HIRSCHMANN
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Reference Manual

Command Line Interface (CLI)
HiOS (Global Overview)

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WARNING

UNCONTROLLED MACHINE ACTIONS
To avoid uncontrolled machine actions caused by data loss, configure all the data transmission devices individually.
Before you start any machine which is controlled via data transmission, be sure to complete the configuration of all data transmission devices.

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

WARNING

UNWANTED APPLICATION BEHAVIOR
Configuration of the Ethernet devices shall be done by an Ethernet expert.
Before you start any application based on an AFS and/or AFF network, be sure to complete the configuration of all Ethernet devices correctly.

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

First login (Password change)

To help prevent undesired access to the device, it is imperative that you change the default password during initial setup.

Perform the following steps:

☐ Open the Graphical User Interface, the HiView application, or the Command Line Interface the
☐ first time you log in.
☐ Log in with the default password.
The device prompts you to type in a new password.
☐ Type in your new password.
To help increase security, choose a password that contains at least 8 characters which includes upper-case characters, lower-case characters, numerical digits, and special characters.
☐ The device prompts you to confirm your new password.
☐ Log in again with your new password.

Note: If you lost your password, then contact your local support team.

For further information, see https://hirschmann-support.belden.com.

About this Manual

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 “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 “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 (CLI) - HiOS Overview” reference manual contains a command reference with detailed information on using the CLI to operate the functions of HiOS devices.

The Industrial HiVision Network 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

Reference Manual CLI - Global Overview

The “Command Line Interface (CLI) - HiOS Overview” reference manual contains a command reference with detailed information on using the CLI to operate the functions of HiOS devices.

The manual provides an overview of the CLI commands universally available on the devices with HiOS Software Release 10.3.

The scope of CLI commands available on your individual device depends on the device type and on the HiOS software level on your device.

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

1.1.9 address-conflict routing trap

Enable or disable sending of IP address conflict traps.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: address-conflict routing trap

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

1.1.10 address-conflict routing probe

Send arp packets on routing interfaces to detect conflicting IP addresses.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: address-conflict routing probe

1.1.11 address-conflict routing clear

Clear the recorded IP address conflict.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: address-conflict routing clear

1.2 mac-address-conflict

Enable/Disable sending a trap if a packet with the MAC of this device is detected in the network.

1.2.1 mac-address-conflict operation

Enable or disable the MAC address conflict detection.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: mac-address-conflict operation

- no mac-address-conflict operation
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no mac-address-conflict operation

1.3 show

Display device options and settings.

1.3.1 show address-conflict global

Display the component mode.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show address-conflict global

1.3.2 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

1.3.3 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

1.3.4 show address-conflict routing

Display the IP address conflict information for routing addresses.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show address-conflict routing

1.3.5 show mac-address-conflict global

Display the component mode.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show mac-address-conflict global

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> [ethertype <P-5>] [vlan <P-6> <P-7>] [cos <P-8>] [log] [time-range <P-9>] permit src <P-10> dst <P-11> [ethertype <P-12>] [vlan <P-13> <P-14>] [cos <P-15>] [time-range <P-16>] [assign-queue <P-17>] [mirror <P-18>] [rate-limit <P-19> <P-20>] [redirect <P-21>] [rate-limit <P-22> <P-23>]`

`[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
`[ethertype]`: Specify the EtherType
`[vlan]`: Configure a match condition based on a VLAN ID.
`[cos]`: Configure a match condition based on a COS value(VLAN priority).
`[log]`: Enable logging.
`[time-range]`: Activate the rule at an absolute time or periodically.
`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
`[ethertype]`: Specify the Ethertype
`[vlan]`: Configure a match condition based on a VLAN ID.
`[cos]`: Set COS field
`[time-range]`: Activate the rule at an absolute time or periodically.
`[assign-queue]`: Configure the User Priority (VLAN priority) assignment attribute.
`[mirror]`: Set Mirror Interface.
`[rate-limit]`: Set rate limit and burst size.
`[redirect]`: Set Redirect Interface.
`[rate-limit]`: Set rate limit and burst size.

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	0x0600-0xffff	Ethertype value
	appletalk	Appletalk
	arp	ARP
	ibmsna	IBMSNA
	ipv4	IPv4
	ipv6	IPv6
	ipx-old	IPX-OLD
	mplsmcast	MPLS Multicast
	mplsucast	MPLS Unicast
	netbios	NetBIOS
	novell	NOVELL
	pppoe	PPPoE
	rarp	RARP
P-6	eq	Specify VLAN value.
P-7	1..4042	Enter the VLAN ID.
P-8	0..7	COS
P-9	string	<name> Time-range name
P-10	any	Enter for any source mac address and mask.
	srcmac-macmask	Enter source MAC and source MAC mask.

Parameter	Value	Meaning
P-11	any	Enter for any destination mac address and mask.
	destmac-macmask	Enter destination MAC and destination MAC mask.
P-12	0x0600-0xffff	Ethertype value
	appletalk	Appletalk
	arp	ARP
	ibmsna	IBMSNA
	ipv4	IPv4
	ipv6	IPv6
	ipx-old	IPX-OLD
	mplsmcast	MPLS Multicast
	mplsucast	MPLS Unicast
	netbios	NetBIOS
	novell	NOVELL
	pppoe	PPPoE
	rarp	RARP
P-13	eq	Specify VLAN value.
P-14	1..4042	Enter the VLAN ID.
P-15	0..7	COS
P-16	string	<name> Time-range name
P-17	0..7	User priority (VLAN priority).
P-18	slot no./port no.	
P-19	0..10000000	Committed rate value, specified in kbps.
P-20	0..128	Committed burst size value, specified in kbytes.
P-21	slot no./port no.	
P-22	0..10000000	Committed rate value, specified in kbps.
P-23	0..128	Committed burst size value, specified in kbytes.

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.
	out	Outbound 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.
	out	Outbound 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

Set MAC parameters.

2.2.1 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> [ethertype <P-5>] [vlan <P-6> <P-7>] [cos <P-8>] [log] [time-range <P-9>] permit src <P-10> dst <P-11> [ethertype <P-12>] [vlan <P-13> <P-14>] [cos <P-15>] [time-range <P-16>] [assign-queue <P-17>] [mirror <P-18>] [rate-limit <P-19> <P-20>] [redirect <P-21>] [rate-limit <P-22> <P-23>]

[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
[ethertype]: Specify the EtherType
[vlan]: Configure a match condition based on a VLAN ID.
[cos]: Configure a match condition based on a COS value(VLAN priority).
[log]: Enable logging.
[time-range]: Activate the rule at an absolute time or periodically.
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
[ethertype]: Specify the Ethertype
[vlan]: Configure a match condition based on a VLAN ID.
[cos]: Set COS field
[time-range]: Activate the rule at an absolute time or periodically.
[assign-queue]: Configure the User Priority (VLAN priority)assignment attribute.
[mirror]: Set Mirror Interface.
[rate-limit]: Set rate limit and burst size.
[redirect]: Set Redirect Interface.
[rate-limit]: Set rate limit and burst size.

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

Parameter	Value	Meaning
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	0x0600-0xffff	Ethertype value
	appletalk	Appletalk
	arp	ARP
	ibmsna	IBMSNA
	ipv4	IPv4
	ipv6	IPv6
	ipx-old	IPX-OLD
	mplsmcast	MPLS Multicast
	mplsucast	MPLS Unicast
	netbios	NetBIOS
	novell	NOVELL
	pppoe	PPPoE
	rarp	RARP
P-6	eq	Specify VLAN value.
P-7	1..4042	Enter the VLAN ID.
P-8	0..7	COS
P-9	string	<name> Time-range name
P-10	any	Enter for any source mac address and mask.
	srcmac-macmask	Enter source MAC and source MAC mask.
P-11	any	Enter for any destination mac address and mask.
	destmac-macmask	Enter destination MAC and destination MAC mask.
P-12	0x0600-0xffff	Ethertype value
	appletalk	Appletalk
	arp	ARP
	ibmsna	IBMSNA
	ipv4	IPv4
	ipv6	IPv6
	ipx-old	IPX-OLD
	mplsmcast	MPLS Multicast
	mplsucast	MPLS Unicast
	netbios	NetBIOS
	novell	NOVELL
	pppoe	PPPoE
	rarp	RARP
P-13	eq	Specify VLAN value.
P-14	1..4042	Enter the VLAN ID.
P-15	0..7	COS
P-16	string	<name> Time-range name
P-17	0..7	User priority (VLAN priority).
P-18	slot no./port no.	
P-19	0..10000000	Committed rate value, specified in kbps.
P-20	0..128	Committed burst size value, specified in kbytes.
P-21	slot no./port no.	
P-22	0..10000000	Committed rate value, specified in kbps.
P-23	0..128	Committed burst size value, specified in kbytes.

2.2.2 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.

2.2.3 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.

2.2.4 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.
	out	Outbound 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]

2.2.5 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.
	out	Outbound 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]

2.3 mac

MAC interface commands.

2.3.1 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.
	out	Outbound 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]

2.3.2 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.
	out	Outbound 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]

2.4 mac

MAC interface commands.

2.4.1 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.
	out	Outbound 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]

2.4.2 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.
	out	Outbound 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]`

2.5 ip

Set IP parameters.

2.5.1 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>] [flag [<P-10>] [<P-11>] [<P-12>] [<P-13>] [<P-14>] [<P-15>] [<P-16>]] [icmp-type <P-17>] [icmp-code <P-18>] [igmp-type <P-19>] [fragments] [precedence <P-20>] [log] [time-range <P-21>] [assign-queue <P-22>] [tos <P-23> <P-24>] [log] [time-range <P-25>] [assign-queue <P-26>] [dscp <P-27>] [log] [time-range <P-28>] [assign-queue <P-29>] every [log] [time-range <P-30>] [assign-queue <P-31>] permit src <P-32> [<P-33> <P-34>] dst <P-35> [<P-36> <P-37>] [proto <P-38>] [flag [<P-39>] [<P-40>] [<P-41>] [<P-42>] [<P-43>] [<P-44>] [<P-45>]] [icmp-type <P-46>] [icmp-code <P-47>] [igmp-type <P-48>] [fragments] [precedence <P-49>] [time-range <P-50>] [mirror <P-51>] [rate-limit <P-52> <P-53>] [redirect <P-54>] [rate-limit <P-55> <P-56>] [tos <P-57> <P-58>] [time-range <P-59>] [assign-queue <P-60>] [mirror <P-61>] [rate-limit <P-62> <P-63>] [redirect <P-64>] [rate-limit <P-65> <P-66>] [dscp <P-67>] [time-range <P-68>] [assign-queue <P-69>] [mirror <P-70>] [rate-limit <P-71> <P-72>] [redirect <P-73>] [rate-limit <P-74> <P-75>] every [time-range <P-76>] [assign-queue <P-77>] [mirror <P-78>] [rate-limit <P-79> <P-80>] [redirect <P-81>] [rate-limit <P-82> <P-83>]`

`[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
`[flag]`: Specify TCP flag.
`[icmp-type]`: Specify ICMP type.
`[icmp-code]`: Specify ICMP code
`[igmp-type]`: Specify IGMP type.
`[fragments]`: Specify if rule matches on fragmented IP packets.
`[precedence]`: Precedence
`[log]`: Enable logging
`[time-range]`: Activate the rule at an absolute time or periodically.
`[assign-queue]`: Configure the User Priority (VLAN priority)assignment attribute.
`[tos]`: TOS
`[log]`: Enable logging
`[time-range]`: Activate the rule at an absolute time or periodically.
`[assign-queue]`: Configure the User Priority (VLAN priority)assignment attribute.
`[dscp]`: DSCP
`[log]`: Enable logging
`[time-range]`: Activate the rule at an absolute time or periodically.
`[assign-queue]`: Configure the User Priority (VLAN priority)assignment attribute.
`every`: Every packet regardless the content.
`[log]`: Enable logging
`[time-range]`: Activate the rule at an absolute time or periodically.
`[assign-queue]`: Configure the User Priority (VLAN priority)assignment attribute.
`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
`[flag]`: Specify TCP flag.

[icmp-type]: Specify ICMP type.
[icmp-code]: Specify ICMP code
[igmp-type]: Specify IGMP type.
[fragments]: Specify if rule matches on fragmented IP packets.
[precedence]: Precedence
[time-range]: Activate the rule at an absolute time or periodically.
[mirror]: Set Mirror Interface
[rate-limit]: Set rate limit and burst size.
[redirect]: Set Redirect Interface
[rate-limit]: Set rate limit and burst size.
[tos]: TOS
[time-range]: Activate the rule at an absolute time or periodically.
[assign-queue]: Configure the User Priority (VLAN priority)assignment attribute.
[mirror]: Set Mirror Interface
[rate-limit]: Set rate limit and burst size.
[redirect]: Set Redirect Interface
[rate-limit]: Set rate limit and burst size.
[dscp]: DSCP
[time-range]: Activate the rule at an absolute time or periodically.
[assign-queue]: Configure the User Priority (VLAN priority)assignment attribute.
[mirror]: Set Mirror Interface
[rate-limit]: Set rate limit and burst size.
[redirect]: Set Redirect Interface
[rate-limit]: Set rate limit and burst size.
every: Every packet regardless the content.
[time-range]: Activate the rule at an absolute time or periodically.
[assign-queue]: Configure the User Priority (VLAN priority)assignment attribute.
[mirror]: Set Mirror Interface
[rate-limit]: Set rate limit and burst size.
[redirect]: Set Redirect Interface
[rate-limit]: Set rate limit and burst size.

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.
P-4	eq	Specify value that port number must be equal to.
	neq	Specify value that port number must not be equal to.
	lt	Specify value that port number must be less than.
	gt	Specify value that port number must be greater than.
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
	1-65535	Port number
P-6	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.
	neq	Specify value that port number must not be equal to.
	lt	Specify value that port number must be less than.
	gt	Specify value that port number must be greater than.

Parameter	Value	Meaning
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
	1-65535	Port number
P-9	icmp	ICMP
	igmp	IGMP
	ip-in-ip	IP-in-IP
	tcp	TCP
	udp	UDP
	ip	Any IP protocol
	1-255	Protocol number
P-10	-fin	Match occurs if fin flag is not set in the TCP header.
	+fin	Match occurs if fin flag is set in the TCP header.
P-11	-syn	Match occurs if syn flag is not set in the TCP header.
	+syn	Match occurs if syn flag is set in the TCP header.
P-12	-rst	Match occurs if rst flag is not set in the TCP header.
	+rst	Match occurs if rst flag is set in the TCP header.
P-13	-psh	Match occurs if psh flag is not set in the TCP header.
	+psh	Match occurs if psh flag is set in the TCP header.
P-14	-ack	Match occurs if ack flag is not set in the TCP header.
	+ack	Match occurs if ack flag is set in the TCP header.
P-15	-urg	Match occurs if urg flag is not set in the TCP header.
	+urg	Match occurs if urg flag is set in the TCP header.
P-16	established	Match occurs if the specified RST and ACK bits are set in TCP header.
P-17	0..255	ICMP type value.
P-18	0..255	ICMP code value.
P-19	0..255	IGMP code value.
P-20	0..7	IP Precedence
P-21	string	<name> Time-range name
P-22	0..7	User priority (VLAN priority).
P-23	0..255	TOS
P-24	0..255	TOS Inverse Mask (0 for exact match)
P-25	string	<name> Time-range name
P-26	0..7	User priority (VLAN priority).
P-27	0..63	DSCP
P-28	string	<name> Time-range name
P-29	0..7	User priority (VLAN priority).
P-30	string	<name> Time-range name
P-31	0..7	User priority (VLAN priority).
P-32	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-33	eq	Specify value that port number must be equal to.
	neq	Specify value that port number must not be equal to.
	lt	Specify value that port number must be less than.
	gt	Specify value that port number must be greater than.

Parameter	Value	Meaning
P-34	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-35	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-36	eq	Specify value that port number must be equal to.
	neq	Specify value that port number must not be equal to.
	lt	Specify value that port number must be less than.
	gt	Specify value that port number must be greater than.
P-37	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-38	icmp	ICMP
	igmp	IGMP
	ip-in-ip	IP-in-IP
	tcp	TCP
	udp	UDP
	ip	Any IP protocol
	1-255	Protocol number
P-39	-fin	Match occurs if fin flag is not set in the TCP header.
	+fin	Match occurs if fin flag is set in the TCP header.
P-40	-syn	Match occurs if syn flag is not set in the TCP header.
	+syn	Match occurs if syn flag is set in the TCP header.
P-41	-rst	Match occurs if rst flag is not set in the TCP header.
	+rst	Match occurs if rst flag is set in the TCP header.
P-42	-psh	Match occurs if psh flag is not set in the TCP header.
	+psh	Match occurs if psh flag is set in the TCP header.
P-43	-ack	Match occurs if ack flag is not set in the TCP header.
	+ack	Match occurs if ack flag is set in the TCP header.
P-44	-urg	Match occurs if urg flag is not set in the TCP header.
	+urg	Match occurs if urg flag is set in the TCP header.
P-45	established	Match occurs if the specified RST and ACK bits are set in TCP header.
P-46	0..255	ICMP type value.
P-47	0..255	ICMP code value.
P-48	0..255	IGMP code value.
P-49	0..7	IP Precedence
P-50	string	<name> Time-range name
P-51	slot no./port no.	
P-52	0..10000000	Committed rate value, specified in kbps.
P-53	0..128	Committed burst size value, specified in kbytes.
P-54	slot no./port no.	
P-55	0..10000000	Committed rate value, specified in kbps.
P-56	0..128	Committed burst size value, specified in kbytes.
P-57	0..255	TOS
P-58	0..255	TOS Inverse Mask (0 for exact match)
P-59	string	<name> Time-range name

Parameter	Value	Meaning
P-60	0..7	User priority (VLAN priority).
P-61	slot no./port no.	
P-62	0..10000000	Committed rate value, specified in kbps.
P-63	0..128	Committed burst size value, specified in kbytes.
P-64	slot no./port no.	
P-65	0..10000000	Committed rate value, specified in kbps.
P-66	0..128	Committed burst size value, specified in kbytes.
P-67	0..63	DSCP
P-68	string	<name> Time-range name
P-69	0..7	User priority (VLAN priority).
P-70	slot no./port no.	
P-71	0..10000000	Committed rate value, specified in kbps.
P-72	0..128	Committed burst size value, specified in kbytes.
P-73	slot no./port no.	
P-74	0..10000000	Committed rate value, specified in kbps.
P-75	0..128	Committed burst size value, specified in kbytes.
P-76	string	<name> Time-range name
P-77	0..7	User priority (VLAN priority).
P-78	slot no./port no.	
P-79	0..10000000	Committed rate value, specified in kbps.
P-80	0..128	Committed burst size value, specified in kbytes.
P-81	slot no./port no.	
P-82	0..10000000	Committed rate value, specified in kbps.
P-83	0..128	Committed burst size value, specified in kbytes.

- 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] [flag] [icmp-type] [icmp-code] [igmp-type] [fragments] [precedence] [log] [time-range] [assign-queue] [tos] [log] [time-range] [assign-queue] [dscp] [log] [time-range] [assign-queue] every [log] [time-range] [assign-queue] permit src dst [proto] [flag] [icmp-type] [icmp-code] [igmp-type] [fragments] [precedence] [time-range] [mirror] [rate-limit] [redirect] [rate-limit] [tos] [time-range] [assign-queue] [mirror] [rate-limit] [redirect] [rate-limit] [dscp] [time-range] [assign-queue] [mirror] [rate-limit] [redirect] [rate-limit] every [time-range] [assign-queue] [mirror] [rate-limit] [redirect] [rate-limit]

2.5.2 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.

2.5.3 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.

2.5.4 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.
	out	Outbound 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]

2.5.5 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.
	out	Outbound 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]

2.6 ip

IP interface commands.

2.6.1 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.
	out	Outbound 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]

2.6.2 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.
	out	Outbound 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]

2.7 show

Display device options and settings.

2.7.1 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

2.7.2 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.

2.7.3 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.

2.7.4 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.

2.7.5 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 appllists

Display the ordered methods for application lists.

- Mode: `Command is in all modes available.`
- Privilege Level: `Administrator`
- Format: `show appllists`

4 Application Rule

4.1 application-rule

Application rule configuration.

4.1.1 application-rule add

Add new application rule name

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `application-rule add <P-1> name <P-2> [protocol <P-3>] [port <P-4>] [direction <P-5>]`

`name`: Application Rule Name
`[protocol]`: Protocol Name
`[port]`: Port Number
`[direction]`: inbound/outbound/both

Parameter	Value	Meaning
P-1	1..999	Application Rule Index
P-2	string	Application Rule Name
P-3	string	Application Rule Protocol tcp/udp/icmp/igmp/ipip/esp/ah/icmpv6/any/custom
P-4	any	any Any port/portless protocol
	a-b	a-b Port Range
	a,b	a,b Port List (may be longer than two ports)
	a-b,c-d	a-b,c-d List of Port Ranges (may be longer than two ranges)
	1 to 65535	1 to 65535 Port Number
P-5	inbound	Rule applies on inbound direction.
	outbound	Rule applies on outbound direction.
	both	Rule applies on inbound and outbound direction.

4.1.2 application-rule modify

Modify application rule details

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `application-rule modify <P-1> [name <P-2>] [protocol <P-3>] [port <P-4>] [direction <P-5>]`

`[name]`: Application Rule Name
`[protocol]`: Protocol Name
`[port]`: Port Number
`[direction]`: inbound/outbound/both

Parameter	Value	Meaning
P-1	1..999	Application Rule Index
P-2	string	Application Rule Name
P-3	string	Application Rule Protocol tcp/udp/icmp/igmp/ipip/esp/ah/icmpv6/any/custom
P-4	any	any Any port/portless protocol
	a-b	a-b Port Range
	a,b	a,b Port List (may be longer than two ports)
	a-b,c-d	a-b,c-d List of Port Ranges (may be longer than two ranges)
	1 to 65535	1 to 65535 Port Number
P-5	inbound	Rule applies on inbound direction.
	outbound	Rule applies on outbound direction.
	both	Rule applies on inbound and outbound direction.

4.1.3 application-rule delete

Delete application rule

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `application-rule delete <P-1>`

Parameter	Value	Meaning
P-1	1..999	Application Rule Index

4.2 show

Display device options and settings.

4.2.1 show application-rule list

Display all application rule list

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show application-rule list`

5 Authentication Lists

5.1 authlists

Configure an authentication list.

5.1.1 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.

5.1.2 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.

5.1.3 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
	tacacs	Authentication by TACACS+ server
	ias	Authentication by IAS server
	ldap	Authentication by remote server
P-3	reject	Authentication is rejected / not allowed
	local	Authentication by local user DB
	radius	Authentication by RADIUS server
	tacacs	Authentication by TACACS+ 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
	tacacs	Authentication by TACACS+ 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
	tacacs	Authentication by TACACS+ 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
	tacacs	Authentication by TACACS+ server
	ias	Authentication by IAS server
	ldap	Authentication by remote server

5.1.4 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.`

5.1.5 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.`

5.2 show

Display device options and settings.

5.2.1 show authlists

Display the ordered methods for authentication lists.

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

6 Auto Disable

6.1 auto-disable

Configure the Auto Disable condition settings.

6.1.1 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>`

6.2 auto-disable

Configure the Auto Disable condition settings.

6.2.1 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.

6.2.2 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>]`

6.3 show

Display device options and settings.

6.3.1 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`

6.3.2 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`

7 Cabletest

7.1 cable-test

7.1.1 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.	

8 Class Of Service

8.1 classofservice

Class of service configuration.

8.1.1 classofservice ip-dscp-mapping

ip-dscp-mapping configuration

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

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	
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Parameter	Value	Meaning
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p-2	<0..7>	Enter the Traffic Class value.

8.1.2 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.`

8.2 classofservice

Interface classofservice configuration.

8.2.1 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.`

8.3 cos-queue

COS queue configuration

8.3.1 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.

8.3.2 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.

8.3.3 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.

8.3.4 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.

8.4 show

Display device options and settings.

8.4.1 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

8.4.2 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

8.4.3 `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`

8.4.4 `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`

9 Command Line Interface (CLI)

9.1 cli

Set the CLI preferences.

9.1.1 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.

9.1.2 cli prompt

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

9.1.3 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.

9.1.4 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`

9.1.5 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).

9.2 show

Display device options and settings.

9.2.1 show cli global

Display the CLI preferences.

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

9.2.2 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`

9.3 logging

Logging configuration.

9.3.1 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`

9.4 show

Display device options and settings.

9.4.1 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`

10 Clock

10.1 clock

Configure local and DST clock settings.

10.1.1 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.

10.1.2 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).

10.1.3 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).

10.1.4 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.

10.1.5 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	

Parameter	Value	Meaning
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).

10.1.6 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).

10.1.7 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).

10.2 show

Display device options and settings.

10.2.1 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.

11 Central Mirroring

11.1 port-redirect

Configure the Central Mirroring / Redirect settings.

11.1.1 port-redirect destination-port

Create or change the status of a Central Mirroring / Redirect instance, determined by its destination port.

- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `port-redirect destination-port <P-1> <P-2>`

Parameter	Value	Meaning
`P-1`	slot no./port no.	
`P-2`	enable	`Enable the option.`
	disable	`Disable the option.`
	add	`Add a new instance.`
	delete	`Delete the instance.`

11.1.2 port-redirect source-port-list destination-port

Destination port determines the Central Mirroring / Redirect instance.

- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `port-redirect source-port-list destination-port <P-1> source-port <P-2>`

`source-port`: Add or remove port from list of source ports.

Parameter	Value	Meaning
`P-1`	slot no./port no.	
`P-2`	slot no./port no.	

- `no port-redirect source-port-list destination-port`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Administrator`
  - Format: `no port-redirect source-port-list destination-port <P-1> source-port <P-2>`

11.2 show

Display device options and settings.

11.2.1 show port-redirect

Display the CMS parameters and status.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show port-redirect [destination-port [<P-1>]]`

`[destination-port]`: Display the Central Mirroring / Redirect instance settings. The instance is determined by its destination port.

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

12 Configuration

12.1 save

Save the configuration to the specified destination.

12.1.1 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.

12.2 config

Configure the configuration saving settings.

12.2.1 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`

12.2.2 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.

12.2.3 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.

12.2.4 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.

12.2.5 config envm choose-active

Choose the active external non-volatile memory for copying firmware, logs, certificates etc. This does not affect loading and saving of the configuration.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `config envm choose-active <P-1>`

Parameter	Value	Meaning
P-1	sd	SD-Card
	usb	USB Storage Device

12.2.6 config envm log-device

Choose the active external non-volatile memory for persistent log files.

- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `config envm log-device <P-1>`

Parameter	Value	Meaning
P-1	sd	SD-Card
	usb	USB Storage Device

12.2.7 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	sd	SD-Card
	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>`

12.2.8 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	sd	SD-Card
	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>`

12.2.9 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	sd	SD-Card
	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>`

12.2.10 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	sd	SD-Card
	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.
	second	Config will be loaded if first one does not succeed.

12.2.11 config envm usb-compatibility

Changes the USB compatibility mode. The changes take effect only after saving the settings and rebooting the device.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `config envm usb-compatibility <P-1>`

Parameter	Value	Meaning
P-1	normal	Normal Mode
	compatibility	Compatibility Mode

- `no config envm usb-compatibility`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no config envm usb-compatibility <P-1>`

12.2.12 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.

12.2.13 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.

12.2.14 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.

12.2.15 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.

12.2.16 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.
P-2	string	Enter hash as 40 hexa-decimal characters.

12.2.17 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.

12.2.18 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

12.2.19 config remote-backup destination

Enter the destination URL for the configuration profile backup. The following wildcards are allowed: %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.

12.2.20 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.

12.2.21 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.

12.3 copy

Copy different kinds of items.

12.3.1 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.

12.3.2 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

12.3.3 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.

12.3.4 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 [source-interface <P-2>]

system: Copy a firmware image to the device from a file server.
[source-interface]: Specify the source-interface to be used (physical or logical). The frames will not necessarily be sent on this interface, only the IP address of the interface will be used as source IP.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.
P-2	slot no./port no.	

12.3.5 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.

12.3.6 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> [source-interface <P-2>]

[source-interface]: Specify the source-interface to be used (physical or logical). The frames will not necessarily be sent on this interface, only the IP address of the interface will be used as source IP.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.
P-2	slot no./port no.	

12.3.7 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> [source-interface <P-3>]

[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.
[source-interface]: Specify the source-interface to be used (physical or logical). The frames will not necessarily be sent on this interface, only the IP address of the interface will be used as source IP.

Parameter	Value	Meaning
P-1	string	Filename.
P-2	string	Enter a user-defined text, max. 128 characters.
P-3	slot no./port no.	

12.3.8 copy config nvm running-config

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

- Mode: Privileged Exec Mode
- Privilege Level: Administrator
- Format: copy config nvm running-config

12.3.9 copy config nvm remote

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

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

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

12.3.10 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.

12.3.11 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>] [source-interface <P-3>] running-config [source-interface <P-4>]

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.
[source-interface]: Specify the source-interface to be used (physical or logical). The frames will not necessarily be sent on this interface, only the IP address of the interface will be used as source IP.
running-config: Copy a configuration file from a server to the running-config.
[source-interface]: Specify the source-interface to be used (physical or logical). The frames will not necessarily be sent on this interface, only the IP address of the interface will be used as source IP.

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.
P-3	slot no./port no.	
P-4	slot no./port no.	

12.3.12 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 [source-interface <P-2>]

nvm: Copy the SFP WhiteList from server to the device.
[source-interface]: Specify the source-interface to be used (physical or logical). The frames will not necessarily be sent on this interface, only the IP address of the interface will be used as source IP.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.
P-2	slot no./port no.	

12.3.13 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.

12.4 clear

Clear several items.

12.4.1 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.

12.4.2 clear factory

Set the device back to the factory settings (use with care).
- Mode: Privileged Exec Mode
- Privilege Level: Administrator
- Format: clear factory [erase-all]

[erase-all]: Set to factory settings and also erase file systems (use with extreme care).

12.4.3 clear sfp-white-list

Clear the SFP WhiteList.
- Mode: Privileged Exec Mode
- Privilege Level: Operator
- Format: clear sfp-white-list

12.5 show

Display device options and settings.

12.5.1 show running-config xml

Display the currently running configuration (XML file).
- Mode: Command is in all modes available.
- Privilege Level: Administrator
- Format: show running-config xml

12.5.2 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] [interface <P-1>]

[all]: Display the currently running configuration (CLI script).
[interface]: Display the currently running configuration for the interface (Partial CLI script).

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

12.6 show

Display device options and settings.

12.6.1 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

12.6.2 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

12.6.3 show config envm active

Display the active external non-volatile memory.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show config envm active

12.6.4 show config envm usb-compatibility

Display the USB compatibility mode. The admin mode takes effect after saving the settings and rebooting the device.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show config envm usb-compatibility

12.6.5 show config watchdog

Display the Auto Configuration Undo settings.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show config watchdog

12.6.6 show config encryption

Display the settings for configuration encryption.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show config encryption

12.6.7 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

Parameter	Value	Meaning
P-2	1..20	Index of the profile entry.

12.6.8 show config status

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

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

12.6.9 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

12.7 swap

Swap software images.

12.7.1 swap firmware system backup

Swap the main and backup images.

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

13 Dynamic ARP Inspection

13.1 ip

Set IP parameters.

13.1.1 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`

13.1.2 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`

13.1.3 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`

13.1.4 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.`

13.1.5 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.

13.1.6 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.

13.1.7 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.

13.1.8 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.

13.1.9 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.

13.2 clear

Clear several items.

13.2.1 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

13.3 ip

IP commands.

13.3.1 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>

13.3.2 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>

13.3.3 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>

13.3.4 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>

13.3.5 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.

13.4 ip

IP interface commands.

13.4.1 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

13.4.2 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

13.4.3 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.

Parameter	Value	Meaning
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.

13.5 show

Display device options and settings.

13.5.1 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

13.5.2 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

13.5.3 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

13.5.4 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

13.5.5 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.

13.5.6 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

13.5.7 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

14 Debugging

14.1 debug

Different tools to assist in debugging the device.

14.1.1 debug tcpdump help

Display the help file for the tcpdump tool.
- Mode: Privileged Exec Mode
- Privilege Level: Operator
- Format: debug tcpdump help

14.1.2 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.

14.1.3 debug tcpdump stop

Abort capture of network traffic.
- Mode: Privileged Exec Mode
- Privilege Level: Operator
- Format: debug tcpdump stop

14.1.4 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.

14.1.5 debug tcpdump filter list

Display every available filter file.
- Mode: Privileged Exec Mode
- Privilege Level: Operator
- Format: debug tcpdump filter list

14.1.6 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.

14.1.7 debug stppkttrace

Packet tracer for spanning tree protocol.
- Mode: Privileged Exec Mode
- Privilege Level: Operator
- Format: debug stppkttrace <P-1>

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

14.1.8 debug support-mode operation

Enable or disable the Support Mode. Contact manufacturer.

- Mode: Privileged Exec Mode
- Privilege Level: Operator
- Format: debug support-mode operation <P-1>

Parameter	Value	Meaning
P-1	enable	Enable Support Mode on the device. Contact manufacturer.
	disable	Disable Support Mode on the device.

14.2 show

Display device options and settings.

14.2.1 show debug developer-log

Show developer log

- Mode: Privileged Exec Mode
- Privilege Level: Administrator
- Format: show debug developer-log [<P-1>]

Parameter	Value	Meaning
P-1	0..4294967294	Enter a number in the given range.

14.2.2 show debug logic-modules

List logic module information

- Mode: Privileged Exec Mode
- Privilege Level: Administrator
- Format: show debug logic-modules

14.2.3 show debug stppkttrace

Display the mode of packet tracer for spanning tree protocol.

- Mode: Privileged Exec Mode
- Privilege Level: Administrator
- Format: show debug stppkttrace

14.3 copy

Copy different kinds of items.

14.3.1 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.

14.3.2 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> [source-interface <P-2>]

[source-interface]: Specify the source-interface to be used (physical or logical). The frames will not necessarily be sent on this interface, only the IP address of the interface will be used as source IP.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.
P-2	slot no./port no.	

14.3.3 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> [source-interface <P-3>]`

`nvm`: Copy the filter file from a server to non-volatile memory.
`[source-interface]`: Specify the source-interface to be used (physical or logical). The frames will not necessarily be sent on this interface, only the IP address of the interface will be used as source IP.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.
P-2	string	<filename> Enter a valid filename.
P-3	slot no./port no.	

14.3.4 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.

14.3.5 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> [source-interface <P-4>]`

`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.
`[source-interface]`: Specify the source-interface to be used (physical or logical). The frames will not necessarily be sent on this interface, only the IP address of the interface will be used as source IP.

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.
P-4	slot no./port no.	

15 Device Monitoring

15.1 device-status

Configure various device conditions to be monitored.

15.1.1 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`

15.1.2 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`

15.1.3 device-status monitor module-removal

Enable or disable monitoring the presence of modules.
- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `device-status monitor module-removal`

- `no device-status monitor module-removal`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Administrator`
  - Format: `no device-status monitor module-removal`

15.1.4 device-status monitor fan-failure

Enable or disable monitoring the status of fan modules.
- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `device-status monitor fan-failure`

- `no device-status monitor fan-failure`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Administrator`
  - Format: `no device-status monitor fan-failure`

15.1.5 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`

15.1.6 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`

15.1.7 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`

15.1.8 device-status monitor humidity

Enable or disable monitoring of the device humidity.
- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `device-status monitor humidity`

- `no device-status monitor humidity`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Administrator`
  - Format: `no device-status monitor humidity`

15.1.9 device-status monitor power-status

Enable or disable monitoring the condition of the power supply.
- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `device-status monitor power-status <P-1>`

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

- `no device-status monitor power-status`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Administrator`
  - Format: `no device-status monitor power-status <P-1>`

15.1.10 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>

15.1.11 device-status monitor stp-blocking

Enable or disable monitoring of ports blocked by STP.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: device-status monitor stp-blocking

- no device-status monitor stp-blocking
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Administrator
  - Format: no device-status monitor stp-blocking

15.1.12 device-status monitor stp-blocking

Enable or disable monitoring of ports blocked by STP.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: device-status monitor stp-blocking

- no device-status monitor stp-blocking
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Administrator
  - Format: no device-status monitor stp-blocking

15.1.13 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

15.1.14 device-status module

Configure the monitoring of the specific module.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: device-status module <P-1>

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

- no device-status module
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Administrator
  - Format: no device-status module <P-1>

15.1.15 device-status fan-module

Configure the monitoring of the specific fan module.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: device-status fan-module <P-1>

Parameter	Value	Meaning
P-1	1..1	Number of fan modules.

- no device-status fan-module
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Administrator
  - Format: no device-status fan-module <P-1>

15.2 device-status

Configure various device conditions to be monitored.

15.2.1 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

15.3 show

Display device options and settings.

15.3.1 show device-status monitor

Display the device monitoring configurations.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show device-status monitor

15.3.2 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

15.3.3 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

15.3.4 show device-status events

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

15.3.5 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

15.3.6 show device-status module

Display the monitor configurations of the modules.

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

15.3.7 show device-status fan-module

Display the monitor configurations of the fan modules.

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

15.3.8 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

16 Device Security

16.1 security-status

Configure the security status settings.

16.1.1 security-status monitor pwd-change

Sets the monitoring of default password change for '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

16.1.2 security-status monitor pwd-min-length

Sets the monitoring of minimum length of the password (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

16.1.3 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: "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

16.1.4 security-status monitor pwd-str-not-config

Sets the monitoring whether the password minimum strength check is configured.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: security-status monitor pwd-str-not-config

- no security-status monitor pwd-str-not-config
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Administrator
  - Format: no security-status monitor pwd-str-not-config

16.1.5 security-status monitor pwd-policy-inactive

Sets the monitoring whether at least one user is configured with inactive policy check. The 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

16.1.6 security-status monitor bypass-pwd-strength

Sets the monitoring whether at least one user is configured to bypass strength check.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: security-status monitor bypass-pwd-strength

- no security-status monitor bypass-pwd-strength
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Administrator
  - Format: no security-status monitor bypass-pwd-strength

16.1.7 security-status monitor telnet-enabled

Sets the monitoring of the activation of telnet on the 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

16.1.8 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

16.1.9 security-status monitor snmp-unsecure

Sets the monitoring of SNMP security (SNMP 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

16.1.10 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

16.1.11 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

16.1.12 security-status monitor extnvm-upd-enabled

Sets the monitoring of activation of the configuration 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

16.1.13 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

16.1.14 security-status monitor hidisc-enabled

Sets the monitoring of HiDiscovery.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: security-status monitor hidisc-enabled

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

16.1.15 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

16.1.16 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

16.1.17 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

16.1.18 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

16.1.19 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

16.1.20 security-status monitor profinet-io-enabled

Sets the monitoring of the activation of PROFINET protocol on the switch.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: security-status monitor profinet-io-enabled

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

16.1.21 security-status monitor pml-disabled

Sets the monitoring of the deactivation of Port MAC Locking service on the switch.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: security-status monitor pml-disabled

- no security-status monitor pml-disabled
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Administrator
  - Format: no security-status monitor pml-disabled

16.1.22 security-status monitor secure-boot-disabled

Sets the monitoring to check if Secure Boot is inactive in the device.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: security-status monitor secure-boot-disabled

- no security-status monitor secure-boot-disabled
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Administrator
  - Format: no security-status monitor secure-boot-disabled

16.1.23 security-status monitor support-mode-enabled

Sets the monitoring to check if Support Mode is active in the device.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: security-status monitor support-mode-enabled

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

16.1.24 security-status trap

Configure if a trap is sent when the security status changes.
- 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

16.2 security-status

Configure the security status interface settings.

16.2.1 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`

16.3 show

Display device options and settings.

16.3.1 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`

16.3.2 show security-status state

Display the current security status.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show security-status state`

16.3.3 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`

16.3.4 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`

16.3.5 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`

16.3.6 show security-status all

Display the security status settings.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show security-status all`

17 Dynamic Host Configuration Protocol (DHCP)

17.1 dhcp-server

Modify DHCP Server parameters.

17.1.1 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`

17.2 dhcp-server

Modify DHCP Server parameters.

17.2.1 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`

17.2.2 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`

17.2.3 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 pool with one or more IP addresses.
`static`: Add a pool with only one IP address. This is the same as the 'dynamic' command with last-ip set to '0.0.0.0'.

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.`

Parameter	Value	Meaning
P-4	A.B.C.D	IP address.

17.2.4 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> mac <P-6> clientid <P-7> classid vendor-id <P-8> architecture <P-9> remoteid <P-10> circuitid <P-11> relay <P-12> vlan <P-13> leasetime <P-14> option configpath <P-15> gateway <P-16> netmask <P-17> wins <P-18> dns <P-19> hostname <P-20> hirschmann-device

first-ip: Modify the first IP.
last-ip: Modify the last IP.
mode: Pool mode settings.
interface: Interface mode.
mac: MAC mode.
mac: MAC mode.
clientid: Clientid mode.
classid: Configure the class ID for using the PXE (Preboot eXecution Environment) protocol.
vendor-id: Specify Vendor ID of client for PXE.
architecture: Specify architecture of client for PXE.
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.
hirschmann-device: Set this pool to Hirschmann 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	any	Enter any as a shortcut for the MAC address 00:00:00:00:00:00.
	aa:bb:cc:dd:ee:ff	Enter the MAC address in hexadecimal format.
P-7	none	Remove ID mode.
	xx:xx:...:xx	Enter ID in hexadecimal format.
P-8	string	User configurable string for the Vendor ID with maximum length of 9 characters to enable the PXE protocol. 'none' or an empty string ("") for the Vendor ID disables the PXE protocol.
P-9	intel-x86pc	Specify 'Intel x86 PC' as PXE client architecture.
	nec-pc98	Specify 'NEC/PC98' as PXE client architecture.
	efi-itanium	Specify 'EFI Itanium' as PXE client architecture.
	dec-alpha	Specify 'DEC Alpha' as PXE client architecture.
	arc-x86	Specify 'Arc x86' as PXE client architecture.
	intel-lean-client	Specify 'Intel Lean Client' as PXE client architecture.
	efi-ia32	Specify 'EFI IA32' as PXE client architecture.
	efi-bc	Specify 'EFI BC' as PXE client architecture.
	efi-xscale	Specify 'EFI Xscale' as PXE client architecture.
	efi-x86-64	Specify 'EFI x86-64' as PXE client architecture.
P-10	none	Remove ID mode.
	xx:xx:...:xx	Enter ID in hexadecimal format.
P-11	none	Remove ID mode.
	xx:xx:...:xx	Enter ID in hexadecimal format.
P-12	none	Remove relay mode.
	ipaddr	Enter IP address of the relay.

Parameter	Value	Meaning
P-13	-1..4042	VLAN ID. A value of -1 corresponds to management vlan (the default), any other value (1-4042) represents a specific VLAN
P-14	infinite	Infinite leasetime.
	60..220752000	Leasetime in seconds.
P-15	tftp://<servername>/<file>	tftp://<servername>/<file> Configuration path; empty string ("") to clear value.
P-16	A.B.C.D	IP address.
P-17	A.B.C.D	IP address.
P-18	A.B.C.D	IP address.
P-19	A.B.C.D	IP address.
P-20	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 mac clientid classid vendor-id architecture remoteid circuitid relay vlan leasetime option configpath gateway netmask wins dns hostname hirschmann-device

17.2.5 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>

17.2.6 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.

17.3 dhcp-client

Configure DHCP client

17.3.1 dhcp-client server-ip

Configure the DHCP server IP address.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: dhcp-client server-ip <P-1>

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

- no dhcp-client server-ip
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no dhcp-client server-ip

17.3.2 dhcp-client mode

Configure the DHCP client in auto/static mode.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `dhcp-client mode <P-1>`

Parameter	Value	Meaning
P-1	auto	DHCP client in auto mode.
	static	DHCP client in static mode.

17.4 show

Display device options and settings.

17.4.1 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`

17.4.2 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.

17.4.3 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.	

17.4.4 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`

17.4.5 show dhcp-client

Display the DHCP client mode for external interface.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show dhcp-client`

18 DHCP Layer 2 Relay

18.1 dhcp-l2relay

Configure DHCP Layer 2 Relay.

18.1.1 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`

18.2 dhcp-l2relay

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

18.2.1 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>`

18.2.2 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>`

18.2.3 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.

18.2.4 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.

18.2.5 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.

18.2.6 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

18.3 dhcp-l2relay

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

18.3.1 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

18.3.2 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

18.4 clear

Clear several items.

18.4.1 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

18.5 show

Display device options and settings.

18.5.1 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

18.5.2 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

18.5.3 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

18.5.4 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

19 DHCP Snooping

19.1 ip

Set IP parameters.

19.1.1 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`

19.1.2 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`

19.1.3 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>.

19.1.4 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.

19.1.5 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.

Parameter	Value	Meaning
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.

19.1.6 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

19.1.7 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.	

19.1.8 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.

19.1.9 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.

19.2 clear

Clear several items.

19.2.1 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.	

19.2.2 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

19.3 ip

IP commands.

19.3.1 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>`

19.4 ip

IP interface commands.

19.4.1 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`

19.4.2 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`

19.4.3 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`

19.4.4 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.`

19.5 show

Display device options and settings.

19.5.1 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`

19.5.2 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`

19.5.3 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`

19.5.4 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`

19.5.5 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.`

20 Differentiated Services (DiffServ)

20.1 diffserv

20.1.1 diffserv

Enable or disable DiffServ.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `diffserv`

- `no diffserv`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no diffserv`

20.2 class-map

Manage DiffServ classes.

20.2.1 class-map match-all

Create a new match-all class.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `class-map match-all <P-1>`

Parameter	Value	Meaning
`P-1`	string	`Enter the DiffServ class name, max. 31 characters.`

20.2.2 class-map name match any

Configure a Diffserv class.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `class-map name <P-1> match any`

`match`: Add a match rule for the class.
`any`: Match any packet.

Parameter	Value	Meaning
`P-1`	string	`Enter the DiffServ class name, max. 31 characters.`

20.2.3 class-map name match class-map

Configure a Diffserv class.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `class-map name <P-1> match class-map <P-2> <P-3>`

`match`: Add a match rule for the class.
`class-map`: Add/remove a set of match condition defined for another class.

Parameter	Value	Meaning
`P-1`	string	`Enter the DiffServ class name, max. 31 characters.`
`P-2`	string	`Enter the DiffServ class name, max. 31 characters.`
`P-3`	enable	`Enable the option.`
	disable	`Disable the option.`

20.2.4 class-map name match cos

Configure a Diffserv class.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `class-map name <P-1> match cos <P-2>`

`match`: Add a match rule for the class.

cos: Add a match condition based on the COS value.

Parameter	Value	Meaning
P-1	string	Enter the DiffServ class name, max. 31 characters.
P-2	0..7	COS value.

20.2.5 class-map name match destination-address

Configure a Diffserv class.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: class-map name <P-1> match destination-address <P-2> <P-3> <P-4>

match: Add a match rule for the class.
destination-address: Add a match condition based on the destination mac address.

Parameter	Value	Meaning
P-1	string	Enter the DiffServ class name, max. 31 characters.
P-2	mac	mac.
P-3	aa:bb:cc:dd:ee:ff	MAC address.
P-4	aa:bb:cc:dd:ee:ff	MAC mask.

20.2.6 class-map name match dstip

Configure a Diffserv class.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: class-map name <P-1> match dstip <P-2> <P-3>

match: Add a match rule for the class.
dstip: Add a match condition based on the destination IPv4 address.

Parameter	Value	Meaning
P-1	string	Enter the DiffServ class name, max. 31 characters.
P-2	a.b.c.d	IP address.
P-3	a.b.c.d	IP subnet mask.

20.2.7 class-map name match dst14port

Configure a Diffserv class.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: class-map name <P-1> match dst14port <P-2>

match: Add a match rule for the class.
dstl4port: Add a match condition based on the layer 4 destination port.

Parameter	Value	Meaning
P-1	string	Enter the DiffServ class name, max. 31 characters.
P-2	domain	domain
	echo	echo
	ftp	ftp
	ftpdata	ftpdata
	http	http
	smtp	smtp
	snmp	snmp
	telnet	telnet
	tftp	tftp
	www	www
	0-65535	Port number

20.2.8 class-map name match ethertype

Configure a Diffserv class.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: class-map name <P-1> match ethertype <P-2>

match: Add a match rule for the class.
ethertype: Add a match condition based on the ethertype value.

Parameter	Value	Meaning
P-1	string	Enter the DiffServ class name, max. 31 characters.

Parameter	Value	Meaning
P-2	0x0600-0xffff	ethertype
	appletalk	appletalk
	arp	arp
	ibmsna	ibmsna
	ipv4	ipv4
	ipv6	ipv6
	ipx	ipx
	mplsmcast	mplsmcast
	mplsucast	mplsucast
	netbios	netbios
	novell	novell
	pppoe	pppoe
	rarp	rarp

20.2.9 class-map name match ip dscp

Configure a Diffserv class.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: class-map name <P-1> match ip dscp <P-2>

match: Add a match rule for the class.
ip: Add a match condition based on IP DSCP, precedence or TOS fields.
dscp: Add a match condition based on the IP DSCP field.

Parameter	Value	Meaning
P-1	string	Enter the DiffServ class name, max. 31 characters.
P-2	0-63	Decimal value
	af11	af11
	af12	af12
	af13	af13
	af21	af21
	af22	af22
	af23	af23
	af31	af31
	af32	af32
	af33	af33
	af41	af41
	af42	af42
	af43	af43
	be	be
	cs0	cs0
	cs1	cs1
	cs2	cs2
	cs3	cs3
	cs4	cs4
	cs5	cs5
	cs6	cs6
	cs7	cs7
	ef	ef

20.2.10 class-map name match ip precedence

Configure a Diffserv class.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: class-map name <P-1> match ip precedence <P-2>

match: Add a match rule for the class.
ip: Add a match condition based on IP DSCP, precedence or TOS fields.
precedence: Add a match condition based on the IP precedence field.

Parameter	Value	Meaning
P-1	string	Enter the DiffServ class name, max. 31 characters.
P-2	0..7	Ip precedence value.

20.2.11 class-map name match ip tos

Configure a Diffserv class.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: class-map name <P-1> match ip tos <P-2> <P-3>

match: Add a match rule for the class.
ip: Add a match condition based on IP DSCP, precedence or TOS fields.
tos: Add a match condition based on the IP TOS field.

Parameter	Value	Meaning
P-1	string	Enter the DiffServ class name, max. 31 characters.
P-2	00-ff	Tos bits/mask.
P-3	00-ff	Tos bits/mask.

20.2.12 class-map name match protocol

Configure a Diffserv class.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: class-map name <P-1> match protocol <P-2>

match: Add a match rule for the class.
protocol: Add a match condition based on the IP protocol field.

Parameter	Value	Meaning
P-1	string	Enter the DiffServ class name, max. 31 characters.
P-2	icmp	icmp
	igmp	igmp
	ip	ip
	tcp	tcp
	udp	udp
	0-255	Protocol number

20.2.13 class-map name match secondary-cos

Configure a Diffserv class.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: class-map name <P-1> match secondary-cos <P-2>

match: Add a match rule for the class.
secondary-cos: Add a match condition based on the secondary COS value.

Parameter	Value	Meaning
P-1	string	Enter the DiffServ class name, max. 31 characters.
P-2	0..7	COS value.

20.2.14 class-map name match secondary-vlan

Configure a Diffserv class.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: class-map name <P-1> match secondary-vlan <P-2>

match: Add a match rule for the class.
secondary-vlan: Add a match condition based on the secondary VLAN field.

Parameter	Value	Meaning
P-1	string	Enter the DiffServ class name, max. 31 characters.
P-2	1..4042	Enter the VLAN ID.

20.2.15 class-map name match source-address

Configure a Diffserv class.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: class-map name <P-1> match source-address <P-2> <P-3> <P-4>

match: Add a match rule for the class.
source-address: Add a match condition based on the source mac address.

Parameter	Value	Meaning
P-1	string	Enter the DiffServ class name, max. 31 characters.
P-2	mac	mac.
P-3	aa:bb:cc:dd:ee:ff	MAC address.
P-4	aa:bb:cc:dd:ee:ff	MAC mask.

20.2.16 class-map name match srcip

Configure a Diffserv class.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `class-map name <P-1> match srcip <P-2> <P-3>`

`match`: Add a match rule for the class.
`srcip`: Add a match condition based on the source IP address.

Parameter	Value	Meaning
P-1	string	Enter the DiffServ class name, max. 31 characters.
P-2	a.b.c.d	IP address.
P-3	a.b.c.d	IP subnet mask.

20.2.17 class-map name match src14port

Configure a Diffserv class.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `class-map name <P-1> match src14port <P-2>`

`match`: Add a match rule for the class.
`srcl4port`: Add a match condition based on the layer 4 source port.

Parameter	Value	Meaning
P-1	string	Enter the DiffServ class name, max. 31 characters.
P-2	domain	domain
	echo	echo
	ftp	ftp
	ftpdata	ftpdata
	http	http
	smtp	smtp
	snmp	snmp
	telnet	telnet
	tftp	tftp
	www	www
	0-65535	Port number

20.2.18 class-map name match vlan

Configure a Diffserv class.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `class-map name <P-1> match vlan <P-2>`

`match`: Add a match rule for the class.
`vlan`: Add a match condition based on the VLAN field.

Parameter	Value	Meaning
P-1	string	Enter the DiffServ class name, max. 31 characters.
P-2	1..4042	Enter the VLAN ID.

20.2.19 class-map remove

Remove a Diffserv class.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `class-map remove <P-1>`

Parameter	Value	Meaning
P-1	string	Enter the DiffServ class name, max. 31 characters.

20.2.20 class-map rename

Rename an existing class.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `class-map rename <P-1> <P-2>`

Parameter	Value	Meaning
P-1	string	Enter the DiffServ class name, max. 31 characters.
P-2	string	Enter the DiffServ class name, max. 31 characters.

20.3 policy-map

Manage DiffServ policies.

20.3.1 policy-map create

Create a DiffServ policy.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `policy-map create <P-1> { in | out }`

Parameter	Value	Meaning
P-1	string	Enter the DiffServ policy name, max. 31 characters.
P-2	in	Traffic direction in.
P-2	out	Traffic direction out.

20.3.2 policy-map name class add

Configure a Diffserv policy.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `policy-map name <string> class add <string>`

`class`: Manage DiffServ policy-class instances.
`add`: Add a policy-class instance.

Parameter	Value	Meaning
P-1	string	Enter the DiffServ policy name, max. 31 characters.
P-2	string	Enter the DiffServ class name, max. 31 characters.

20.3.3 policy-map name class name assign-queue

Configure a Diffserv policy.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `policy-map name <string> class name <string> assign-queue <0..7>`

`class`: Manage DiffServ policy-class instances.
`name`: Configure a policy-class instance.
`assign-queue`: Modify the queue id to which the associated traffic stream is assigned.

Parameter	Value	Meaning
P-1	string	Enter the DiffServ policy name, max. 31 characters.
P-2	string	Enter the DiffServ class name, max. 31 characters.
P-3	0..7	Assign queue id.

20.3.4 policy-map name class name conform-color

Configure a Diffserv policy.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `policy-map name <string> class name <string> conform-color <string>`

`class`: Manage DiffServ policy-class instances.
`name`: Configure a policy-class instance.
`conform-color`: Enable color-aware traffic policing and define the conform-color class.

Parameter	Value	Meaning
P-1	string	Enter the DiffServ policy name, max. 31 characters.
P-2	string	Enter the DiffServ class name, max. 31 characters.
P-3	string	Enter the DiffServ class name, max. 31 characters.

20.3.5 policy-map name class name drop

Configure a Diffserv policy.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `policy-map name <string> class name <string> drop`

`class`: Manage DiffServ policy-class instances.
`name`: Configure a policy-class instance.
`drop`: All packets for the associated traffic stream are dropped at ingress.

Parameter	Value	Meaning
P-1	string	Enter the DiffServ policy name, max. 31 characters.
P-2	string	Enter the DiffServ class name, max. 31 characters.

20.3.6 policy-map name class name mark

Configure a Diffserv policy.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: policy-map name <string> class name <string>
  mark {cos <0..7> |
  cos-as-sec-cos |
  ip-dscp <af11|af12|af13|af21|af22|
  af23|af31|af32|af33|af41|
  af42|af43|be|cs0|cs1|cs2|
  cs3|cs4|cs5|cs6|cs7|ef>|
  ip-precedence <0..7>}

class: Manage DiffServ policy-class instances.
name: Configure a policy-class instance.
mark: Add a mark attribute.
cos: Marks all packets with the specified COS value.
cos-as-sec-cos: Use secondary COS as COS.
ip-dscp: Marks all packets with the specified IP DSCP value.
ip-precedence: Marks all packets with the specified IP precedence value.

Parameter	Value	Meaning
P-1	string	Enter the DiffServ policy name, max. 31 characters.
P-2	string	Enter the DiffServ class name, max. 31 characters.
P-3	0..7	COS value.
P-4	af11	af11
	af12	af12
	af13	af13
	af21	af21
	af22	af22
	af23	af23
	af31	af31
	af32	af32
	af33	af33
	af41	af41
	af42	af42
	af43	af43
	be	be
	cs0	cs0
	cs1	cs1
	cs2	cs2
	cs3	cs3
	cs4	cs4
	cs5	cs5
	cs6	cs6
	cs7	cs7
	ef	ef
P-5	0..7	Ip precedence value.

20.3.7 policy-map name class name mirror

Configure a Diffserv policy.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: policy-map name <string> class name <string>
  mirror < 1/1 | 1/2 | 1/3 | 1/4 | 2/1 |
  2/2 | 2/3 | 2/4 | 3/1 | 3/2 |
  3/3 | 3/4 | 4/1 | 4/2 | 4/3 |
  4/4 | 5/1 | 5/2 | 5/3 | 5/4 >

class: Manage DiffServ policy-class instances.
name: Configure a policy-class instance.
mirror: All incoming packets for the associated traffic stream are copied to a specific egress interface.

Parameter	Value	Meaning
P-1	string	Enter the DiffServ policy name, max. 31 characters.
P-2	string	Enter the DiffServ class name, max. 31 characters.
P-3	1/1	slot 1 / port 1
	1/2	slot 1 / port 2
	1/3	slot 1 / port 3
	1/4	slot 1 / port 4
	2/1	slot 2 / port 1
	2/2	slot 2 / port 2
	2/3	slot 2 / port 3
	2/4	slot 2 / port 4
	3/1	slot 3 / port 1
	3/2	slot 3 / port 2
	3/3	slot 3 / port 3
	3/4	slot 3 / port 4
	4/1	slot 4 / port 1
	4/2	slot 4 / port 2
	4/3	slot 4 / port 3
	4/4	slot 4 / port 4
	5/1	slot 5 / port 1
	5/2	slot 5 / port 2
	5/3	slot 5 / port 3
	5/4	slot 5 / port 4
	lag/1	lag instance 1
	lag/2	lag instance 2

20.3.8 policy-map name class name police-simple conform action drop violate-action

Configure a Diffserv policy.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `policy-map name <string> class name <string>`

```
police-simple
  < 1..4294967295> <1..128> conform-action
       drop violate-action
           {drop |
            set-cos-as-sec-cos |
            set-cos-transmit <0..7> |
            set-dscp-transmit
               <af11|af12|af13|af21|af22|
                af23|af31|af32|af33|af41|
                af42|af43|be|cs0|cs1|cs2|
                cs3|cs4|cs5|cs6|cs7|ef> |
            set-prec-transmit <0..7> |
            set-sec-cos-transmit <0..7> |
            transmit}
```

`class`: Manage DiffServ policy-class instances.
`name`: Configure a policy-class instance.
`police-simple`: Establish the traffic policing style for the specified class.
`conform-action`: Conform action.
`violate-action`: Violate action.
`drop`: Drop.
`set-cos-as-sec-cos`: set-cos-as-sec-cos
`set-cos-transmit`: set-cos-transmit
`set-sec-cos-transmit`: set-sec-cos-transmit
`set-prec-transmit`: set-prec-transmit
`set-dscp-transmit`: set-dscp-transmit
`transmit`: transmit

Parameter	Value	Meaning
P-1	string	Enter the DiffServ policy name, max. 31 characters.
P-2	string	Enter the DiffServ class name, max. 31 characters.
P-3	1..4294967295	Data rate (Kbps).
P-4	1..128	Burst size (KB).
P-5	0..7	COS value.

Parameter	Value	Meaning
P-6	af11	af11
	af12	af12
	af13	af13
	af21	af21
	af22	af22
	af23	af23
	af31	af31
	af32	af32
	af33	af33
	af41	af41
	af42	af42
	af43	af43
	be	be
	cs0	cs0
	cs1	cs1
	cs2	cs2
	cs3	cs3
	cs4	cs4
	cs5	cs5
	cs6	cs6
	cs7	cs7
	ef	ef
P-7	0..7	Ip precedence value.
P-8	0..7	COS value.

20.3.9 policy-map name class name police-simple conform action set-cos-as-sec-cos violate-action

Configure a Diffserv policy.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: policy-map name <string> class name <string>
  police-simple <1..4294967295> <1..128>
  conform-action set-cos-as-sec-cos
  violate-action
  {drop |
  set-cos-as-sec-cos |
  set-cos-transmit <0..7> |
  set-dscp-transmit
  <af11|af12|af13|af21|af22|
  af23|af31|af32|af33|af41|
  af42|af43|be|cs0|cs1|cs2|
  cs3|cs4|cs5|cs6|cs7|ef> |
  set-prec-transmit <0..7> |
  set-sec-cos-transmit <0..7> |
  transmit}

class: Manage DiffServ policy-class instances.
name: Configure a policy-class instance.
police-simple: Establish the traffic policing style for the specified class.
conform-action: Conform action.
violate-action: Violate action.
drop: Drop.
set-cos-as-sec-cos: set-cos-as-sec-cos
set-cos-transmit: set-cos-transmit
set-sec-cos-transmit: set-sec-cos-transmit
set-prec-transmit: set-prec-transmit
set-dscp-transmit: set-dscp-transmit
transmit: transmit

Parameter	Value	Meaning
P-1	string	Enter the DiffServ policy name, max. 31 characters.
P-2	string	Enter the DiffServ class name, max. 31 characters.
P-3	1..4294967295	Data rate (Kbps).
P-4	1..128	Burst size (KB).

Parameter	Value	Meaning
P-5	0..7	COS value.
P-6	af11	af11
	af12	af12
	af13	af13
	af21	af21
	af22	af22
	af23	af23
	af31	af31
	af32	af32
	af33	af33
	af41	af41
	af42	af42
	af43	af43
	be	be
	cs0	cs0
	cs1	cs1
	cs2	cs2
	cs3	cs3
	cs4	cs4
	cs5	cs5
	cs6	cs6
	cs7	cs7
	ef	ef
P-7	0..7	Ip precedence value.
P-8	0..7	COS value.

20.3.10 policy-map name class name police-simple conform action set-cos-transmit violate-action

Configure a Diffserv policy.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: policy-map name <string> class name <string>
  police-simple <1..4294967295> <1..128>
  conform-action set-cos-transmit <0..7>
  violate-action
  {drop |
  set-cos-as-sec-cos |
  set-cos-transmit <0..7> |
  set-dscp-transmit
  <af11|af12|af13|af21|af22|
  af23|af31|af32|af33|af41|
  af42|af43|be|cs0|cs1|cs2|
  cs3|cs4|cs5|cs6|cs7|ef> |
  set-prec-transmit <0..7> |
  set-sec-cos-transmit <0..7> |
  transmit}

class: Manage DiffServ policy-class instances.
name: Configure a policy-class instance.
police-simple: Establish the traffic policing style for the specified class.
conform-action: Conform action.
violate-action: Violate action.
drop: Drop.
set-cos-as-sec-cos: set-cos-as-sec-cos
set-cos-transmit: set-cos-transmit
set-sec-cos-transmit: set-sec-cos-transmit
set-prec-transmit: set-prec-transmit
set-dscp-transmit: set-dscp-transmit
transmit: transmit

Parameter	Value	Meaning
P-1	string	Enter the DiffServ policy name, max. 31 characters.
P-2	string	Enter the DiffServ class name, max. 31 characters.
P-3	1..4294967295	Data rate (Kbps).

Parameter	Value	Meaning
P-4	1..128	Burst size (KB).
P-5	0..7	COS value.
P-6	0..7	COS value.
P-7	af11	af11
	af12	af12
	af13	af13
	af21	af21
	af22	af22
	af23	af23
	af31	af31
	af32	af32
	af33	af33
	af41	af41
	af42	af42
	af43	af43
	be	be
	cs0	cs0
	cs1	cs1
	cs2	cs2
	cs3	cs3
	cs4	cs4
	cs5	cs5
	cs6	cs6
	cs7	cs7
	ef	ef
P-8	0..7	Ip precedence value.
P-9	0..7	COS value.

20.3.11 policy-map name class name police-simple conform action set-dscp-transmit violate-action

Configure a Diffserv policy.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format:

```
policy-map name <string> class name <string>
        police-simple <1..4294967295> <1..128>
           conform-action set-dscp-transmit
             <af11|af12|af13|af21|af22|
              af23|af31|af32|af33|af41|
              af42|af43|be|cs0|cs1|cs2|
              cs3|cs4|cs5|cs6|cs7|ef>
                 violate-action
                   {drop |
                    set-cos-as-sec-cos |
                    set-cos-transmit <0..7> |
                    set-dscp-transmit
                       <af11|af12|af13|af21|af22|
                        af23|af31|af32|af33|af41|
                        af42|af43|be|cs0|cs1|cs2|
                        cs3|cs4|cs5|cs6|cs7|ef> |
                    set-prec-transmit <0..7> |
                    set-sec-cos-transmit <0..7> |
                    transmit}
```

`class`: Manage DiffServ policy-class instances.
`name`: Configure a policy-class instance.
`police-simple`: Establish the traffic policing style for the specified class.
`conform-action`: Conform action.
`violate-action`: Violate action.
`drop`: Drop.
`set-cos-as-sec-cos`: set-cos-as-sec-cos
`set-cos-transmit`: set-cos-transmit
`set-sec-cos-transmit`: set-sec-cos-transmit
`set-prec-transmit`: set-prec-transmit
`set-dscp-transmit`: set-dscp-transmit
`transmit`: transmit

Parameter	Value	Meaning
P-1	string	Enter the DiffServ policy name, max. 31 characters.
P-2	string	Enter the DiffServ class name, max. 31 characters.
P-3	1..4294967295	Data rate (Kbps).
P-4	1..128	Burst size (KB).
P-5	af11	af11
	af12	af12
	af13	af13
	af21	af21
	af22	af22
	af23	af23
	af31	af31
	af32	af32
	af33	af33
	af41	af41
	af42	af42
	af43	af43
	be	be
	cs0	cs0
	cs1	cs1
	cs2	cs2
	cs3	cs3
	cs4	cs4
	cs5	cs5
	cs6	cs6
	cs7	cs7
	ef	ef
P-6	0..7	COS value.
P-7	af11	af11
	af12	af12
	af13	af13
	af21	af21
	af22	af22
	af23	af23
	af31	af31
	af32	af32
	af33	af33
	af41	af41
	af42	af42
	af43	af43
	be	be
	cs0	cs0
	cs1	cs1
	cs2	cs2
	cs3	cs3
	cs4	cs4
	cs5	cs5
	cs6	cs6
	cs7	cs7
	ef	ef
P-8	0..7	Ip precedence value.
P-9	0..7	COS value.

20.3.12 policy-map name class name police-simple conform action set-prec-transmit violate-action

Configure a Diffserv policy.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format:

```
policy-map name <string> class name <string>
        police-simple <1..4294967295> <1..128>
           conform-action set-prec-transmit <0..7>
              violate-action
                 {drop |
                  set-cos-as-sec-cos |
                  set-cos-transmit <0..7> |
                  set-dscp-transmit
```

```
                    <af11|af12|af13|af21|af22|
                     af23|af31|af32|af33|af41|
                     af42|af43|be|cs0|cs1|cs2|
                     cs3|cs4|cs5|cs6|cs7|ef> |
                  set-prec-transmit <0..7> |
                  set-sec-cos-transmit <0..7> |
                  transmit}
```

`class`: Manage DiffServ policy-class instances.
`name`: Configure a policy-class instance.
`police-simple`: Establish the traffic policing style for the specified class.
`conform-action`: Conform action.
`violate-action`: Violate action.
`drop`: Drop.
`set-cos-as-sec-cos`: set-cos-as-sec-cos
`set-cos-transmit`: set-cos-transmit
`set-sec-cos-transmit`: set-sec-cos-transmit
`set-prec-transmit`: set-prec-transmit
`set-dscp-transmit`: set-dscp-transmit
`transmit`: transmit

Parameter	Value	Meaning
P-1	string	Enter the DiffServ policy name, max. 31 characters.
P-2	string	Enter the DiffServ class name, max. 31 characters.
P-3	1..4294967295	Data rate (Kbps).
P-4	1..128	Burst size (KB).
P-5	0..7	Ip precedence value..
P-6	0..7	COS value.
P-7	af11	af11
	af12	af12
	af13	af13
	af21	af21
	af22	af22
	af23	af23
	af31	af31
	af32	af32
	af33	af33
	af41	af41
	af42	af42
	af43	af43
	be	be
	cs0	cs0
	cs1	cs1
	cs2	cs2
	cs3	cs3
	cs4	cs4
	cs5	cs5
	cs6	cs6
	cs7	cs7
	ef	ef
P-8	0..7	Ip precedence value.
P-9	0..7	COS value.

20.3.13 policy-map name class name police-simple conform action set-sec-cos-transmit violate-action

Configure a Diffserv policy.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `policy-map name <string> class name <string>`

```
            police-simple <1..4294967295> <1..128>
               conform-action set-sec-cos-transmit <0..7>
                  violate-action
                     {drop |
                      set-cos-as-sec-cos |
                      set-cos-transmit <0..7> |
                      set-dscp-transmit
```

```
                    <af11|af12|af13|af21|af22|
                     af23|af31|af32|af33|af41|
                     af42|af43|be|cs0|cs1|cs2|
                     cs3|cs4|cs5|cs6|cs7|ef> |
                  set-prec-transmit <0..7> |
                  set-sec-cos-transmit <0..7> |
                  transmit}
```

`class`: Manage DiffServ policy-class instances.
`name`: Configure a policy-class instance.
`police-simple`: Establish the traffic policing style for the specified class.
`conform-action`: Conform action.
`violate-action`: Violate action.
`drop`: Drop.
`set-cos-as-sec-cos`: set-cos-as-sec-cos
`set-cos-transmit`: set-cos-transmit
`set-sec-cos-transmit`: set-sec-cos-transmit
`set-prec-transmit`: set-prec-transmit
`set-dscp-transmit`: set-dscp-transmit
`transmit`: transmit

Parameter	Value	Meaning
P-1	string	Enter the DiffServ policy name, max. 31 characters.
P-2	string	Enter the DiffServ class name, max. 31 characters.
P-3	1..4294967295	Data rate (Kbps).
P-4	1..128	Burst size (KB).
P-5	0..7	COS value.
P-6	0..7	COS value.
P-7	af11	af11
	af12	af12
	af13	af13
	af21	af21
	af22	af22
	af23	af23
	af31	af31
	af32	af32
	af33	af33
	af41	af41
	af42	af42
	af43	af43
	be	be
	cs0	cs0
	cs1	cs1
	cs2	cs2
	cs3	cs3
	cs4	cs4
	cs5	cs5
	cs6	cs6
	cs7	cs7
	ef	ef
P-8	0..7	Ip precedence value.
P-9	0..7	COS value.

20.3.14 policy-map name class name police-simple conform action transmit violate-action

Configure a Diffserv policy.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `policy-map name <string> class name <string>`

```
            police-simple <1..4294967295> <1..128>
               conform-action transmit violate-action
                   {drop |
                    set-cos-as-sec-cos |
                    set-cos-transmit <0..7> |
                    set-dscp-transmit
                       <af11|af12|af13|af21|af22|
                        af23|af31|af32|af33|af41|
```

```
                af42|af43|be|cs0|cs1|cs2|
                cs3|cs4|cs5|cs6|cs7|ef> |
            set-prec-transmit <0..7> |
            set-sec-cos-transmit <0..7> |
            transmit}
```

`class`: Manage DiffServ policy-class instances.
`name`: Configure a policy-class instance.
`police-simple`: Establish the traffic policing style for the specified class.
`conform-action`: Conform action.
`violate-action`: Violate action.
`drop`: Drop.
`set-cos-as-sec-cos`: set-cos-as-sec-cos
`set-cos-transmit`: set-cos-transmit
`set-sec-cos-transmit`: set-sec-cos-transmit
`set-prec-transmit`: set-prec-transmit
`set-dscp-transmit`: set-dscp-transmit
`transmit`: transmit

Parameter	Value	Meaning
P-1	string	Enter the DiffServ policy name, max. 31 characters.
P-2	string	Enter the DiffServ class name, max. 31 characters.
P-3	1..4294967295	Data rate (Kbps).
P-4	1..128	Burst size (KB).
P-5	0..7	COS value.
P-6	af11	af11
	af12	af12
	af13	af13
	af21	af21
	af22	af22
	af23	af23
	af31	af31
	af32	af32
	af33	af33
	af41	af41
	af42	af42
	af43	af43
	be	be
	cs0	cs0
	cs1	cs1
	cs2	cs2
	cs3	cs3
	cs4	cs4
	cs5	cs5
	cs6	cs6
	cs7	cs7
	ef	ef
P-7	0..7	Ip precedence value.
P-8	0..7	COS value.

20.3.15 policy-map name class name police-two-rate conform-action ... exceed-action ... violate-action ...

Configure a Diffserv policy.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `policy-map name <string> class name <string>`

```
            police-two-rate <1..4294967295> <1..128>
              <1..4294967295> <1..128>
                conform-action *)
                  exceed-action *)
                    violate-action *)

           *){drop |
             set-cos-as-sec-cos |
             set-cos-transmit <0..7> |
             set-dscp-transmit
```

<af11|af12|af13|af21|af22|
af23|af31|af32|af33|af41|
af42|af43|be|cs0|cs1|cs2|
cs3|cs4|cs5|cs6|cs7|ef> |
set-prec-transmit <0..7> |
set-sec-cos-transmit <0..7> |
transmit}

`class`: Manage DiffServ policy-class instances.
`name`: Configure a policy-class instance.
`police-two-rate`: Establish the two-rate traffic policing style for the specified class.
`conform-action`: Conform action.
`exceed-action`: Exceed action.
`violate-action`: Violate action.
`drop`: Drop.
`set-cos-as-sec-cos`: set-cos-as-sec-cos
`set-cos-transmit`: set-cos-transmit
`set-sec-cos-transmit`: set-sec-cos-transmit
`set-prec-transmit`: set-prec-transmit
`set-dscp-transmit`: set-dscp-transmit
`transmit`: transmit

Parameter	Value	Meaning
P-1	string	Enter the DiffServ policy name, max. 31 characters.
P-2	string	Enter the DiffServ class name, max. 31 characters.
P-3	1..4294967295	Data rate (Kbps).
P-4	1..128	Burst size (KB).
P-5	1..4294967295	Data rate (Kbps).
P-6	1..128	Burst size (KB).
P-7	0..7	COS value.
P-8	af11	af11
	af12	af12
	af13	af13
	af21	af21
	af22	af22
	af23	af23
	af31	af31
	af32	af32
	af33	af33
	af41	af41
	af42	af42
	af43	af43
	be	be
	cs0	cs0
	cs1	cs1
	cs2	cs2
	cs3	cs3
	cs4	cs4
	cs5	cs5
	cs6	cs6
	cs7	cs7
	ef	ef
P-9	0..7	Ip precedence value.
P-10	0..7	COS value.

20.3.16 policy-map name class name redirect

Configure a Diffserv policy.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `policy-map name <string> class name <string>`

```
redirect < 1/1 | 1/2 | 1/3 | 1/4 | 2/1 |
           2/2 | 2/3 | 2/4 | 3/1 | 3/2 |
           3/3 | 3/4 | 4/1 | 4/2 | 4/3 |
           4/4 | 5/1 | 5/2 | 5/3 | 5/4 |
                                 lag/1 | lag/2 >
```

`class`: Manage DiffServ policy-class instances.
`name`: Configure a policy-class instance.
`redirect`: All incoming packets for the associated traffic stream are redirected to a specific egress interface.

Parameter	Value	Meaning
P-1	string	Enter the DiffServ policy name, max. 31 characters.
P-2	string	Enter the DiffServ class name, max. 31 characters.
P-3	1/1	slot 1 / port 1
	1/2	slot 1 / port 2
	1/3	slot 1 / port 3
	1/4	slot 1 / port 4
	2/1	slot 2 / port 1
	2/2	slot 2 / port 2
	2/3	slot 2 / port 3
	2/4	slot 2 / port 4
	3/1	slot 3 / port 1
	3/2	slot 3 / port 2
	3/3	slot 3 / port 3
	3/4	slot 3 / port 4
	4/1	slot 4 / port 1
	4/2	slot 4 / port 2
	4/3	slot 4 / port 3
	4/4	slot 4 / port 4
	5/1	slot 5 / port 1
	5/2	slot 5 / port 2
	5/3	slot 5 / port 3
	5/4	slot 5 / port 4
	lag/1	lag instance 1
	lag/1	lag instance 1

20.3.17 policy-map name class remove

Configure a Diffserv policy.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `policy-map name <string> class remove <string>`

`class`: Manage DiffServ policy-class instances.
`remove`: Remove a policy-class instance.

Parameter	Value	Meaning
P-1	string	Enter the DiffServ policy name, max. 31 characters.
P-2	string	Enter the DiffServ class name, max. 31 characters.

20.3.18 policy-map rename

Rename an existing DiffServ policy.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `policy-map rename <string> <string>`

Parameter	Value	Meaning
P-1	string	Enter the DiffServ policy name, max. 31 characters.
P-2	string	Enter the DiffServ policy name, max. 31 characters.

20.3.19 policy-map remove

Remove a Diffserv policy.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `policy-map remove <string>`

Parameter	Value	Meaning
P-1	string	Enter the DiffServ policy name, max. 31 characters.

20.4 service-policy

20.4.1 service-policy

Assign/detach a DiffServ traffic conditioning policy to/from all interfaces.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `service-policy <P-1> <P-2>`

Parameter	Value	Meaning
P-1	in	Traffic direction in
	out	Traffic direction out
P-2	string	Enter the DiffServ policy name, max. 31 characters.

- `no service-policy`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no service-policy <P-1> <P-2>`

20.5 service-policy

20.5.1 service-policy

Assign/detach a DiffServ traffic conditioning policy to/from an interface.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `service-policy <P-1> <P-2>`

Parameter	Value	Meaning
P-1	in	Traffic direction in
	out	Traffic direction out
P-2	string	Enter the DiffServ policy name, max. 31 characters.

- `no service-policy`
  Disable the option
  - Mode: `Interface Range Mode`
  - Privilege Level: `Operator`
  - Format: `no service-policy <P-1> <P-2>`

20.6 show

Display device options and settings.

20.6.1 show diffserv global

Display the DiffServ global information.

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

20.6.2 show diffserv service brief

Display the DiffServ policy summary information.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show diffserv service brief`

20.6.3 show diffserv service interface

Display the DiffServ policy service information for the specified interface and direction.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show diffserv service interface <P-1> <P-2>`

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	in	Traffic direction in
	out	Traffic direction out

20.6.4 show class-map

Display the existing DiffServ classes or display the information for a specified class.

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

Parameter	Value	Meaning
P-1	string	Enter the DiffServ class name, max. 31 characters.

20.6.5 show policy-map all

Display every Diffserv policy.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show policy-map all

20.6.6 show policy-map interface

Display the policies attached to the specified interface.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show policy-map interface <P-1> <P-2>

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	in	Traffic direction in
	out	Traffic direction out

20.6.7 show policy-map name

Display the information for the specified policy.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show policy-map name <P-1>

Parameter	Value	Meaning
P-1	string	Enter the DiffServ policy name, max. 31 characters.

20.6.8 show service-policy

Display a summary of policy-oriented statistics information for every interface in the specified direction.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show service-policy <P-1>

Parameter	Value	Meaning
P-1	in	Traffic direction in
	out	Traffic direction out

21 Device Level Ring (DLR)

21.1 dlr

Set the DLR parameters.

21.1.1 dlr operation

Enable or disable the Device Level Ring globally.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `dlr operation`

- `no dlr operation`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no dlr operation`

21.1.2 dlr ring add

Create a Device Level Ring. The DLR ring will consist of default parameters and its operation will be disabled.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `dlr ring add <P-1> [port-1 <P-2>] [port-2 <P-3>] [name <P-4>] [supervisor <P-5>] [precedence <P-6>] [vlan <P-7>] [beacon-interval <P-8>] [beacon-timeout <P-9>]`

`[port-1]`: Configure the DLR ring port 1.
`[port-2]`: Configure the DLR ring port 2.
`[name]`: Configure the name of the DLR ring.
`[supervisor]`: Enable or disable the supervisor mode.
`[precedence]`: Configure the supervisor precedence.
`[vlan]`: Configure the VLAN identifier to use in the DLR protocol messages.
`[beacon-interval]`: Configure the beacon interval in microseconds (default: 400).
`[beacon-timeout]`: Configure the beacon timeout in microseconds (default: 10000).

Parameter	Value	Meaning
P-1	1..255	The DLR ring ID.
P-2	slot no./port no.	
P-3	slot no./port no.	
P-4	string	Enter a user-defined text, max. 255 characters.
P-5	enable	Enable the option.
	disable	Disable the option.
P-6	0..255	The DLR supervisor precedence (default: 0).
P-7	0..4042	Enter the VLAN for the given Sub-Ring ID (min.: 0, max.: 4042, default: 0).
P-8	400..100000	The DLR beacon interval time in microseconds (default: 400).
P-9	1600..500000	The DLR beacon timeout in microseconds (default: 10000).

21.1.3 dlr ring delete

Delete the Device Level Ring.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `dlr ring delete <P-1>`

Parameter	Value	Meaning
P-1	1..255	The DLR ring ID.

21.1.4 dlr ring modify

Modify the DLR ring settings.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `dlr ring modify <P-1> operation <P-2> supervisor <P-3> precedence <P-4> name <P-5> port-1 <P-6> port-2 <P-7> beacon interval <P-8> timeout <P-9> vlan <P-10> service <P-11>`

operation: Enable or disable the Device Level Ring for the specified ring ID.
supervisor: Enable or disable the supervisor mode.
precedence: Configure the supervisor precedence.
name: Configure the name of the DLR ring.
port-1: Configure the DLR ring ports.
port-2: Configure the DLR ring ports.
beacon: Configure the beacon interval or the beacon timeout in microseconds.
interval: Configure the beacon interval in microseconds (default: 400).
timeout: Configure the beacon timeout in microseconds (default: 10000).
vlan: Configure the VLAN identifier to use in the DLR protocol messages.
service: Initiates a service on the supervisor node.

Parameter	Value	Meaning
P-1	1..255	The DLR ring ID.
P-2	enable	Enable the option.
	disable	Disable the option.
P-3	enable	Enable the option.
	disable	Disable the option.
P-4	0..255	The DLR supervisor precedence (default: 0).
P-5	string	Enter a user-defined text, max. 255 characters.
P-6	slot no./port no.	
P-7	slot no./port no.	
P-8	400..100000	The DLR beacon interval time in microseconds (default: 400).
P-9	1600..500000	The DLR beacon timeout in microseconds (default: 10000).
P-10	0..4042	Enter the VLAN for the given Sub-Ring ID (min.: 0, max.: 4042, default: 0).
P-11	fault-location	Verify the fault location.
	clear-rapid-fault	Clear rapid faults.
	restart-sign-on	Restart the Sign On process and refresh the participants list.
	clear-gateway-fault	Clear partial network fault condition in the gateway. The function is only available if the device is capable of being a gateway, and you enable the gateway for the specified ring.

21.1.5 dlr gateway

Configure the Device Level Ring gateway(s).

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: dlr gateway <P-1> operation add <P-2> delete <P-3> modify <P-4> name <P-5> learning-update precedence <P-6> advertise interval <P-7> timeout <P-8> uplink-primary <P-9> uplink-secondary <P-10>

operation: Enable or disable the Device Level Ring Gateway for the specified gateway ID.
add: Create a Device Level Ring gateway with a specific gateway ID.\n\rInitally the DLR gateway has the default parameters assigned, and the function is disabled.\n\rConfigure a unique gateway ID on the device.\n\rThe DLR gateway is then added to the specified ring ID.
delete: Delete the Device Level Ring Gateway.
modify: Modify the DLR gateway settings.
name: Configure the name of the DLR gateway.
learning-update: Enable or disable the DLR gateway learning update.
precedence: Configure the precedence of the DLR gateway.
advertise: Configure the advertise interval or advertise timeout in microseconds.
interval: Configure the advertise interval in microseconds (default: 2000).
timeout: Configure the advertise timeout in microseconds (default: 5000).
uplink-primary: Configure the DLR gateway uplink ports.
uplink-secondary: Configure the DLR gateway uplink ports.

Parameter	Value	Meaning
P-1	1..255	The DLR ring ID.
P-2	1..255	The DLR gateway ID.
P-3	1..255	The DLR gateway ID.
P-4	1..255	The DLR gateway ID.
P-5	string	Enter a user-defined text, max. 256 characters.
P-6	0..255	The DLR gateway precedence.
P-7	1000..100000	The DLR gateway advertise interval in microseconds.
P-8	2500..500000	The DLR gateway advertise timeout in microseconds.
P-9	slot no./port no.	
P-10	slot no./port no.	

- no dlr gateway
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no dlr gateway operation add delete modify name learning-update precedence advertise interval timeout uplink-primary uplink-secondary

21.2 show

Display device options and settings.

21.2.1 show dlr global

Display the global configuration of the DLR feature.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show dlr global

21.2.2 show dlr ring config

Display the configuration of the DLR ring.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show dlr ring config [<P-1>]

Parameter	Value	Meaning
P-1	1..255	The DLR ring ID.

21.2.3 show dlr ring status

Display the status of the DLR ring.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show dlr ring status [<P-1>]

Parameter	Value	Meaning
P-1	1..255	The DLR ring ID.

21.2.4 show dlr ring participants

Display the participants list of the DLR ring.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show dlr ring participants [<P-1> [<P-2>]]

Parameter	Value	Meaning
P-1	1..255	The DLR ring ID.
P-2	1..65535	The DLR ring participant ID.

21.2.5 show dlr gateway config

Display the configuration of the DLR gateway.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show dlr gateway config [<P-1>] [<P-2>]

Parameter	Value	Meaning
P-1	1..255	The DLR ring ID.
P-2	1..255	The DLR gateway ID.

21.2.6 show dlr gateway status

Display the status of the DLR gateway.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show dlr gateway status [<P-1>] [<P-2>]

Parameter	Value	Meaning
P-1	1..255	The DLR ring ID.
P-2	1..255	The DLR gateway ID.

22 Domain Name System (DNS)

22.1 dns

Set DNS parameters.

22.1.1 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`

22.1.2 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.

22.1.3 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`

22.1.4 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`

22.1.5 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.

22.1.6 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.

22.1.7 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.

22.1.8 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.

22.1.9 dns client host modify

Mofify 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.

22.1.10 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.
	provider	

22.1.11 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.
P-2	A.B.C.D	IP address.

22.1.12 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.

22.1.13 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.

22.1.14 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.

22.1.15 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.

22.1.16 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).

22.1.17 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).

22.2 show

Display device options and settings.

22.2.1 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

22.2.2 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

22.2.3 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.

23 DoS Mitigation

23.1 dos

Manage DoS Mitigation

23.1.1 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`

23.1.2 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`

23.1.3 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`

23.1.4 dos tcp-min-header

Enables TCP minimal header size check.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `dos tcp-min-header`

- `no dos tcp-min-header`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no dos tcp-min-header`

23.1.5 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

23.1.6 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

23.1.7 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)

23.1.8 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.

23.1.9 dos ip-src-route

Enables Drop IP source route - Discard packets with Strict/Loose Source Routing Option set.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: dos ip-src-route

- no dos ip-src-route
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no dos ip-src-route

23.1.10 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

23.1.11 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

23.1.12 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

23.1.13 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

23.2 show

Display device options and settings.

23.2.1 show dos

Display the DoS Mitigation parameters.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show dos

24 IEEE 802.1as (Dot1as - Timing and Synchronization)

24.1 dot1as

Configure the IEEE Std 802.1AS protocol.

24.1.1 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`

24.1.2 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.`

24.1.3 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.`

24.1.4 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	

24.1.5 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	

24.1.6 dot1as instance

Configure instance of the IEEE Std 802.1AS protocol.
- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `dot1as instance <P-1> operation priority1 <P-2> priority2 <P-3> domain <P-4> external-port-config <P-5>`

`operation`: Enable or disable the instance.
`priority1`: Configure the priority1 value (0..255) of the default data set.

priority2: Configure the priority2 value (0..255) of the default data set.
domain: Configure the domain value (0..127) of the default data set.
external-port-config: Enable or disable the external port configuration.

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	0..255	Enter a number in the given range.
P-3	0..255	Enter a number in the given range.
P-4	0..127	Enter a number in the given range.
P-5	enable	Enable the option.
	disable	Disable the option.

- no dot1as instance
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Administrator
  - Format: no dot1as instance <P-1> operation priority1 priority2 domain external-port-config

24.2 dot1as

Configure the 802.1AS interface settings.

24.2.1 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

24.2.2 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 transmision interval to 1s.
	2	Set the pdelay message transmision interval to 2s.
	4	Set the pdelay message transmision interval to 4s.
	8	Set the pdelay message transmision interval to 8s.
	16	Set the pdelay message transmision interval to 16s.
	disable	Disable the transmision of pdelay messages.

24.2.3 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 transmision interval to 1s.
	2	Set the announce message transmision interval to 2s.
	disable	Disable the transmision of announce messages.

24.2.4 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 transmision interval to 125ms.
	0.25	Set the sync message transmision interval to 250ms.
	0.5	Set the sync message transmision interval to 500ms.
	1	Set the sync message transmision interval to 1s.
	disable	Disable the transmision of sync messages.

24.2.5 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.

24.2.6 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.

24.2.7 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.

24.2.8 dot1as instance

Configure instance of the IEEE Std 802.1AS protocol.

- Mode: Interface Range Mode
- Privilege Level: Administrator
- Format: dot1as instance <P-1> operation announce-timeout <P-2> asymmetry <P-3> allowed-faults <P-4> allowed-lost-rsp <P-5> init-announce-intvl <P-6> init-pdelay-intvl <P-7> init-signal-intvl <P-8> init-sync-intvl <P-9> pdelay-threshold <P-10> set-announce-intvl <P-11> set-pdelay-intvl <P-12> set-signal-intvl <P-13> set-sync-intvl <P-14> settable-announce settable-pdelay settable-signal settable-sync signal-timeout <P-15> sync-timeout <P-16> desired-state <P-17>

operation: Enable or disable 802.1AS on a port.
announce-timeout: Configure the announce receipt timeout (2..10).
asymmetry: Set the asymmetry of the link connected to this interface.
allowed-faults: Configure the faults number (1..255).
allowed-lost-rsp: Configure the lost responses number (1..255).
init-announce-intvl: Configure the initial announce interval in seconds {1|2|disable}.
init-pdelay-intvl: Configure the initial pDelay interval in seconds {1|2|4|8|16|disable}.
init-signal-intvl: Configure the initial signal interval in seconds {1|2|4|disable}.
init-sync-intvl: Configure the initial sync interval in seconds {0.125|0.25|0.5|1|disable}.
pdelay-threshold: Set the pDelay threshold in nano seconds (0..1000000).
set-announce-intvl: Configure the announce interval in seconds {1|2|disable}.
set-pdelay-intvl: Configure the pdelay interval in seconds {1|2|4|disable}.
set-signal-intvl: Configure the signal interval in seconds {1|2|4|disable}.
set-sync-intvl: Configure the sync interval in seconds {0.125|0.25|0.5|1|disable}.
settable-announce: Enable/disable manual settings of announce interval.
settable-pdelay: Enable/disable manual settings of pdelay interval.
settable-signal: Enable/disable manual settings of signal interval.

settable-sync: Enable/disable manual settings of sync interval.
signal-timeout: Configure the signal receipt timeout (2..10).
sync-timeout: Configure the sync receipt timeout (2..10).
desired-state: Configure the desired state.

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	2..10	Enter a number in the given range.
P-3	-10^10..10^10	Enter a number in the given range.
P-4	1..255	Enter a number in the given range.
P-5	1..255	Enter a number in the given range.
P-6	1	Set the announce message transmision interval to 1s.
	2	Set the announce message transmision interval to 2s.
	disable	Disable the transmision of announce messages.
P-7	1	Set the pdelay message transmision interval to 1s.
	2	Set the pdelay message transmision interval to 2s.
	4	Set the pdelay message transmision interval to 4s.
	8	Set the pdelay message transmision interval to 8s.
	16	Set the pdelay message transmision interval to 16s.
	disable	Disable the transmision of pdelay messages.
P-8	1	Set the signal message transmision interval to 1s.
	2	Set the signal message transmision interval to 2s.
	4	Set the signal message transmision interval to 4s.
	disable	Disable the transmision of signal messages.
P-9	0.125	Set the sync message transmision interval to 125ms.
	0.25	Set the sync message transmision interval to 250ms.
	0.5	Set the sync message transmision interval to 500ms.
	1	Set the sync message transmision interval to 1s.
	disable	Disable the transmision of sync messages.
P-10	0..1000000	Enter a number in the given range.
P-11	1	Set the announce message transmision interval to 1s.
	2	Set the announce message transmision interval to 2s.
	disable	Disable the transmision of announce messages.
P-12	1	Set the pdelay message transmision interval to 1s.
	2	Set the pdelay message transmision interval to 2s.
	4	Set the pdelay message transmision interval to 4s.
	8	Set the pdelay message transmision interval to 8s.
	16	Set the pdelay message transmision interval to 16s.
	disable	Disable the transmision of pdelay messages.
P-13	1	Set the signal message transmision interval to 1s.
	2	Set the signal message transmision interval to 2s.
	4	Set the signal message transmision interval to 4s.
	disable	Disable the transmision of signal messages.
P-14	0.125	Set the sync message transmision interval to 125ms.
	0.25	Set the sync message transmision interval to 250ms.
	0.5	Set the sync message transmision interval to 500ms.
	1	Set the sync message transmision interval to 1s.
	disable	Disable the transmision of sync messages.
P-15	2..10	Enter a number in the given range.
P-16	2..10	Enter a number in the given range.
P-17	disabled	
	master	
	passive	
	slave	

- no dot1as instance
  Disable the option
  - Mode: Interface Range Mode
  - Privilege Level: Administrator
  - Format: no dot1as instance <P-1> operation announce-timeout asymmetry allowed-faults allowed-lost-rsp init-announce-intvl init-pdelay-intvl init-signal-intvl init-sync-intvl pdelay-threshold set-announce-intvl set-pdelay-intvl set-signal-intvl set-sync-intvl settable-announce settable-pdelay settable-signal settable-sync signal-timeout sync-timeout desired-state

24.3 show

Display device options and settings.

24.3.1 show dot1as global

Show 802.1AS global status.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show dot1as global

24.3.2 show dot1as default instance

Show 802.1AS Default Data Set per instance.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show dot1as default instance <P-1>

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

24.3.3 show dot1as current instance

Show 802.1AS Current Data Set per instance.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show dot1as current instance <P-1>

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

24.3.4 show dot1as port-data-set instance

Show 802.1AS Port Data Set of the chosen port per instance.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show dot1as port-data-set instance <P-1> port [<P-2>]

port: Show 802.1AS Port Data Set of a single port.

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	all or slot no./port no.	

24.3.5 show dot1as parent instance

Show 802.1AS Parent Data Set per instance.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show dot1as parent instance <P-1>

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

24.3.6 show dot1as time-properties instance

Show instance of the IEEE Std 802.1AS protocol.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show dot1as time-properties instance <P-1>

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

24.3.7 show dot1as path-trace-list instance

Display 802.1AS Path Trace data per instance.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show dot1as path-trace-list instance <P-1>

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

24.3.8 show dot1as stats instance

Display 802.1AS PortStatistics per instance.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show dot1as stats instance <P-1>`

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

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

25.1 dot1x

Configure 802.1X parameters.

25.1.1 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`

25.1.2 dot1x radius_vlan_assignment

Command is deprecated. To enable or disable 802.1X RADIUS VLAN assignment use radius-vlan-assignment.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `dot1x radius_vlan_assignment`

- `no dot1x radius_vlan_assignment`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no dot1x radius_vlan_assignment`

25.1.3 dot1x radius-vlan-assignment

Enable or disable 802.1X RADIUS VLAN assignment support on the switch.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `dot1x radius-vlan-assignment`

- `no dot1x radius-vlan-assignment`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no dot1x radius-vlan-assignment`

25.1.4 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`

25.1.5 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

25.1.6 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	

25.1.7 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.

25.1.8 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.

25.1.9 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.

25.2 dot1x

Configure 802.1X interface parameters.

25.2.1 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 for the given Sub-Ring ID (min.: 0, max.: 4042, default: 0).

25.2.2 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).

25.2.3 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).

25.2.4 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

25.2.5 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.

25.2.6 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

25.2.7 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 for the given Sub-Ring ID (min.: 0, max.: 4042, default: 0).

25.2.8 dot1x timeout guest-vlan-period

Command is deprecated. The guest-vlan-period is fixed to 3 times the tx-period.

- 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).

25.2.9 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.

25.2.10 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).

25.2.11 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.

25.2.12 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.

25.2.13 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.

25.2.14 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

25.2.15 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`

25.3 show

Display device options and settings.

25.3.1 show dot1x global

Display the global 802.1X configuration.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show dot1x global`

25.3.2 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]]

25.3.3 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.	

25.3.4 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.	

25.3.5 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.

25.3.6 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.	

25.4 clear

Clear several items.

25.4.1 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.	

25.4.2 clear dot1x statistics all

Resets the 802.1X statistics for all ports.

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

25.4.3 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.	

25.4.4 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`

26 IEEE 802.3ad (Dot3ad - Link Aggregation)

26.1 link-aggregation

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

26.1.1 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	lag/<lagport>	lag/<lagport> Enter a lag interface in lag/lagport format.

26.1.2 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 hashmode <P-5> min-links <P-6>`

`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.
`hashmode`: Set the hash mode to be used by the load balancing algorithm for specified Link Aggregation Group.
`min-links`: Set the minimum links for the specified Link Aggregation Group.

Parameter	Value	Meaning
P-1	slot no./port no.	
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	src-mac	Source MAC, VLAN, EtherType, and incoming port associated with the packet.
	dst-mac	Destination MAC, VLAN, EtherType, and incoming port associated with the packet.
	src-dst-mac	Source/Destination MAC, VLAN, EtherType, and incoming port associated with the packet.
	src-ip	Source IP and Source TCP/UDP fields of the packet.
	dst-ip	Destination IP and Destination TCP/UDP Port fields of the packet.
	src-dst-ip	Source/Destination IP and source/destination TCP/UDP Port fields of the packet.
P-6	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 hashmode min-links`

26.1.3 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.	

26.1.4 link-aggregation hashmode

Set the hash mode to be used by the load balancing algorithm for all Link Aggregation Groups.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `link-aggregation hashmode <P-1>`

Parameter	Value	Meaning
P-1	src-mac	Source MAC, VLAN, EtherType, and incoming port associated with the packet.
	dst-mac	Destination MAC, VLAN, EtherType, and incoming port associated with the packet.
	src-dst-mac	Source/Destination MAC, VLAN, EtherType, and incoming port associated with the packet.
	src-ip	Source IP and Source TCP/UDP fields of the packet.
	dst-ip	Destination IP and Destination TCP/UDP Port fields of the packet.
	src-dst-ip	Source/Destination IP and source/destination TCP/UDP Port fields of the packet.

26.2 lacp

Configure lacp parameters.

26.2.1 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

26.2.2 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

26.2.3 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`

26.2.4 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

26.2.5 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

26.2.6 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

26.2.7 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

26.2.8 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

26.2.9 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

26.2.10 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

26.2.11 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

26.2.12 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

26.2.13 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

26.2.14 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

26.2.15 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

26.2.16 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.

26.3 show

Display device options and settings.

26.3.1 show link-aggregation global

Display the Common and Internal Link-Aggregation information and settings.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show link-aggregation global

26.3.2 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.	

26.3.3 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.	

26.3.4 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.	

26.3.5 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.	

26.3.6 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.	

26.3.7 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.	

26.3.8 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.	

26.3.9 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.	

27 Double VLAN

27.1 dvlan-tunnel

Specifies the double VLAN tunnel configuration per interface.

27.1.1 dvlan-tunnel operation

Controls the Double VLAN Tag mode on this interface. When the Double VLAN Tag mode is enabled, the port operates as the Core port. Other ports on which the Double VLAN Tag mode is disabled operate as Access ports. When the Double VLAN Tag mode is not enabled on any port, the ports operate as normal ports.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `dvlan-tunnel operation`

- `no dvlan-tunnel operation`
  Disable the option
  - Mode: `Interface Range Mode`
  - Privilege Level: `Operator`
  - Format: `no dvlan-tunnel operation`

27.2 show

Display device options and settings.

27.2.1 show dvlan-tunnel global

Displays the global double VLAN tunnel configuration.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show dvlan-tunnel global`

27.2.2 show dvlan-tunnel port

Displays the double VLAN tunnel port configuration.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show dvlan-tunnel port [<P-1>]`

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

28 Distance Vector Multicast Routing Protocol (DVMRP)

28.1 ip

Set IP parameters.

28.1.1 ip dvmrp operation

Configure DVMRP admin mode.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip dvmrp operation`

- `no ip dvmrp operation`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no ip dvmrp operation`

28.1.2 ip dvmrp trapflag

Enable or disable the DVMRP trap mode.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip dvmrp trapflag`

- `no ip dvmrp trapflag`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no ip dvmrp trapflag`

28.1.3 ip dvmrp route-expire

Configure DVMRP route expire time in seconds.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip dvmrp route-expire <P-1>`

Parameter	Value	Meaning
P-1	0..200	Enter a number in the given range.

28.2 ip

IP interface commands.

28.2.1 ip dvmrp operation

Configure DVMRP admin mode.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip dvmrp operation`

- `no ip dvmrp operation`
  Disable the option
  - Mode: `Interface Range Mode`
  - Privilege Level: `Operator`
  - Format: `no ip dvmrp operation`

28.2.2 ip dvmrp metric

Set DVMRP metric.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip dvmrp metric <P-1>

Parameter	Value	Meaning
P-1	1..31	Enter a number in the given range.

28.3 show

Display device options and settings.

28.3.1 show ip dvmrp global

Display the DVMRP global related parameters.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip dvmrp global

28.3.2 show ip dvmrp interface

Display the DVMRP interface related parameters.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip dvmrp interface [<P-1>]

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

28.3.3 show ip dvmrp neighbor

Display the DVMRP neighbor information.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip dvmrp neighbor [<P-1> [<P-2>]]

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	A.B.C.D	IP address.

28.3.4 show ip dvmrp route

Display the multicast routing information for DVMRP.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip dvmrp route [<P-1> [<P-2>]]

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	A.B.C.D	IP address.

28.3.5 show ip dvmrp nexthop

Display the next hop information on outgoing interfaces for DVMRP routing multicast datagrams.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip dvmrp nexthop

28.3.6 show ip dvmrp prune

Display the upstream router prune information.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip dvmrp prune

29 Ethernet IP

29.1 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.

29.1.1 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`

29.1.2 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	1..4042	Enter the EtherNet/IP VLAN ID.
	mgmt	Management VLAN

29.1.3 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`

29.1.4 ethernet-ip interface

Configure the interface in slot/port or vlan/vlan-id or mgmt format.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ethernet-ip interface <P-1>`

Parameter	Value	Meaning
P-1	mgmt	Management interface
	slot no./port no.	Physical routing interface
	vlan/vlan no.	VLAN routing interface

29.2 show

Display device options and settings.

29.2.1 show ethernet-ip

Display the EtherNet/IP settings.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ethernet-ip

29.3 copy

Copy different kinds of items.

29.3.1 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> [source-interface <P-2>]

[source-interface]: Specify the source-interface to be used (physical or logical). The frames will not necessarily be sent on this interface, only the IP address of the interface will be used as source IP.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.
P-2	slot no./port no.	

29.3.2 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

30 Filtering Database (FDB)

30.1 mac-filter

30.1.1 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>`

30.2 bridge

Bridge configuration.

30.2.1 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.

30.3 show

Display device options and settings.

30.3.1 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`

30.4 show

Display device options and settings.

30.4.1 show bridge aging-time

Address aging time.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show bridge aging-time`

30.5 show

Display device options and settings.

30.5.1 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.

30.6 clear

Clear several items.

30.6.1 clear mac-addr-table

Clears the MAC address table.

- Mode: `Privileged Exec Mode`
- Privilege Level: `Operator`
- Format: `clear mac-addr-table`

31 GARP VLAN and Multicast Registration Protocol (GVRP and GMRP)

31.1 garp

Configure GARP protocols, GVRP for dynamic VLAN registration and GMRP for dynamic MAC registration.

31.1.1 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`

31.1.2 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`

31.1.3 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.

31.2 garp

Configure GARP parameters and protocols, GVRP for dynamic VLAN registration and GMRP for dynamic MAC registration on a port.

31.2.1 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.

31.2.2 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.

31.2.3 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.

31.2.4 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`

31.2.5 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`

31.2.6 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`

31.3 show

Display device options and settings.

31.3.1 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.	

31.3.2 show garp gvrp global

Display the GVRP global configuration.

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

31.3.3 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.	

31.3.4 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.	

31.3.5 show garp gmrp global

Display the GMRP global configuration.

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

31.3.6 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.	

31.3.7 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.	

31.4 show

Display device options and settings.

31.4.1 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`

32 HiDiscovery

32.1 network

Configure the inband and outband connectivity.

32.1.1 network hidiscovery operation

Enable/disable the HiDiscovery protocol on this device.
- Mode: `Privileged Exec Mode`
- Privilege Level: `Operator`
- Format: `network hidiscovery operation <P-1>`

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

- `no network hidiscovery operation`
  Disable the option
  - Mode: `Privileged Exec Mode`
  - Privilege Level: `Operator`
  - Format: `no network hidiscovery operation <P-1>`

32.1.2 network hidiscovery mode

Set the access level for HiDiscovery.
- Mode: `Privileged Exec Mode`
- Privilege Level: `Operator`
- Format: `network hidiscovery mode <P-1>`

Parameter	Value	Meaning
P-1	read-write	Allow detection and configuration.
	read-only	Allow only detection, no configuration.

32.1.3 network hidiscovery blinking

Enable/disable the HiDiscovery blinking sequence on this device. This preference is not saved in configuration
- Mode: `Privileged Exec Mode`
- Privilege Level: `Operator`
- Format: `network hidiscovery blinking`

- `no network hidiscovery blinking`
  Disable the option
  - Mode: `Privileged Exec Mode`
  - Privilege Level: `Operator`
  - Format: `no network hidiscovery blinking`

32.1.4 network hidiscovery relay

Enable/disable the HiDiscovery relay status.
- Mode: `Privileged Exec Mode`
- Privilege Level: `Operator`
- Format: `network hidiscovery relay`

- `no network hidiscovery relay`
  Disable the option
  - Mode: `Privileged Exec Mode`
  - Privilege Level: `Operator`
  - Format: `no network hidiscovery relay`

32.1.5 network hidiscovery operation

Enable/disable the HiDiscovery protocol on this device.
- Mode: Privileged Exec Mode
- Privilege Level: Operator
- Format: network hidiscovery operation <P-1>

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

- no network hidiscovery operation
  Disable the option
  - Mode: Privileged Exec Mode
  - Privilege Level: Operator
  - Format: no network hidiscovery operation <P-1>

32.1.6 network hidiscovery mode

Set the access level for HiDiscovery.
- Mode: Privileged Exec Mode
- Privilege Level: Operator
- Format: network hidiscovery mode <P-1>

Parameter	Value	Meaning
P-1	read-write	Allow detection and configuration.
	read-only	Allow only detection, no configuration.

32.1.7 network hidiscovery blinking

Enable/disable the HiDiscovery blinking sequence on this device. This preference is not saved in configuration
- Mode: Privileged Exec Mode
- Privilege Level: Operator
- Format: network hidiscovery blinking

- no network hidiscovery blinking
  Disable the option
  - Mode: Privileged Exec Mode
  - Privilege Level: Operator
  - Format: no network hidiscovery blinking

32.1.8 network hidiscovery relay

Enable/disable the HiDiscovery relay status.
- Mode: Privileged Exec Mode
- Privilege Level: Operator
- Format: network hidiscovery relay

- no network hidiscovery relay
  Disable the option
  - Mode: Privileged Exec Mode
  - Privilege Level: Operator
  - Format: no network hidiscovery relay

32.2 show

Display device options and settings.

32.2.1 show network hidiscovery

Display the HiDiscovery settings.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show network hidiscovery

33 HIPER-Ring

33.1 hiper-ring

Configure the HIPER Ring settings.

33.1.1 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`

33.1.2 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).`

33.1.3 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.	

33.1.4 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.	

33.2 show

Display device options and settings.

33.2.1 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`

34 High-availability Seamless Redundancy (HSR)

34.1 hsr

Configure High-availability Seamless Redundancy protocol (HSR) parameters.

34.1.1 hsr operation

Enable or disable the High-availability Seamless Redundancy protocol (HSR).
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `hsr operation`

- `no hsr operation`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no hsr operation`

34.1.2 hsr instance

Configure HSR instances
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `hsr instance <P-1> operation port-a port-b supervision evaluate send redbox-exclusively mode <P-2> switching-node-type <P-3> redbox-id <P-4> speed <P-5>`

`operation`: Enable or disable the HSR instance.
`port-a`: Enable or disable the first port of HSR line.
`port-b`: Enable or disable the second port of the HSR line.
`supervision`: Configure the HSR supervision tx and rx packet handling.
`evaluate`: Enable or disable evaluation of received supervision packets.
`send`: Enable or disable sending of supervision packets.
`redbox-exclusively`: Enable sending of supervision packets for this RedBox exclusively. Use the no form of the command to send supervision packets for each connected VDAN and this RedBox (if send is enabled).
`mode`: Modify HSR operating mode.
`switching-node-type`: Modify HSR switching end node type.
`redbox-id`: Modify RedBox identity.
`speed`: Configure the speed of LRE interfaces.

Parameter	Value	Meaning
P-1	1..1	Enter HSR instance number (only 1 supported).
P-2	modeh	HSR mode h - bridging of HSR traffic (default HSR mode).
	modeu	HSR mode u - like mode h, but unicast messages are not removed.
P-3	hsrredboxsan	An HSR RedBox with regular Ethernet traffic on its interlink.
	hsrredboxprpa	An HSR RedBox with PRP traffic for LAN A on its interlink.
	hsrredboxprpb	An HSR RedBox with PRP traffic for LAN B on its interlink.
P-4	id1a	Redbox pair 1 to LAN A.
	id1b	Redbox pair 1 to LAN B.
	id2a	Redbox pair 2 to LAN A.
	id2b	Redbox pair 2 to LAN B.
	id3a	Redbox pair 3 to LAN A.
	id3b	Redbox pair 3 to LAN B.
	id4a	Redbox pair 4 to LAN A.
	id4b	RedBox pair 4 to LAN B.
	id5a	Redbox pair 5 to LAN A.
	id5b	Redbox pair 5 to LAN B.
	id6a	Redbox pair 6 to LAN A.
	id6b	Redbox pair 6 to LAN B.
	id7a	Redbox pair 7 to LAN A.
	id7b	Redbox pair 7 to LAN B.
P-5	100	100 MBit/s
	1000	1000 MBit/s

- no hsr instance
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no hsr instance <P-1> operation port-a port-b supervision evaluate send redbox-exclusively mode switching-node-type redbox-id speed

34.2 clear

Clear several items.

34.2.1 clear hsr proxy-node-table

Clear proxy-node-table.
- Mode: Privileged Exec Mode
- Privilege Level: Operator
- Format: clear hsr proxy-node-table [<P-1>]

Parameter	Value	Meaning
P-1	1..1	Enter HSR instance number (only 1 supported).

34.2.2 clear hsr node-table

Clear node-table (received supervision packets).
- Mode: Privileged Exec Mode
- Privilege Level: Operator
- Format: clear hsr node-table [<P-1>]

Parameter	Value	Meaning
P-1	1..1	Enter HSR instance number (only 1 supported).

34.2.3 clear hsr counters

Clear HSR counters.
- Mode: Privileged Exec Mode
- Privilege Level: Operator
- Format: clear hsr counters [<P-1>]

Parameter	Value	Meaning
P-1	1..1	Enter HSR instance number (only 1 supported).

34.3 show

Display device options and settings.

34.3.1 show hsr global

Display the global preferences.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show hsr global

34.3.2 show hsr instance

Display the HSR instances.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show hsr instance [<P-1>]

Parameter	Value	Meaning
P-1	1..1	Enter HSR instance number (only 1 supported).

34.3.3 show hsr node-table

Display the node table (received supervision packets).
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show hsr node-table [<P-1>]

Parameter	Value	Meaning
P-1	1..1	Enter HSR instance number (only 1 supported).

34.3.4 show hsr proxy-node-table

Display the proxy node table.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show hsr proxy-node-table [<P-1>]

Parameter	Value	Meaning
P-1	1..1	Enter HSR instance number (only 1 supported).

34.3.5 show hsr counters

Display the HSR counters.

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

Parameter	Value	Meaning
P-1	1..1	Enter HSR instance number (only 1 supported).

35 Hypertext Transfer Protocol (HTTP)

35.1 http

Set HTTP parameters.

35.1.1 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).

35.1.2 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`

35.2 show

Display device options and settings.

35.2.1 show http

Display the HTTP server information.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show http`

36 HTTP Secure (HTTPS)

36.1 https

Set HTTPS parameters.

36.1.1 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

36.1.2 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).

36.1.3 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

36.1.4 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

36.2 copy

Copy different kinds of items.

36.2.1 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 [source-interface <P-2>]

nvm: Copy HTTPS certificate (PEM) from a server to the device.
[source-interface]: Specify the source-interface to be used (physical or logical). The frames will not necessarily be sent on this interface, only the IP address of the interface will be used as source IP.

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

Parameter	Value	Meaning
P-2	slot no./port no.	

36.2.2 copy httpscert envm

Copy X509/PEM certificate from external non-volatile memory to the specified destination.

- Mode: Privileged Exec Mode
- Privilege Level: Administrator
- Format: copy httpscert envm <P-1> nvm

nvm: Copy X509/PEM certificate from external non-volatile memory to the device.

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

36.3 show

Display device options and settings.

36.3.1 show https

Display the HTTPS server information.

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

37 Integrated Authentification Server (IAS)

37.1 ias-users

Manage IAS Users and User Accounts.

37.1.1 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).

37.1.2 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).

37.1.3 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).

37.1.4 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).

37.1.5 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.

37.2 show

Display device options and settings.

37.2.1 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

38 IEC 61850 MMS Server

38.1 iec61850-mms

Configure the IEC61850 MMS Server settings.

38.1.1 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`

38.1.2 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`

38.1.3 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).

38.1.4 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).

38.1.5 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')

38.2 show

Display device options and settings.

38.2.1 show iec61850-mms

Display the IEC61850 MMS server settings.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show iec61850-mms`

39 Internet Group Management Protocol (IGMP)

39.1 ip

Set IP parameters.

39.1.1 ip igmp operation

Enable or disable IGMP globally on the device.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip igmp operation`

- `no ip igmp operation`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no ip igmp operation`

39.2 ip

IP interface commands.

39.2.1 ip igmp operation

Enables or disables IGMP on the interface.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip igmp operation`

- `no ip igmp operation`
  Disable the option
  - Mode: `Interface Range Mode`
  - Privilege Level: `Operator`
  - Format: `no ip igmp operation`

39.2.2 ip igmp version

Configure IGMP version.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip igmp version <P-1>`

Parameter	Value	Meaning
P-1	1..3	Enter igmp version (default: 3).

39.2.3 ip igmp robustness

Configure IGMP router robustness.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip igmp robustness <P-1>`

Parameter	Value	Meaning
P-1	1..255	Enter igmp query robustness (default: 2).

39.2.4 ip igmp querier query-interval

Configure IGMP query interval in seconds.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip igmp querier query-interval <P-1>`

Parameter	Value	Meaning
P-1	1..3600	Enter igmp query interval (default: 125).

39.2.5 ip igmp querier last-member-interval

Configure last member query interval in tenths of seconds.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip igmp querier last-member-interval <P-1>

Parameter	Value	Meaning
P-1	1..255	Enter igmp last member query interval (default: 10).

39.2.6 ip igmp querier max-response-time

Configure maximum response time in tenths of seconds.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip igmp querier max-response-time <P-1>

Parameter	Value	Meaning
P-1	1..255	Enter igmp query maximum response time (default: 100).

39.3 show

Display device options and settings.

39.3.1 show ip igmp global

Display the IGMP global configuration.
- Mode: Command is in all modes available.
- Privilege Level: Operator
- Format: show ip igmp global

39.3.2 show ip igmp interface

Display the IGMP interface information.
- Mode: Command is in all modes available.
- Privilege Level: Operator
- Format: show ip igmp interface [<P-1>]

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

39.3.3 show ip igmp membership

Display the interfaces subscribed to the multicast group.
- Mode: Command is in all modes available.
- Privilege Level: Operator
- Format: show ip igmp membership

39.3.4 show ip igmp groups

Display the subscribed multicast groups.
- Mode: Command is in all modes available.
- Privilege Level: Operator
- Format: show ip igmp groups

39.3.5 show ip igmp statistics

Display the IGMP statistical information.
- Mode: Command is in all modes available.
- Privilege Level: Operator
- Format: show ip igmp statistics [<P-1>]

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

40 IGMP Proxy

40.1 ip

Set IP parameters.

40.1.1 ip igmp-proxy interface

This command enables/disables IGMP Proxy on the router and configures the host interface.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip igmp-proxy interface <P-1>`

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

- `no ip igmp-proxy interface`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no ip igmp-proxy interface <P-1>`

40.1.2 ip igmp-proxy report-interval

Sets the unsolicited report interval in seconds.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip igmp-proxy report-interval <P-1>`

Parameter	Value	Meaning
P-1	1..260	Enter a number in the given range.

40.2 show

Display device options and settings.

40.2.1 show ip igmp-proxy global

Display a summary of the host interface status parameters.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show ip igmp-proxy global`

40.2.2 show ip igmp-proxy groups

Display the information about the subscribed multicast groups that IGMP Proxy reported.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show ip igmp-proxy groups`

40.2.3 show ip igmp-proxy source-list

Display the source-list of each subscribed multicast group that IGMP Proxy reported.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show ip igmp-proxy source-list`

41 IGMP Querier

41.1 ip

Set IP parameters.

41.1.1 ip igmp-querier operation

Enable or disable IGMP querier globally on the system.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip igmp-querier operation`

- `no ip igmp-querier operation`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no ip igmp-querier operation`

41.1.2 ip igmp-querier interval

Sets the IGMP querier query interval time.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip igmp-querier interval <P-1>`

Parameter	Value	Meaning
P-1	1..1024	Enter value in range

41.1.3 ip igmp-querier response-interval

Sets the IGMP querier response interval.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip igmp-querier response-interval <P-1>`

Parameter	Value	Meaning
P-1	1..1024	Enter value in range

41.1.4 ip igmp-querier last-member-interval

Sets the IGMP query last member interval.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip igmp-querier last-member-interval <P-1>`

Parameter	Value	Meaning
P-1	1..1024	Enter value in range

41.1.5 ip igmp-querier robustness

Sets the IGMP querier robustness.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip igmp-querier robustness <P-1>`

Parameter	Value	Meaning
P-1	..	

41.2 ip

IP interface commands.

41.2.1 ip igmp-querier operation

Enable or disable IGMP querier instance.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip igmp-querier operation`

- `no ip igmp-querier operation`
  Disable the option
  - Mode: `Interface Range Mode`
  - Privilege Level: `Operator`
  - Format: `no ip igmp-querier operation`

41.2.2 ip igmp-querier version

Sets the IGMP version (default:3).

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip igmp-querier version <P-1>`

Parameter	Value	Meaning
P-1	..	

41.3 show

Display device options and settings.

41.3.1 show ip igmp-querier global

Display the general IGMP querier information.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show ip igmp-querier global`

41.3.2 show ip igmp-querier interface

Display the interface specific information.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show ip igmp-querier interface [<P-1>]`

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

42 IGMP Snooping

42.1 igmp-snooping

Configure IGMP snooping.

42.1.1 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`

42.1.2 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`

42.1.3 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.

42.1.4 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.

42.1.5 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).

42.1.6 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. This setting can be overwritten for individual vlans.
	query-ports	Unknown multicast frames will be forwarded only to query ports.

42.2 igmp-snooping

Configure IGMP snooping.

42.2.1 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> mcrtrexpiretime <P-4> querier mode address <P-5> forward-known <P-6> forward-all <P-7> forward-unknown <P-8> static-query-port <P-9> automatic-mode <P-10>

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.
forward-unknown: Set IGMP unknown forwarding mode for the vlan. This only takes effect if forward-unknown is set to 'flood' globally.
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	discard	Unknown multicast frames will be discarded.
	flood	Unknown multicast frames will be flooded.
	query-ports	Unknown multicast frames will be forwarded only to query ports. The maximum number of VLANs which can have this setting depend on the device type and the software level.
P-9	slot no./port no.	
P-10	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> forward-unknown static-query-port <P-9> automatic-mode <P-10>

42.3 igmp-snooping

Configure IGMP snooping.

42.3.1 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`

42.3.2 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`

42.3.3 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.

42.3.4 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.

42.3.5 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.

42.3.6 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`

42.4 show

Display device options and settings.

42.4.1 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

42.4.2 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.	

42.4.3 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.

42.4.4 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

42.4.5 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.

42.4.6 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.

42.4.7 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

42.4.8 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

42.4.9 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.	

42.5 show

Display device options and settings.

42.5.1 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`

42.6 clear

Clear several items.

42.6.1 clear igmp-snooping

Clear all IGMP snooping entries.

- Mode: `Privileged Exec Mode`
- Privilege Level: `Operator`
- Format: `clear igmp-snooping`

43 Interface

43.1 shutdown

43.1.1 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`

43.2 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.

43.2.1 auto-negotiate speed

Additionally, enter the speed to be used for advertise capabilities.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `auto-negotiate <P-1> speed <P-1> [<P-2>]`

Parameter	Value	Meaning
`P-1`	10	`10 MBit/s.`
	100	`100 MBit/s.`
	1000	`1 GBit/s.`
`P-2`	full	`Full-Duplex.`
	half	`Half-Duplex.`

- `no auto-negotiate speed`
  Disable the option
  - Mode: `Interface Range Mode`
  - Privilege Level: `Operator`
  - Format: `no auto-negotiate <P-1> speed <P-1> [<P-2>]`

43.2.2 auto-negotiate duplex

Additionally, enter the duplex mode to be used for advertise capabilities.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `auto-negotiate <P-1> duplex <P-1>`

Parameter	Value	Meaning
`P-1`	full	`Full-Duplex.`
	half	`Half-Duplex.`

- `no auto-negotiate duplex`
  Disable the option
  - Mode: `Interface Range Mode`
  - Privilege Level: `Operator`
  - Format: `no auto-negotiate <P-1> duplex <P-1>`

43.2.3 auto-negotiate reset

Reset the advertisement capabilities to the default value of locally available bits.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `auto-negotiate <P-1> reset`

43.3 auto-power-down

43.3.1 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.

43.4 cable-crossing

43.4.1 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.

43.5 linktraps

43.5.1 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`

43.6 link-loss-alert

Configure Link Loss Alert on the interface.

43.6.1 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`

43.7 speed

43.7.1 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.

43.8 name

43.8.1 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.

43.9 power-state

43.9.1 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`

43.10 mac-filter

43.10.1 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>`

43.11 led-signaling

Enable or disable Port LED signaling.

43.11.1 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`

43.12 dhcp-client

43.12.1 dhcp-client

Enable/disable the DHCP client on the interface.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `dhcp-client`

- `no dhcp-client`
  Disable the option
  - Mode: `Interface Range Mode`
  - Privilege Level: `Operator`
  - Format: `no dhcp-client`

43.13 track

Set track parameters.

43.13.1 track if-status add

Set tracking object for interface status.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: track if-status add <P-1>

Parameter	Value	Meaning
P-1	string	Track instance.

43.13.2 track if-status delete

Delete tracking object for interface status.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: track if-status delete

43.14 show

Display device options and settings.

43.14.1 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.	

43.14.2 show auto-negotiation

Display the interface auto-negotiation parameters.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show auto-negotiation [<P-1>]

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

43.15 show

Display device options and settings.

43.15.1 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.	

43.16 show

Display device options and settings.

43.16.1 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

44 Interface Statistics

44.1 utilization

Configure the interface utilization parameters.

44.1.1 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.

44.1.2 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.

44.1.3 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.

44.1.4 utilization ingress control-interval

Add interval time to monitor the bandwidth utilization of the interface.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `utilization ingress control-interval <P-1>`

Parameter	Value	Meaning
P-1	1..3600	Add interval time to monitor the bandwidth utilization.

44.1.5 utilization ingress alarm-threshold lower

Lower threshold value for ingress

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `utilization ingress 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.

44.1.6 utilization ingress alarm-threshold upper

Upper threshold value for ingress

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `utilization ingress 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.

44.1.7 utilization egress control-interval

Add interval time to monitor the bandwidth utilization of the interface.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `utilization egress control-interval <P-1>`

Parameter	Value	Meaning
P-1	1..3600	Add interval time to monitor the bandwidth utilization.

44.1.8 utilization egress alarm-threshold lower

Lower threshold value for egress

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `utilization egress 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.

44.1.9 utilization egress alarm-threshold upper

Upper threshold value for egress

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `utilization egress 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.

44.2 clear

Clear several items.

44.2.1 clear port-statistics

Clear all statistics counter.

- Mode: `Privileged Exec Mode`
- Privilege Level: `Operator`
- Format: `clear port-statistics`

44.3 show

Display device options and settings.

44.3.1 show interface counters

Display the interface counters.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show interface counters`

44.3.2 show interface layout

Display the interface layout of the device.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show interface layout`

44.3.3 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.	

44.3.4 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.	

44.3.5 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.	

45 Intern

45.1 help

Display the help text for various special keys.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `help`

45.2 logout

Exit this session.
- Mode: `Command is in all modes available.`
- Privilege Level: `any`
- Format: `logout`

45.3 history

Display a list of previously run commands.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `history`

45.4 vlan

Enter VLAN database mode.

45.4.1 vlan database

Enter VLAN database mode.
- Mode: `Privileged Exec Mode`
- Privilege Level: `Operator`
- Format: `vlan database`

45.5 vlan-mode

45.5.1 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.

45.6 exit

Exit from vlan mode.
- Mode: VLAN Mode
- Privilege Level: Operator
- Format: exit

45.7 end

Exit to exec mode.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: end

45.8 serviceshell

Enter system mode.

45.8.1 serviceshell start

Start serviceshell prompt
- Mode: Privileged Exec Mode
- Privilege Level: Administrator
- Format: serviceshell start

45.8.2 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
	ifconfig	Start Linux ifconfig
	osapi-debug	Start osapi debug functions.
	cors-enable	Enable the HTTP(S) CORS headers.
	cors-disable	Disable the HTTP(S) CORS headers.
	hw-port-reg	Display the hardware port register.
	hw-system-reg	Display the hardware system register.
	hw-sw-temperature	Display the hardware switch temperature register.
	interruptTestAll	Activate all kind of logic interrupts for testing
	sfp-temp-hist	Dump the SFP temperature histograms.

45.8.3 serviceshell boot fastboot

Enable/disable fastboot
- Mode: Privileged Exec Mode
- Privilege Level: Administrator
- Format: serviceshell boot fastboot <P-1>

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

45.8.4 serviceshell boot test-mark

Start/clear all test mark.
- Mode: Privileged Exec Mode
- Privilege Level: Administrator
- Format: serviceshell boot test-mark <P-1>

Parameter	Value	Meaning
P-1	start	Start mark test
	clear-all	Clear all mark test

45.8.5 serviceshell boot test-reset-params

Set a bootparameter invalid in a parameter block
- Mode: Privileged Exec Mode
- Privilege Level: Administrator
- Format: serviceshell boot test-reset-params <P-1>

Parameter	Value	Meaning
P-1	PARAM_BOOT_MAIN_SECTION	Set a parameter invalid in a parameter block.
	PARAM_BOOT_IMAGE_START_0	Set a parameter invalid in a parameter block.
	PARAM_BOOT_IMAGE_START_1	Set a parameter invalid in a parameter block.
	PARAM_BOOT_IMAGE_START_2	Set a parameter invalid in a parameter block.
	PARAM_BOOT_IMAGE_START_3	Set a parameter invalid in a parameter block.

45.8.6 serviceshell boot test-print

Display the device tree information.
- Mode: Privileged Exec Mode
- Privilege Level: Administrator
- Format: serviceshell boot test-print <P-1>

Parameter	Value	Meaning
P-1	struct	Print boot structure

45.8.7 serviceshell deactivate

Disable the service shell access permanently (Cannot be undone).
- Mode: Privileged Exec Mode
- Privilege Level: Administrator
- Format: serviceshell deactivate

45.9 serviceshell-f

Enter system mode.

45.9.1 serviceshell-f deactivate

Disable the service shell access permanently (Cannot be undone).
- Mode: Factory Mode
- Privilege Level: Administrator
- Format: serviceshell-f deactivate

45.10 traceroute

Trace route to a specified host.

45.10.1 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	A.B.C.D	IP address.
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

45.11 traceroute

Trace route to a specified host.

45.11.1 traceroute source

Source address for traceroute command.

- Mode: Privileged Exec Mode
- Privilege Level: Operator
- Format: traceroute <P-1> source <P-2>

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	A.B.C.D	IP address.

45.12 reboot

Reset the device (cold start).

45.12.1 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.

45.13 ping

Send ICMP echo packets to a specified IP address.

45.13.1 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.

45.14 ping

Send ICMP echo packets to a specified host or IP address.

45.14.1 ping source

Source address for ping command.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: ping <P-1> source <P-2> [count <P-3>]

[count]: Number of retries.

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	A.B.C.D	IP address.
P-3	1..255	Enter a number in the given range.

45.15 show

Display device options and settings.

45.15.1 show reboot

Display the configured reboot in seconds.

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

45.15.2 show serviceshell

Display the service shell access.

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

46 Digital IO Module

46.1 digital-input

Digital Input related configuration.

46.1.1 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`

46.1.2 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.

46.1.3 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	slot/input	Enter a Digital IO module input in slot/input format.
	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>`

46.1.4 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`

46.1.5 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	slot/input	Enter a Digital IO module input in slot/input format.
	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>

46.1.6 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

46.1.7 digital-input clear-factory io

Configure a single IO port.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: digital-input clear-factory io <P-1>

Parameter	Value	Meaning
P-1	slot/input	Enter a Digital IO module input in slot/input format.
	MU/input	Enter a Digital IO input on the power supply module in MU/input format.

- no digital-input clear-factory io
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no digital-input clear-factory io <P-1>

46.1.8 digital-input clear-factory all

Configure all IO ports.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: digital-input clear-factory all

- no digital-input clear-factory all
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no digital-input clear-factory all

46.2 digital-output

Digital Output related configuration

46.2.1 digital-output admin-state

Enable or disable the polling for digital outputs.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: digital-output admin-state

- no digital-output admin-state
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no digital-output admin-state

46.2.2 digital-output refresh-interval

Set refresh interval in milliseconds for digital outputs.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: digital-output refresh-interval <P-1>

Parameter	Value	Meaning
P-1	1000..10000	Refresh interval in milliseconds.

46.2.3 digital-output retry-count

Set the number of retry counts for setting digital outputs.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: digital-output retry-count <P-1>

Parameter	Value	Meaning
P-1	1..10	Retry count for digital outputs.

46.2.4 digital-output log-event io

Configure an IO port.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: digital-output log-event io <P-1>

Parameter	Value	Meaning
P-1	slot/output	Enter a Digital IO module output in slot/output format.
	MU/output	Enter a Digital IO output on the power supply module in MU/output format.

- no digital-output log-event io
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no digital-output log-event io <P-1>

46.2.5 digital-output log-event all

Configure all IO ports.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: digital-output log-event all

- no digital-output log-event all
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no digital-output log-event all

46.2.6 digital-output snmp-trap io

Configure an IO port.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: digital-output snmp-trap io <P-1>

Parameter	Value	Meaning
P-1	slot/output	Enter a Digital IO module output in slot/output format.
	MU/output	Enter a Digital IO output on the power supply module in MU/output format.

- no digital-output snmp-trap io
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no digital-output snmp-trap io <P-1>

46.2.7 digital-output snmp-trap all

Configure all IO ports.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `digital-output snmp-trap all`

- `no digital-output snmp-trap all`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no digital-output snmp-trap all`

46.2.8 digital-output mirror io

Mirror a single IO port.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `digital-output mirror io <P-1> disable from <P-2> <P-3>`

`disable`: Disable Mirroring on this output port.
`from`: Enable Mirroring on this output port.

Parameter	Value	Meaning
P-1	slot/output	Enter a Digital IO module output in slot/output format.
	MU/output	Enter a Digital IO output on the power supply module in MU/output format.
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.
	[a:b:c:d:e:f:g:h]	[a:b:c:d:e:f:g:h] Single IPv6 address.
	[a:b:c:d:e:f:g:h]:n	[a:b:c:d:e:f:g:h]:n IPv6 address with port.
P-3	slot/input	Enter a Digital IO module input in slot/input format.
	MU/input	Enter a Digital IO input on the power supply module in MU/input format.

46.3 show

Display device options and settings.

46.3.1 show digital-input config

Display the global information.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show digital-input config`

46.3.2 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`

46.3.3 show digital-output config

Display the global configuration.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show digital-output config`

46.3.4 show digital-output io

Display the details about a single IO output port.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show digital-output io`

47 Open Shortest Path First (OSPF)

47.1 ip

Set IP parameters.

47.1.1 ip ospf area

Administer the OSPF areas. An area is a sub-division of an OSPF autonomous system. You identify an area by an area-id. OSPF networks, routers, and links that have the same area-id form a logical set.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip ospf area <P-1> range add <P-2> <P-3> <P-4> modify <P-5> <P-6> <P-7> <P-8> delete <P-9> <P-10> <P-11> add delete stub add <P-12> modify <P-13> summarylsa <P-14> default-cost <P-15> delete <P-16> virtual-link add <P-17> delete <P-18> modify <P-19> authentication type <P-20> key <P-21> key-id <P-22> hello-interval <P-23> dead-interval <P-24> transmit-delay <P-25> retransmit-interval <P-26> nssa add <P-27> delete <P-28> modify translator role <P-29> stability-interval <P-30> summary no-redistribute default-info originate [metric <P-31>] [metric-type <P-32>]`

`range`: Configure the range for the area. You summarize the networks within this range into a single routing domain.
`add`: Create an area.
`modify`: Modify the parameters of an existing area.
`delete`: Delete a specific area.
`add`: Create a new area.
`delete`: Delete an existing area.
`stub`: Configure the preferences for a stub area. You shield stub areas from external route advertisements, but the area receives advertisements from networks that belong to other areas of the same autonomous system.
`add`: Create a stub area. The command also allows you to convert an existing area to a stub area.
`modify`: Modify the stub area parameters.
`summarylsa`: Configure the summary LSA mode for a stub area. When enabled, the router both summarizes and propagates summary LSAs.
`default-cost`: Set the default cost for the stub area.
`delete`: Remove a stub area. After removal, the area receives external route advertisements.
`virtual-link`: Configure a virtual link. You use the virtual link to connect the router to the backbone area (0.0.0.0) through a non-backbone area or to connect two parts of a partitioned backbone area (0.0.0.0) through a non-backbone area.
`add`: Add a virtual neighbor.
`delete`: Delete a virtual neighbor.
`modify`: Modify the parameters of a virtual neighbor.
`authentication`: Configure the authentication type. The device authenticates the OSPF protocol exchanges in the OSPF packet header which includes an authentication type field.
`type`: Configure the authentication type. Authentication types are 0 for null authentication, 1 for simple password authentication, and 2 for cryptographic authentication.
`key`: Configure the authentication key.
`key-id`: Configure the authentication key-id for md5 authentication. This field identifies the algorithm and secret key used to create the message digest appended to the OSPF packet.
`hello-interval`: Configure the OSPF hello-interval for the virtual link, in seconds. The hello timer controls the time interval between sending two consecutive hello packets. Set this value to the same hello-interval value of the virtual neighbors.
`dead-interval`: Configure the OSPF dead-interval for the virtual link, in seconds. If the timer expires without the router receiving hello packets from a virtual neighbor, the router declares the neighbor router as down. Set the timer to at least four times the value of the hello-interval.
`transmit-delay`: Configure the OSPF transmit-delay for the virtual link, in seconds. Transmit delay is the time that you estimate it takes to transmit a link-state update packet over the virtual link.
`retransmit-interval`: Configure the OSPF retransmit-interval for the virtual link, in seconds. The retransmit interval is the time between two consecutive link-state advertisement transmissions. Link-state advertisements contain such information as database descriptions and link-state request packets for adjacencies belonging to virtual link.
`nssa`: Configure a NSSA(Not-So-Stubby-Area).
`add`: Add a NSSA.

`delete`: Delete a NSSA.
`modify`: Modify the parameters of a NSSA.
`translator`: Configure the NSSA translator related parameters.
`role`: Configure the NSSA translator role.
`stability-interval`: Configure the translator stability interval for the NSSA, in seconds.
`summary`: Configure the import summary for the specified NSSA.
`no-redistribute`: Configure route redistribution for the specified NSSA.
`default-info`: Configure the nssa default information origination parameters.
`originate`: Configuration whether a Type-7 LSA should be originated into the NSSA.
`[metric]`: Configure the metric for the NSSA.
`[metric-type]`: Configure the metric type for default information.

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	summary-link	Configure summary links LSDB type optional mode.
	nssa-external-link	Configure nssa external link LSDB type optional mode.
P-3	A.B.C.D	IP address.
P-4	A.B.C.D	IP address.
P-5	summary-link	Configure summary links LSDB type optional mode.
	nssa-external-link	Configure nssa external link LSDB type optional mode.
P-6	A.B.C.D	IP address.
P-7	A.B.C.D	IP address.
P-8	advertise	Set as advertise.
	do-not-advertise	Set as do-not-advertise.
P-9	summary-link	Configure summary links LSDB type optional mode.
	nssa-external-link	Configure nssa external link LSDB type optional mode.
P-10	A.B.C.D	IP address.
P-11	A.B.C.D	IP address.
P-12	0	Configure the TOS (0 is for Normal Service).
P-13	0	Configure the TOS (0 is for Normal Service).
P-14	no-area-summary	Disable the router from sending area link state advertisement summaries.
	send-area-summary	Enable the router to send area link state advertisement summaries. The router floods LSAs within the area using multicast. Every topology change starts a new flood of LSAs.
P-15	0..16777215	Configure the default cost.
P-16	0	Configure the TOS (0 is for Normal Service).
P-17	A.B.C.D	IP address.
P-18	A.B.C.D	IP address.
P-19	A.B.C.D	IP address.
P-20	none	Configure the authentication type as none (Key and key ID is not required).
	simple	Configure the authentication type as simple (Key ID is not required).
	md5	Configure the authentication type as md5 for the interface.
P-21	string	<key> Configure the authentication key.
P-22	0..255	Enter a number in the given range.
P-23	1..65535	Enter a number between 1 and 65535
P-24	1..65535	Enter a number between 1 and 65535
P-25	0..3600	Enter a number in the given range.
P-26	0..3600	Enter a number in the given range.
P-27	import-nssa	Configure the area as NSSA only.
P-28	import-external	Change the area to support external LSAs also.
P-29	always	Configure the NSSA translator role as always. When used as a border router, the router translates LSAs regardless of the translator states of the other NSSA border routers.
	candidate	Configure the NSSA translator role as a candidate. When used as a border router, the router participates in the translator election process. The router maintains a list of reachable NSSA border routers.
P-30	0..65535	Enter a number between 0 and 65535
P-31	1..16777214	Configure the metric value.
P-32	ospf-metric	Set the metric type as ospf Metric.
	comparable-cost	Set the metric type as comparable cost.
	non-comparable	Set the metric type as non-comparable.

- no ip ospf area
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no ip ospf area <P-1> range add modify delete add delete stub add modify summarylsa default-cost delete virtual-link add delete modify authentication type key key-id hello-interval dead-interval transmit-delay retransmit-interval nssa add delete modify translator role stability-interval summary no-redistribute default-info originate [metric] [metric-type]

47.1.2 ip ospf trapflags all

Set all trapflags at once.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip ospf trapflags all <P-1>

Parameter	Value	Meaning
P-1	[cr]	Enable the Bit.

- no ip ospf trapflags all
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no ip ospf trapflags all <P-1>

47.1.3 ip ospf operation

Enable or disable the OSPF admin mode. When enabled, the device initiates the OSPF process if the OSPF function is active on at least one interface.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip ospf operation

- no ip ospf operation
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no ip ospf operation

47.1.4 ip ospf 1583compatability

Enable or disable the 1583compatibility for calculating routes external to the autonomous system. When enabled, the router is compatible with the preference rules defined in RFC1583, section 16.4.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip ospf 1583compatability

- no ip ospf 1583compatability
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no ip ospf 1583compatability

47.1.5 ip ospf default-metric

Configure the default metric for re-distributed routes, when OSPF redistributes routes from other protocols.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip ospf default-metric <P-1>

Parameter	Value	Meaning
P-1	1..16777214	Configure the default metric for redistributed routes.

- no ip ospf default-metric
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no ip ospf default-metric <P-1>

47.1.6 ip ospf router-id

Configure the router ID to uniquely identify this OSPF router in the autonomous system. If a tie occurs during the designated router election, the router with the higher router ID is the designated router.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip ospf router-id <P-1>`

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

47.1.7 ip ospf external-lsdb-limit

Configure the OSPF external lsdb limitation, which is the maximum number of non-default AS-external-LSA entries that the router stores in the link-state database. When the value -1 is configured, you disable the limitation.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip ospf external-lsdb-limit <P-1>`

Parameter	Value	Meaning
P-1	-1..2147483647	Configure the external lsdb limit.

47.1.8 ip ospf exit-overflow

Configure the OSPF exit overflow interval, in seconds. After the timer expires the router will attempt to leave the overflow-state. To disable the exit overflow interval function set the value to 0.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip ospf exit-overflow <P-1>`

Parameter	Value	Meaning
P-1	0..2147483647	Configure the exit overflow interval.

47.1.9 ip ospf maximum-path

Configure the maximum number of paths that OSPF reports.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip ospf maximum-path <P-1>`

Parameter	Value	Meaning
P-1	1..4	Set the maximum path.

47.1.10 ip ospf spf-delay

Configure the SPF delay, in seconds. The Shortest Path First (SPF) delay is the time that the device waits for the network to stabilize before calculating the shortest path tree, after a topology change.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip ospf spf-delay <P-1>`

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

47.1.11 ip ospf spf-holdtime

Configure the minimum time between two consecutive SPF calculations, in seconds.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip ospf spf-holdtime <P-1>`

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

47.1.12 ip ospf auto-cost

Set the auto cost reference bandwidth of the router interfaces for ospf metric calculations. The default reference bandwidth is 100 Mbps.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip ospf auto-cost <P-1>`

Parameter	Value	Meaning
P-1	1..4294967	Configure the auto cost for OSPF calculation.

47.1.13 ip ospf distance intra

Enter the preference type as intra. Use intra-area routing when the device routes packets solely within an area, such as an internal router.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip ospf distance intra <P-1>

Parameter	Value	Meaning
P-1	1..255	Enter the value.

47.1.14 ip ospf distance inter

Enter the preference type as inter. Use inter-area routing when the device routes packets into or out of an area, such as an area border router.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip ospf distance inter <P-1>

Parameter	Value	Meaning
P-1	1..255	Enter the value.

47.1.15 ip ospf distance external

Enter the preference type as external. Use external-area routing when the device routes packets into or out of an autonomous system, such as an autonomous system boundary router (ASBR).

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip ospf distance external <P-1>

Parameter	Value	Meaning
P-1	1..255	Enter the value.

47.1.16 ip ospf re-distribute

Configure the OSPF route re-distribution. An ASBR is able to translate information from other OSPF processes in separate areas and routes from other sources, such as static routes or other dynamic routing protocols, into the OSPF protocol.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip ospf re-distribute <P-1> [metric <P-2>] [metric-type <P-3>] [tag <P-4>] [subnets <P-5>]

[metric]: Configure the OSPF route re-distribution metric parameters.
[metric-type]: Configure the OSPF route redistribution metric-type.
[tag]: Configure the OSPF route redistribution tag parameters.
[subnets]: Allow the router to redistribute subnets into OSPF.

Parameter	Value	Meaning
P-1	connected	Select the source protocol as connected.
	static	Select the source protocol as static.
	rip	Select the source protocol as RIP.
P-2	0..16777214	Configure the metric.
P-3	1..2	Configure the metric type.
P-4	0..4294967295	Configure the tag.
P-5	enable	Enable the option.
	disable	Disable the option.

- no ip ospf re-distribute
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no ip ospf re-distribute <P-1> [metric] [metric-type] [tag] [subnets]

47.1.17 ip ospf distribute-list

Configure the distribute list for the routes from other source protocols.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip ospf distribute-list <P-1> <P-2> <P-3>

Parameter	Value	Meaning
P-1	out	Configure as out to re-distribute routes with ACL rules

Parameter	Value	Meaning
P-2	connected	Select the source protocol as connected.
	static	Select the source protocol as static.
	rip	Select the source protocol as RIP.
P-3	<1000..1099>	Enter the access list number.

- no ip ospf distribute-list
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no ip ospf distribute-list <P-1> <P-2> <P-3>

47.1.18 ip ospf default-info originate

Originate the OSPF default information.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip ospf default-info originate [always] [metric <P-1>] [metric-type <P-2>]

[always]: Always advertise the 0.0.0.0/0.0.0.0 route information.
[metric]: Configure the metric for default information.
[metric-type]: Configure the metric type for default information.

Parameter	Value	Meaning
P-1	1..16777214	Configure the metric value.
P-2	external-type1	Set the metric type for default information as external type-1. The type 1 value sets the metric to the sum of the internal and external OSPF metrics.
	external-type2	Set the metric type for default information as external type-2. The type 2 value sets the metric to the sum of external OSPF metrics from the source AS to the destination AS.

- no ip ospf default-info originate
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no ip ospf default-info originate [always] [metric <P-1>] [metric-type]

47.2 ip

IP interface commands.

47.2.1 ip ospf operation

Enable or disable OSPF on port.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip ospf operation

- no ip ospf operation
  Disable the option
  - Mode: Interface Range Mode
  - Privilege Level: Operator
  - Format: no ip ospf operation

47.2.2 ip ospf area-id

Configure the area ID that uniquely identifies the area to which the interface is connected.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip ospf area-id <P-1>

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

47.2.3 ip ospf link-type

Configure the OSPF link type.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip ospf link-type <P-1>`

Parameter	Value	Meaning
P-1	broadcast	Configure the link-type as broadcast for the interface. In broadcast networks, routers discover their neighbors dynamically using the OSPF hello protocol.
	nbma	Configure the link-type as Non-Broadcast Multi-Access for the interface. The nbma mode, emulates OSPF operation over a broadcast network. The nbma mode is the most efficient way to run OSPF over non-broadcast networks, both in terms of the LSDB size and the amount of routing protocol traffic. However, this mode requires direct communication between every router in the nbma network.
	point-to-point	Configure the link-type as point-to-point for the interface. Use the point-to-point link-type in a network that joins a single pair of routers.
	point-to-multipoint	Configure the link-type as point-to-multipoint for the interface. In the point-to-multipoint mode, OSPF treats each router-to-router link over non-broadcast networks as if they were point-to-point links.

47.2.4 ip ospf priority

Configure the OSPF router priority which the router uses in multi-access networks for the designated router election algorithm. The router with the higher router priority is the designated router. A value of 0 declares the router as ineligible for designated router elections.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip ospf priority <P-1>`

Parameter	Value	Meaning
P-1	0..255	Configure the priority.

47.2.5 ip ospf transmit-delay

Configure the OSPF transmit-delay for the interface, in seconds. The transmit-delay is the time that you estimate it takes to transmit a link-state update packet over the interface.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip ospf transmit-delay <P-1>`

Parameter	Value	Meaning
P-1	0..3600	Enter a number in the given range.

47.2.6 ip ospf retransmit-interval

Configure the OSPF retransmit-interval for the interface, in seconds. The retransmit-interval is the interval after which link-state advertisements containing database description and link-state request packets, are re-transmitted for adjacencies belonging to this interface.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip ospf retransmit-interval <P-1>`

Parameter	Value	Meaning
P-1	0..3600	Enter a number in the given range.

47.2.7 ip ospf hello-interval

Configure the OSPF hello-interval for the interface, in seconds. The hello timer controls the time interval between two consecutive hello packets. Set this value to the same hello-interval value of the neighbor.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip ospf hello-interval <P-1>`

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

47.2.8 ip ospf dead-interval

Configure the OSPF dead-interval for the interface, in seconds. If the timer expires without the router receiving hello packets from the neighbor, the router declares the neighbor router as down. Set the timer to at least four times the value of the hello-interval.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip ospf dead-interval <P-1>`

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

47.2.9 ip ospf cost

Configure the OSPF cost for the interface. The cost of a specific interface indicates the overhead required to send packets across the link. If set to 0, OSPF calculates the cost from the reference bandwidth and the interface speed.

- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip ospf cost <P-1>

Parameter	Value	Meaning
P-1	<1..65535>	Configure the cost for the specified interface.
	auto	Automatic calculation from reference bandwidth and link speed.

47.2.10 ip ospf mtu-ignore

Enable/Disable OSPF MTU mismatch on interface.

- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip ospf mtu-ignore

- no ip ospf mtu-ignore
  Disable the option
  - Mode: Interface Range Mode
  - Privilege Level: Operator
  - Format: no ip ospf mtu-ignore

47.2.11 ip ospf authentication type

Configure authentication type.

- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip ospf authentication type <P-1>

Parameter	Value	Meaning
P-1	none	Configure the authentication type as none (Key and key ID is not required).
	simple	Configure the authentication type as simple (Key ID is not required).
	md5	Configure the authentication type as md5 for the interface.

47.2.12 ip ospf authentication key

Configure authentication key.

- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip ospf authentication key <P-1>

Parameter	Value	Meaning
P-1	string	<key> Configure the authentication key.

47.2.13 ip ospf authentication key-id

Configure authentication key-id for md5 authentication.

- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip ospf authentication key-id <P-1>

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

47.2.14 ip ospf fast-hello

Enable or disable fast hello mode on port. When enabled, hello packets would be sent out on the interface for every 250ms. The dead interval needs to be re-configured accordingly for faster convergence.

- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip ospf fast-hello

- no ip ospf fast-hello
  Disable the option
  - Mode: Interface Range Mode
  - Privilege Level: Operator
  - Format: no ip ospf fast-hello

47.3 show

Display device options and settings.

47.3.1 show ip ospf global

Display the OSPF global configurations.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip ospf global

47.3.2 show ip ospf area

Display the OSPF area related information.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip ospf area [<P-1>]

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

47.3.3 show ip ospf stub

Display the OSPF stub area related information.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip ospf stub

47.3.4 show ip ospf database internal

Display the internal LSA database information.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip ospf database internal

47.3.5 show ip ospf database external

Display the external LSA database information.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip ospf database external

47.3.6 show ip ospf range

Display the OSPF area range information.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip ospf range

47.3.7 show ip ospf interface

Display the OSPF interface related information.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip ospf interface [<P-1>]

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

47.3.8 show ip ospf virtual-link

Display the OSPF virtual-link related information.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip ospf virtual-link <P-1> <P-2>

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	A.B.C.D	IP address.

47.3.9 show ip ospf virtual-neighbor

Display the OSPF Virtual-link neighbor information
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip ospf virtual-neighbor

47.3.10 show ip ospf neighbor

Display the OSPF neighbor related information.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip ospf neighbor [<P-1>]

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

47.3.11 show ip ospf statistics

Display the OSPF statistics.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip ospf statistics

47.3.12 show ip ospf re-distribute

Display the OSPF re-distribute related information
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip ospf re-distribute <P-1>

Parameter	Value	Meaning
P-1	connected	Select the source protocol as connected.
	static	Select the source protocol as static.
	rip	Select the source protocol as RIP.

47.3.13 show ip ospf nssa

Display the OSPF NSSA related information.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip ospf nssa <P-1>

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

47.3.14 show ip ospf route

Display the OSPF routes.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip ospf route

48 Routing Information Protocol (RIP)

48.1 ip

Set IP parameters.

48.1.1 ip rip operation

Enable or disable the RIP admin mode.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip rip operation`

- `no ip rip operation`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no ip rip operation`

48.1.2 ip rip auto-summary

Enable or disable the RIP auto summarization mode on the router.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip rip auto-summary`

- `no ip rip auto-summary`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no ip rip auto-summary`

48.1.3 ip rip default-info originate

Originate the RIP default information.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip rip default-info originate`

- `no ip rip default-info originate`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no ip rip default-info originate`

48.1.4 ip rip default-metric

Configure the default metric for redistributed routes, when RIP redistributes routes from other protocols.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip rip default-metric <P-1>`

Parameter	Value	Meaning
P-1	1..15	Enter the metric.

- `no ip rip default-metric`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no ip rip default-metric <P-1>`

48.1.5 ip rip distance

Configure the route preference for RIP routes (administrative distance).
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip rip distance <P-1>

Parameter	Value	Meaning
P-1	1..255	Enter the distance.

48.1.6 ip rip host-route-accept

Configure the RIP host route acceptance mode on the router.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip rip host-route-accept

- no ip rip host-route-accept
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no ip rip host-route-accept

48.1.7 ip rip distribute-list

Configure the distribute list for the routes from other source protocols.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip rip distribute-list <P-1> <P-2> <P-3>

Parameter	Value	Meaning
P-1	out	Configure as out to re-distribute routes with ACL rules
P-2	connected	Select the source protocol as connected.
	static	Select the source protocol as static.
	ospf	Select the source protocol as OSPF.
P-3	<1000..1099>	Enter the access list number.

- no ip rip distribute-list
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no ip rip distribute-list <P-1> <P-2> <P-3>

48.1.8 ip rip re-distribute

Configure the RIP route redistribution.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip rip re-distribute <P-1> [metric <P-2>] [internal <P-3>] [external-1 <P-4>] [external-2 <P-5>] [nssa-external-1 <P-6>] [nssa-external-2 <P-7>]

[metric]: Configure the RIP route re-distribution metric parameters.
[internal]: Configure the router to re-distribute OSPF internal routes to other routers using RIP. OSPF enters internal routes in the routing table for routes originating within OSPF. In order to re-distribute the routing table with this value, first configure and enable ospf.
[external-1]: Configure the router to re-distribute OSPF external-1 routes to other routers using RIP. OSPF external type 1 entries originate from other protocols. External type 1 routes include the total cost, internal and external, of the route. In order to re-distribute the routing table with this value, first configure and enable ospf.
[external-2]: Configure the router to re-distribute OSPF external-2 routes to other routers using RIP. OSPF external type 2 entries originate from other routing protocols or are static routes. External type 2 routes contain solely the external cost of the route. In order to re-distribute the routing table with this value, first configure and enable ospf.
[nssa-external-1]: Configure the router to re-distribute OSPF nssa-external-1 routes to other routers using RIP. OSPF nssa external type 1 entries originate from other protocols and contain solely Not-So-Stubby-Area routes. External type 1 routes include the total cost, internal and external, of the route. In order to re-distribute the routing table with this value, first configure and enable ospf.
[nssa-external-2]: Configure the router to re-distribute OSPF nssa-external-2 routes to other routers using RIP. OSPF nssa external type 2 entries originate from other protocols and contain solely Not-So-Stubby-Area routes. External type 2 routes include solely the internal cost of the route. In order to re-distribute the routing table with this value, first configure and enable ospf.

Parameter	Value	Meaning
P-1	connected	Select the source protocol as connected.
	static	Select the source protocol as static.
	ospf	Select the source protocol as OSPF.
P-2	1..15	Enter the metric.
P-3	enable	Enable the option.
	disable	Disable the option.
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.

- `no ip rip re-distribute`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no ip rip re-distribute <P-1> [metric <P-2>] [internal] [external-1] [external-2] [nssa-external-1] [nssa-external-2]`

48.1.9 ip rip split-horizon

Configure the RIP split horizon operating mode on the router.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip rip split-horizon <P-1>`

Parameter	Value	Meaning
P-1	none	Disable the split horizon
	simple	Configure the split horizon as simple
	poison-reverse	Configure the split horizon as poison-reverse

48.1.10 ip rip update-timer

Configure the RIP update timer on the router.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip rip update-timer <P-1>`

Parameter	Value	Meaning
P-1	1..1000	Configure the update timer.

48.2 ip

IP interface commands.

48.2.1 ip rip authentication type

Configure the RIP authentication type.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip rip authentication type <P-1>`

Parameter	Value	Meaning
P-1	none	Configure the authentication type as none (Key and key ID is not required).
	simple	Configure the authentication type as simple (Key ID is not required).
	md5	Configure the authentication type as md5 for the interface.

48.2.2 ip rip authentication key

Configure the authentication key. Entering a key helps protect your network information such as routing tables from being tampered with.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip rip authentication key <P-1>`

Parameter	Value	Meaning
P-1	string	<key> Configure the authentication key.

48.2.3 ip rip authentication key-id

Configure authentication key-id for md5 authentication.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip rip authentication key-id <P-1>

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

48.2.4 ip rip operation

Enable or disable RIP on a port.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip rip operation

- no ip rip operation
  Disable the option
  - Mode: Interface Range Mode
  - Privilege Level: Operator
  - Format: no ip rip operation

48.2.5 ip rip send-version

Configure the RIP version to send RIP updates on an interface.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip rip send-version <P-1>

Parameter	Value	Meaning
P-1	none	Do not send RIP update on this interface.
	ripv1	Configure the send version type as ripv1.
	rip1c	Configure the send version type as rip1c.
	ripv2	Configure the send version type as ripv2.

48.2.6 ip rip receive-version

Configure the RIP version to receive RIP updates on an interface.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip rip receive-version <P-1>

Parameter	Value	Meaning
P-1	ripv1	Configure the receive version type as ripv1.
	ripv2	Configure the receive version type as ripv2.
	both	Configure the receive version type as both.
	none	Do not receive RIP update on this interface.

48.3 show

Display device options and settings.

48.3.1 show ip rip global

Display the RIP global configurations.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip rip global

48.3.2 show ip rip interface

Display the RIP interface related information.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip rip interface [<P-1>]

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

48.3.3 show ip rip statistics global

Display the global statistics.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip rip statistics global

48.3.4 show ip rip statistics interface

Display the interface statistics.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip rip statistics interface [<P-1>]

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

48.3.5 show ip rip re-distribute

Display the RIP re-distribute related information.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip rip re-distribute <P-1>

Parameter	Value	Meaning
P-1	connected	Select the source protocol as connected.
	static	Select the source protocol as static.
	ospf	Select the source protocol as OSPF.

49 Virtual Router Redundancy Protocol (VRRP)

49.1 ip

Set IP parameters.

49.1.1 ip vrrp operation

Enables or disables VRRP globally on the device.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip vrrp operation`

- `no ip vrrp operation`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no ip vrrp operation`

49.1.2 ip vrrp trap auth-failure

Enable or disable the sending of a trap if this router detects an authentication failure on any of its VRRP interfaces.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip vrrp trap auth-failure`

- `no ip vrrp trap auth-failure`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no ip vrrp trap auth-failure`

49.1.3 ip vrrp trap new-master

Enable or disable the sending of a trap if this router becomes new master for any of its VRRP interfaces.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip vrrp trap new-master`

- `no ip vrrp trap new-master`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no ip vrrp trap new-master`

49.1.4 ip vrrp domain

VRRP domain settings
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip vrrp domain <P-1> member-advertisement`

`member-advertisement`: Enables or disables sending of advertisements for members of this domain.

Parameter	Value	Meaning
P-1	1..8	Enter a number in the given range.

- `no ip vrrp domain`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no ip vrrp domain <P-1> member-advertisement`

49.2 ip

IP interface commands.

49.2.1 ip vrrp add

Create a new VRRP instance.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip vrrp add <P-1> [priority <P-2>] [interval <P-3>] [preempt <P-4>] [advertisement-ip <P-5>] [preempt-delay <P-6>] [notify-ip <P-7>] [master-candidate <P-8>] [domain-id <P-9>] [domain-role <P-10>] [accept-mode <P-11>]`

`[priority]`: Priority of the virtual router ..... default 100
`[interval]`: Advertisement Interval in ms ..... default 1000
`[preempt]`: Enables or disabled preempt mode ... default enabled
`[advertisement-ip]`: Advertisement ip address ..... default 224.0.0.18
`[preempt-delay]`: Preemption delay ..... default 0
`[notify-ip]`: Linkdown notification address ..... default none
`[master-candidate]`: Master Candidate Address ..... default 0.0.0.0
`[domain-id]`: Domain id ..... default none
`[domain-role]`: Role within the domain ..... default none
`[accept-mode]`: Accept ICMP Echo Requests ..... default enabled

Parameter	Value	Meaning
P-1	1..255	Enter a virtual router ID.
P-2	1..254	Enter a priority value.
P-3	100..25500	Enter a number in the given range.
P-4	enable	Enable the option.
	disable	Disable the option.
P-5	a.b.c.d	Ipv4 address.
P-6	0..65535	Enter a number between 0 and 65535.
P-7	a.b.c.d	Ipv4 address.
P-8	a.b.c.d	Ipv4 address.
P-9	1..8	Enter a number in the given range.
P-10	none	None
	member	Member
	supervisor	Supervisor
P-11	enable	Enable the option.
	disable	Disable the option.

49.2.2 ip vrrp modify

Modify parameters of a VRRP instance.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip vrrp modify <P-1> [priority <P-2>] [interval <P-3>] [preempt <P-4>] [advertisement-ip <P-5>] [preempt-delay <P-6>] [notify-ip <P-7>] [master-candidate <P-8>] [domain-id <P-9>] [domain-role <P-10>] [accept-mode <P-11>]`

`[priority]`: Priority of the virtual router
`[interval]`: Advertisement Interval in milliseconds
`[preempt]`: Enables or disabled preemption mode
`[advertisement-ip]`: Advertisement ip address
`[preempt-delay]`: Preemption delay
`[notify-ip]`: Linkdown notification address
`[master-candidate]`: The IP Address that shows as Master IP Address when this Virtual Router becomes Master
`[domain-id]`: Domain id
`[domain-role]`: Role within the domain
`[accept-mode]`: Accept ICMP Echo Requests

Parameter	Value	Meaning
P-1	1..255	Enter a virtual router ID.
P-2	1..254	Enter a priority value.
P-3	100..25500	Enter a number in the given range.
P-4	enable	Enable the option.
	disable	Disable the option.
P-5	a.b.c.d	Ipv4 address.
P-6	0..65535	Enter a number between 0 and 65535.
P-7	a.b.c.d	Ipv4 address.

Parameter	Value	Meaning
P-8	a.b.c.d	Ipv4 address.
P-9	1..8	Enter a number in the given range.
P-10	none	None
	member	Member
	supervisor	Supervisor
P-11	enable	Enable the option.
	disable	Disable the option.

49.2.3 ip vrrp delete

Delete a VRRP instance.

- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip vrrp delete <P-1>

Parameter	Value	Meaning
P-1	1..255	Enter a virtual router ID.

49.2.4 ip vrrp enable

Enable a VRRP instance.

- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip vrrp enable <P-1>

Parameter	Value	Meaning
P-1	1..255	Enter a virtual router ID.

49.2.5 ip vrrp disable

Disable a VRRP instance.

- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip vrrp disable <P-1>

Parameter	Value	Meaning
P-1	1..255	Enter a virtual router ID.

49.2.6 ip vrrp virtual-address add

Add a virtual address.

- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip vrrp virtual-address add <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..255	Enter a virtual router ID.
P-2	A.B.C.D	IP address.

49.2.7 ip vrrp virtual-address delete

Delete a virtual address.

- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip vrrp virtual-address delete <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..255	Enter a virtual router ID.
P-2	A.B.C.D	IP address.

49.2.8 ip vrrp track add

Add a tracking object to the vrrp instance.

- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip vrrp track add <P-1> <P-2> [decrement <P-3>]

[decrement]: Configure the decrement value. Default is 20

Parameter	Value	Meaning
P-1	1..255	Enter a virtual router ID.
P-2	string	Track instance.
P-3	1..253	Enter the decrement value. The priority will be decremented by the configured value

49.2.9 ip vrrp track modify

Modify a tracking object to the vrrp instance.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip vrrp track modify <P-1> <P-2> decrement <P-3>

decrement: Configure the decrement value. Default is 20

Parameter	Value	Meaning
P-1	1..255	Enter a virtual router ID.
P-2	string	Track instance.
P-3	1..253	Enter the decrement value. The priority will be decremented by the configured value

49.2.10 ip vrrp track delete

Delete a tracking object to the vrrp instance.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip vrrp track delete <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..255	Enter a virtual router ID.
P-2	string	Track instance.

49.3 show

Display device options and settings.

49.3.1 show ip vrrp interface

Display the parameters of one VRRP instances.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip vrrp interface [<P-1> [<P-2>]]

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	1..255	Enter a virtual router ID.

49.3.2 show ip vrrp global

Display the global VRRP parameters.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip vrrp global

49.3.3 show ip vrrp domains

Display the VRRP domain table.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip vrrp domains

50 Address Resolution Protocol (IP ARP)

50.1 ip

Set IP parameters.

50.1.1 ip arp add

Add a static arp entry.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip arp add <P-1> <P-2>

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	aa:bb:cc:dd:ee:ff	MAC address.

50.1.2 ip arp delete

Delete a static arp entry.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip arp delete <P-1>

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

50.1.3 ip arp enable

Enable a static arp entry.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip arp enable <P-1>

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

50.1.4 ip arp disable

Disable a static arp entry.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip arp disable <P-1>

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

50.1.5 ip arp timeout

Configure ARP entry age-out time (in seconds).
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip arp timeout <P-1>

Parameter	Value	Meaning
P-1	15..21600	Enter the arp response time.

50.1.6 ip arp response-time

Configure ARP request response timeout (in seconds).
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip arp response-time <P-1>

Parameter	Value	Meaning
P-1	1..10	Enter the arp response time.

50.1.7 ip arp retries

Configure ARP count of maximum requests for retries.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip arp retries <P-1>

Parameter	Value	Meaning
P-1	0..10	Enter the arp max retries.

50.1.8 ip arp dynamic-renew

Configure if dynamic ARP Entries should be automatically renewed when they age out.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip arp dynamic-renew

- no ip arp dynamic-renew
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no ip arp dynamic-renew

50.1.9 ip arp selective-learning

Enables the Selective ARP Learning Mode on the router.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip arp selective-learning

- no ip arp selective-learning
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no ip arp selective-learning

50.2 show

Display device options and settings.

50.2.1 show ip arp info

Display the ARP summary information.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip arp info

50.2.2 show ip arp table

Display the ARP cache entries.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip arp table

50.2.3 show ip arp static

Display the static ARP entries.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip arp static

50.2.4 show ip arp entry

Display the ARP cache entry.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip arp entry <P-1>

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

50.3 clear

Clear several items.

50.3.1 clear ip arp-cache

Clear the router's ARP table (cache).

- Mode: `Privileged Exec Mode`
- Privilege Level: `Operator`
- Format: `clear ip arp-cache [gateway]`

`[gateway]`: Also clear gateway ARP entries.

51 IP UDP Helper (IP Helper)

51.1 ip

Set IP parameters.

51.1.1 ip udp-helper operation

Enable or disable the IP helper and DHCP relay.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip udp-helper operation`

- `no ip udp-helper operation`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no ip udp-helper operation`

51.1.2 ip udp-helper server add

Add a global relay agent to process DHCP client requests and UDP broadcast packets received on any interface.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip udp-helper server add <P-1> <P-2>`

Parameter	Value	Meaning
`P-1`	default	Port 0. Relay only dhcp, time, winnameserver, tacacs, dns,
	dhcp	tftp, netbios-ns and netbios-dgm.
	dns	Port 67
	isakmp	Port 53
	mobile-ip	Port 500
	winnameserver	Port 434
	netbios-dgm	Port 42
	netbios-ns	Port 138
	ntp	Port 137
	pim-auto-rp	Port 123
	rip	Port 496
	tacacs	Port 520
	tftp	Port 49
	time	Port 69
	<0..65535>	Port 37
		Port number
`P-2`	A.B.C.D	`IP address.`

51.1.3 ip udp-helper server delete

Delete a global relay agent.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip udp-helper server delete <P-1> <P-2>`

Parameter	Value	Meaning
`P-1`	default	Port 0. Relay only dhcp, time, winnameserver, tacacs, dns,
	dhcp	tftp, netbios-ns and netbios-dgm.
	dns	Port 67
	isakmp	Port 53
	mobile-ip	Port 500
	winnameserver	Port 434
	netbios-dgm	Port 42
	netbios-ns	Port 138
	ntp	Port 137
	pim-auto-rp	Port 123
	rip	Port 496
	tacacs	Port 520
	tftp	Port 49
	time	Port 69
	<0..65535>	Port 37
		Port number
`P-2`	A.B.C.D	`IP address.`

51.1.4 ip udp-helper server enable

Enable a global relay agent to process DHCP client requests and UDP broadcast packets received on any interface.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip udp-helper server enable <P-1> <P-2>`

Parameter	Value	Meaning
P-1	default	Port 0. Relay only dhcp, time, winnameserver, tacacs, dns,
	dhcp	tftp, netbios-ns and netbios-dgm.
	dns	Port 67
	isakmp	Port 53
	mobile-ip	Port 500
	winnameserver	Port 434
	netbios-dgm	Port 42
	netbios-ns	Port 138
	ntp	Port 137
	pim-auto-rp	Port 123
	rip	Port 496
	tacacs	Port 520
	tftp	Port 49
	time	Port 69
	<0..65535>	Port 37
		Port number
P-2	A.B.C.D	IP address.

51.1.5 ip udp-helper server disable

Disable a global relay agent from processing DHCP client requests and UDP broadcast packets received on any interface.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip udp-helper server disable <P-1> <P-2>`

Parameter	Value	Meaning
P-1	default	Port 0. Relay only dhcp, time, winnameserver, tacacs, dns,
	dhcp	tftp, netbios-ns and netbios-dgm.
	dns	Port 67
	isakmp	Port 53
	mobile-ip	Port 500
	winnameserver	Port 434
	netbios-dgm	Port 42
	netbios-ns	Port 138
	ntp	Port 137
	pim-auto-rp	Port 123
	rip	Port 496
	tacacs	Port 520
	tftp	Port 49
	time	Port 69
	<0..65535>	Port 37
		Port number
P-2	A.B.C.D	IP address.

51.1.6 ip udp-helper maxhopcount

Configure the DHCP relay maximum hop count.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip udp-helper maxhopcount <P-1>`

Parameter	Value	Meaning
P-1	1..16	Enter a number in the given range.

51.1.7 ip udp-helper minwaittime

Configure DHCP relay minimum wait time in seconds.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip udp-helper minwaittime <P-1>`

Parameter	Value	Meaning
P-1	0..100	Enter a number in the given range.

51.1.8 ip udp-helper cidoptmode

Enable or disable DHCP relay circuit id option mode.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip udp-helper cidoptmode`

- `no ip udp-helper cidoptmode`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no ip udp-helper cidoptmode`

51.2 ip

IP interface commands.

51.2.1 ip udp-helper server add

Add a relay agent to process DHCP client requests and UDP broadcast packets received on a specific interface.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip udp-helper server add <P-1> <P-2>`

Parameter	Value	Meaning
P-1	default	Port 0. Relay only dhcp, time, winnameserver, tacacs, dns,
	dhcp	tftp, netbios-ns and netbios-dgm.
	dns	Port 67
	isakmp	Port 53
	mobile-ip	Port 500
	winnameserver	Port 434
	netbios-dgm	Port 42
	netbios-ns	Port 138
	ntp	Port 137
	pim-auto-rp	Port 123
	rip	Port 496
	tacacs	Port 520
	tftp	Port 49
	time	Port 69
	<0..65535>	Port 37
		Port number
P-2	A.B.C.D	IP address.

51.2.2 ip udp-helper server delete

Delete a relay agent from a specific interface.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip udp-helper server delete <P-1> <P-2>`

Parameter	Value	Meaning
P-1	default	Port 0. Relay only dhcp, time, winnameserver, tacacs, dns,
	dhcp	tftp, netbios-ns and netbios-dgm.
	dns	Port 67
	isakmp	Port 53
	mobile-ip	Port 500
	winnameserver	Port 434
	netbios-dgm	Port 42
	netbios-ns	Port 138
	ntp	Port 137
	pim-auto-rp	Port 123
	rip	Port 496
	tacacs	Port 520
	tftp	Port 49
	time	Port 69
	<0..65535>	Port 37
		Port number
P-2	A.B.C.D	IP address.

51.2.3 ip udp-helper server enable

Enable a relay agent to process DHCP client requests and UDP broadcast packets received on a specific interface.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip udp-helper server enable <P-1> <P-2>`

Parameter	Value	Meaning
P-1	default	Port 0. Relay only dhcp, time, winnameserver, tacacs, dns,
	dhcp	tftp, netbios-ns and netbios-dgm.
	dns	Port 67
	isakmp	Port 53
	mobile-ip	Port 500
	winnameserver	Port 434
	netbios-dgm	Port 42
	netbios-ns	Port 138
	ntp	Port 137
	pim-auto-rp	Port 123
	rip	Port 496
	tacacs	Port 520
	tftp	Port 49
	time	Port 69
	<0..65535>	Port 37
		Port number
P-2	A.B.C.D	IP address.

51.2.4 ip udp-helper server disable

Disable a relay agent from processing DHCP client requests and UDP broadcast packets received on a specific interface.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip udp-helper server disable <P-1> <P-2>`

Parameter	Value	Meaning
P-1	default	Port 0. Relay only dhcp, time, winnameserver, tacacs, dns,
	dhcp	tftp, netbios-ns and netbios-dgm.
	dns	Port 67
	isakmp	Port 53
	mobile-ip	Port 500
	winnameserver	Port 434
	netbios-dgm	Port 42
	netbios-ns	Port 138
	ntp	Port 137
	pim-auto-rp	Port 123
	rip	Port 496
	tacacs	Port 520
	tftp	Port 49
	time	Port 69
	<0..65535>	Port 37
		Port number
P-2	A.B.C.D	IP address.

51.3 ip

IP interface commands.

51.3.1 ip udp-helper server add

Add a relay agent to process DHCP client requests and UDP broadcast packets received on a specific interface.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip udp-helper server add <P-1> <P-2>`

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	A.B.C.D	IP address.

51.3.2 ip udp-helper server delete

Delete a relay agent from a specific interface.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip udp-helper server delete <P-1> <P-2>

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	A.B.C.D	IP address.

51.3.3 ip udp-helper server enable

Enable a relay agent to process DHCP client requests and UDP broadcast packets received on a specific interface.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip udp-helper server enable <P-1> <P-2>

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	A.B.C.D	IP address.

51.3.4 ip udp-helper server disable

Disable a relay agent from processing DHCP client requests and UDP broadcast packets received on a specific interface.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip udp-helper server disable <P-1> <P-2>

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	A.B.C.D	IP address.

51.4 show

Display device options and settings.

51.4.1 show ip udp-helper status

Display the IP helper and DHCP relay status information.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip udp-helper status

51.4.2 show ip udp-helper global

Display the DHCP and UDP relays defined globally.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip udp-helper global

51.4.3 show ip udp-helper interface

Display the DHCP and UDP relays defined for specific interfaces.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip udp-helper interface [<P-1>]

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

51.4.4 show ip udp-helper interface

Display the DHCP and UDP relays defined for specific interfaces.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip udp-helper interface [<P-1>]

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

51.4.5 show ip udp-helper statistics

Display the IP helper and DHCP relay statistics.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show ip udp-helper statistics`

51.5 clear

Clear several items.

51.5.1 clear ip udp-helper

Reset IP helper and DHCP relay statistics.

- Mode: `Privileged Exec Mode`
- Privilege Level: `Operator`
- Format: `clear ip udp-helper`

52 IP Source Guard (IPSG)

52.1 ip

Set IP parameters.

52.1.1 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.

52.1.2 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

52.1.3 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.	

52.1.4 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.

52.1.5 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.

52.2 clear

Clear several items.

52.2.1 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.	

52.3 ip

IP interface commands.

52.3.1 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

52.3.2 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

52.4 show

Display device options and settings.

52.4.1 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

52.4.2 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.

53 IP Subnet VLAN

53.1 vlan

Creation and configuration of VLANS.

53.1.1 vlan association subnet

Configure Subnet association to VLAN.

- Mode: `VLAN Database Mode`
- Privilege Level: `Operator`
- Format: `vlan association subnet <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	1..4042	Enter the VLAN ID.

- `no vlan association subnet`
  Disable the option
  - Mode: `VLAN Database Mode`
  - Privilege Level: `Operator`
  - Format: `no vlan association subnet <P-1> <P-2> <P-3>`

53.2 show

Display device options and settings.

53.2.1 show vlan association subnet

Display the Subnet association to VLAN entries.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show vlan association subnet [<P-1>]`

Parameter	Value	Meaning
P-1	a.b.c.d-e.f.g.h	IP address and mask e.g. 192.168.1.1-255.255.255.0 .

54 Internet Protocol Version 4 (IPv4)

54.1 network

Configure the inband and outband connectivity.

54.1.1 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

54.1.2 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.

54.1.3 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.

54.2 clear

Clear several items.

54.2.1 clear arp-table-switch

Clear the agent's ARP table (cache).

- Mode: Privileged Exec Mode
- Privilege Level: Operator
- Format: clear arp-table-switch

54.3 show

Display device options and settings.

54.3.1 show network parms

Display the network settings.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show network parms

54.3.2 show network services

Display the opened UDP and TCP ports.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show network services

54.3.3 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

54.4 show

Display device options and settings.

54.4.1 show arp

Display the ARP table.

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

55 Internet Protocol Version 6 (IPv6)

55.1 network

Configure the inband and outband connectivity.

55.1.1 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.

55.1.2 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

55.1.3 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

55.1.4 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

55.1.5 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

55.1.6 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.

55.1.7 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

55.1.8 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.

55.1.9 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

55.2 show

Display device options and settings.

55.2.1 show network ipv6 neighbors

Show the table of neighbors.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show network ipv6 neighbors

55.2.2 show network ipv6 address all

All IPv6 addresses.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show network ipv6 address all

55.2.3 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

55.2.4 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

55.2.5 show network ipv6 global

Display the global IPv6 information.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show network ipv6 global

56 ICMP Router Discovery Protocol (IRDP)

56.1 ip

IP interface commands.

56.1.1 ip irdp operation

This command enables/disables Router Discovery on the interface.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip irdp operation`

- `no ip irdp operation`
  Disable the option
  - Mode: `Interface Range Mode`
  - Privilege Level: `Operator`
  - Format: `no ip irdp operation`

56.1.2 ip irdp address

Configure the address to be used to advertise the router. The valid options are 224.0.0.1 and 255.255.255.255.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip irdp address <P-1>`

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

56.1.3 ip irdp holdtime

Configure the value of holdtime of the router advertisement (Range: maxadvertinterval-9000).
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip irdp holdtime <P-1>`

Parameter	Value	Meaning
P-1	4..9000	Enter a number in the given range.

56.1.4 ip irdp maxadvertinterval

Configure the maxtime between sending router advertisement.(Range: minadvertinterval-holdtime).
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip irdp maxadvertinterval <P-1>`

Parameter	Value	Meaning
P-1	4..1800	Enter a number in the given range.

56.1.5 ip irdp minadvertinterval

Configure the mintime between sending router advertisement. The value must be less than or equal to maxadvertinterval.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip irdp minadvertinterval <P-1>`

Parameter	Value	Meaning
P-1	3..1800	Enter a number in the given range.

56.1.6 ip irdp preference

Configure the preferability of address as default router address.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip irdp preference <P-1>`

Parameter	Value	Meaning
P-1	0..2147483647	Enter a number in the given range.

56.2 show

Display device options and settings.

56.2.1 show ip irdp

Display the Router Discovery information.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show ip irdp [<P-1>]`

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

57 Inter Range Instrumentation Group IRIG-B

57.1 irig-b

Set IRIG-B parameters

57.1.1 irig-b operation

Enable or disable the IRIG-B output.
- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `irig-b operation`

- `no irig-b operation`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Administrator`
  - Format: `no irig-b operation`

57.1.2 irig-b mode

Set IRIG-B mode
- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `irig-b mode <P-1>`

Parameter	Value	Meaning
P-1	b000	Mode IRIG-B000 (BCDtoy, CF, SBS)
	b001	Mode IRIG-B001 (BCDtoy, CF)
	b002	Mode IRIG-B002 (BCDtoy)
	b003	Mode IRIG-B003 (BCDtoy, SBS)
	b004	Mode IRIG-B004 (BCDtoy, BCDyear, CF, SBS)
	b005	Mode IRIG-B005 (BCDtoy, BCDyear, CF)
	b006	Mode IRIG-B006 (BCDtoy, BCDyear)
	b007	Mode IRIG-B007 (BCDtoy, BCDyear, SBS)

57.1.3 irig-b pps

Set IRIG-B pps output parameters
- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `irig-b pps`

- `no irig-b pps`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Administrator`
  - Format: `no irig-b pps`

57.1.4 irig-b time

Set IRIG-B time mode
- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `irig-b time <P-1>`

Parameter	Value	Meaning
P-1	utc	Transmit UTC.
	local	Transmit local time.

57.2 show

Display device options and settings.

57.2.1 show irig-b

Display the IRIG-B settings.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show irig-b`

58 Ring Coupling

58.1 ring-coupling

Configure the ring/net coupling settings.

58.1.1 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.	
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.	

58.1.2 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.	

58.1.3 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.
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.

58.1.4 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.	

58.1.5 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.	

58.2 show

Display device options and settings.

58.2.1 show ring-coupling global

Display the ring coupling settings.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ring-coupling global

58.2.2 show ring-coupling status

Display the ring coupling states.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ring-coupling status

59 License Manager

59.1 license

Configure licensing settings.

59.1.1 license level

Sets the software level of the device. The change needs a config save and a reboot to take effect.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: license level <P-1>

Parameter	Value	Meaning
P-1	default	Default software level of the device
	2S	Software Layer 2 Standard
	2A	Software Layer 2 Advanced
	3S	Software Layer 3 Standard

59.1.2 license package

Enable or disable a license package
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: license package <P-1>

Parameter	Value	Meaning
P-1	UR	Unicast Routing
	MR	Multicast Routing (includes Unicast Routing)

- no license package
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Administrator
  - Format: no license package <P-1>

59.2 show

Display device options and settings.

59.2.1 show license global

Display the global information about the license of device software.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show license global

59.2.2 show license package

Display the license pakages of the device.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show license package [<P-1>]

Parameter	Value	Meaning
P-1	0..4294967294	Enter a number in the given range.

60 Link Backup

60.1 link-backup

Configure Link Backup parameters.

60.1.1 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`

60.2 link-backup

Configure Link Backup parameters.

60.2.1 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.`

60.2.2 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.	

60.2.3 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.`

Parameter	Value	Meaning
P-5	enable	Enable the option.
	disable	Disable the option.

60.3 show

Display device options and settings.

60.3.1 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

60.3.2 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.	

61 Link Layer Discovery Protocol (LLDP)

61.1 lldp

Configure of Link Layer Discovery Protocol.

61.1.1 lldp operation

Enable or disable the LLDP operational state.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `lldp operation`

- `no lldp operation`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no lldp operation`

61.1.2 lldp 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.

61.1.3 lldp 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.

61.1.4 lldp 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.

61.1.5 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)

61.1.6 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.

61.1.7 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.

61.2 show

Display device options and settings.

61.2.1 show lldp global

Display the LLDP global configurations.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show lldp global

61.2.2 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.	

61.2.3 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.	

61.3 lldp

Configure of Link Layer Discovery Protocol on a port.

61.3.1 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.

61.3.2 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.

61.3.3 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.

61.3.4 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

61.3.5 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>

61.3.6 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>

61.3.7 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>

61.3.8 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>

61.3.9 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

61.3.10 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>

61.3.11 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

61.3.12 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`

61.3.13 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>`

61.3.14 lldp tlv sys-contact

Enable or disable system contact TLV transmission.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `lldp tlv sys-contact <P-1>`

Parameter	Value	Meaning
`P-1`	[cr]	Enable the Bit.

- `no lldp tlv sys-contact`
  Disable the option
  - Mode: `Interface Range Mode`
  - Privilege Level: `Operator`
  - Format: `no lldp tlv sys-contact <P-1>`

61.3.15 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>`

61.3.16 lldp tlv sys-location

Enable or disable system location TLV transmission.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `lldp tlv sys-location <P-1>`

Parameter	Value	Meaning
`P-1`	[cr]	Enable the Bit.

- no lldp tlv sys-location
  Disable the option
  - Mode: Interface Range Mode
  - Privilege Level: Operator
  - Format: no lldp tlv sys-location <P-1>

61.3.17 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>

61.3.18 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

61.3.19 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

61.3.20 lldp tlv igmp

Enable or disable igmp TLV transmission.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: lldp tlv igmp

- no lldp tlv igmp
  Disable the option
  - Mode: Interface Range Mode
  - Privilege Level: Operator
  - Format: no lldp tlv igmp

61.3.21 lldp tlv portsec

Enable or disable portsec TLV transmission.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: lldp tlv portsec

- `no lldp tlv portsec`
  Disable the option
  - Mode: `Interface Range Mode`
  - Privilege Level: `Operator`
  - Format: `no lldp tlv portsec`

61.3.22 lldp tlv ptp

Enable or disable PTP TLV transmission.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `lldp tlv ptp`

- `no lldp tlv ptp`
  Disable the option
  - Mode: `Interface Range Mode`
  - Privilege Level: `Operator`
  - Format: `no lldp tlv ptp`

61.3.23 lldp tlv pnio

Enable or disable PROFINET TLV transmission.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `lldp tlv pnio`

- `no lldp tlv pnio`
  Disable the option
  - Mode: `Interface Range Mode`
  - Privilege Level: `Operator`
  - Format: `no lldp tlv pnio`

61.3.24 lldp tlv pnio-alias

Enable or disable PROFINET alias TLV transmission.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `lldp tlv pnio-alias`

- `no lldp tlv pnio-alias`
  Disable the option
  - Mode: `Interface Range Mode`
  - Privilege Level: `Operator`
  - Format: `no lldp tlv pnio-alias`

61.3.25 lldp tlv pnio-mrp

Enable or disable PROFINET MRP TLV transmission.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `lldp tlv pnio-mrp`

- `no lldp tlv pnio-mrp`
  Disable the option
  - Mode: `Interface Range Mode`
  - Privilege Level: `Operator`
  - Format: `no lldp tlv pnio-mrp`

62 Media Endpoint Discovery LLDP-MED

62.1 lldp

Configure of Link Layer Discovery Protocol on a port.

62.1.1 lldp med confignotification

Enable or disable LLDP-MED notification send for this interface.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `lldp med confignotification`

- `no lldp med confignotification`
  Disable the option
  - Mode: `Interface Range Mode`
  - Privilege Level: `Operator`
  - Format: `no lldp med confignotification`

62.1.2 lldp med transmit-tlv capabilities

Include/Exclude LLDP MED capabilities TLV.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `lldp med transmit-tlv capabilities`

- `no lldp med transmit-tlv capabilities`
  Disable the option
  - Mode: `Interface Range Mode`
  - Privilege Level: `Operator`
  - Format: `no lldp med transmit-tlv capabilities`

62.1.3 lldp 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 lldp med transmit-tlv network-policy`
  Disable the option
  - Mode: `Interface Range Mode`
  - Privilege Level: `Operator`
  - Format: `no lldp med transmit-tlv network-policy`

62.2 lldp

Configure of Link Layer Discovery Protocol.

62.2.1 lldp 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.

62.3 show

Display device options and settings.

62.3.1 show lldp 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`

62.3.2 show lldp 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.	

62.3.3 show lldp 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.	

62.3.4 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.	

62.3.5 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.	

63 Logging

63.1 logging

Logging configuration.

63.1.1 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.

63.1.2 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 and 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

63.1.3 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

Parameter	Value	Meaning
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 and 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
P-6	systemlog	the system event log entries
	audittrail	the audit trail log entries

63.1.4 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

63.1.5 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

63.1.6 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

63.1.7 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.
P-3	udp	The UDP-based transmission.
	tls	The TLS-based transmission.
P-4	1..65535	Port number to be used

Parameter	Value	Meaning
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 and 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
P-6	systemlog	the system event log entries
	audittrail	the audit trail log entries

63.1.8 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

63.1.9 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

63.1.10 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 and 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

63.1.11 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

63.1.12 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 and 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

63.1.13 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

63.1.14 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

63.1.15 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

63.1.16 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 and 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

63.1.17 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

63.1.18 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

63.1.19 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

63.1.20 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 and 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

63.1.21 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 and 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

63.1.22 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

63.1.23 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

63.1.24 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

63.1.25 logging email to-addr enable

Activate a destination address
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: logging email to-addr enable <P-1>

Parameter	Value	Meaning
P-1	1..10	Destination address entry index

63.1.26 logging email to-addr disable

Deactivate a destination address
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: logging email to-addr disable <P-1>

Parameter	Value	Meaning
P-1	1..10	Destination address entry index

63.1.27 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

Parameter	Value	Meaning
P-4	string	Enter a user-defined text, max. 255 characters.
P-5	string	Enter a user-defined text, max. 255 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).

63.1.28 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

63.1.29 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. 255 characters.
P-5	string	Enter a user-defined text, max. 255 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).

63.1.30 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)

63.1.31 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

63.1.32 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)

63.1.33 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.

63.2 show

Display device options and settings.

63.2.1 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

63.2.2 show logging traplogs

Display the trap log entries.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show logging traplogs

63.2.3 show logging console

Display the console logging configurations.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show logging console

63.2.4 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.

63.2.5 show logging syslog

Display the current syslog operational setting.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show logging syslog

63.2.6 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

63.2.7 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

63.2.8 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

63.2.9 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

63.2.10 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

63.2.11 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

63.3 copy

Copy different kinds of items.

63.3.1 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.

63.3.2 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> [source-interface <P-2>]

[source-interface]: Specify the source-interface to be used (physical or logical). The frames will not necessarily be sent on this interface, only the IP address of the interface will be used as source IP.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.
P-2	slot no./port no.	

63.3.3 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> [source-interface <P-4>]

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.
[source-interface]: Specify the source-interface to be used (physical or logical). The frames will not necessarily be sent on this interface, only the IP address of the interface will be used as source IP.

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.
P-4	slot no./port no.	

63.3.4 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.

63.3.5 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> [source-interface <P-2>]

[source-interface]: Specify the source-interface to be used (physical or logical). The frames will not necessarily be sent on this interface, only the IP address of the interface will be used as source IP.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.
P-2	slot no./port no.	

63.3.6 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.

63.3.7 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> [source-interface <P-2>]

[source-interface]: Specify the source-interface to be used (physical or logical). The frames will not necessarily be sent on this interface, only the IP address of the interface will be used as source IP.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.
P-2	slot no./port no.	

63.3.8 copy mailcacert remote

Copy CA Certificate/CRL file (*.pem) from the remote AD server to the specified destination.
- Mode: Privileged Exec Mode
- Privilege Level: Administrator
- Format: copy mailcacert remote <P-1> nvm [<P-2>] [source-interface <P-3>]

nvm: Copy CA Certificate/CRL file (*.pem) from the remote AD server to the device.
[source-interface]: Specify the source-interface to be used (physical or logical).

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.
P-3	slot no./port no.	

63.3.9 copy mailcacert envm

Copy CA Certificate/CRL 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/CRL 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.

63.3.10 copy syslogcacert remote

Copy CA Certificate/CRL 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>] [source-interface <P-3>]

nvm: Copy CA Certificate/CRL file (*.pem) from the remote AD server to the device.
[source-interface]: Specify the source-interface to be used (physical or logical).

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.
P-3	slot no./port no.	

63.3.11 copy syslogcacert envm

Copy CA certificate/CRL 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/CRL 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.

63.4 clear

Clear several items.

63.4.1 clear logging buffered

Clear buffered log from memory.
- Mode: Privileged Exec Mode
- Privilege Level: Administrator
- Format: clear logging buffered

63.4.2 clear logging persistent

Clear persistent log from memory.
- Mode: Privileged Exec Mode
- Privilege Level: Administrator
- Format: clear logging persistent

63.4.3 clear logging email statistics

Clear email statistics
- Mode: Privileged Exec Mode
- Privilege Level: Administrator
- Format: clear logging email statistics

63.4.4 clear eventlog

Clear the event log entries from memory.
- Mode: Privileged Exec Mode
- Privilege Level: Administrator
- Format: clear eventlog

63.4.5 clear mailcacert all

Clear all Mail Certificate and CRL files.
- Mode: Privileged Exec Mode
- Privilege Level: Administrator
- Format: clear mailcacert all

63.4.6 clear syslogcacert all

Clear all Syslog Certificate and CRL files.
- Mode: Privileged Exec Mode
- Privilege Level: Administrator
- Format: clear syslogcacert all

64 Loop Protection

64.1 loop-protection

Configure loop protection settings.

64.1.1 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`

64.1.2 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).

64.1.3 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).

64.2 loop-protection

Configure loop protection settings for interfaces.

64.2.1 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`

64.2.2 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.

64.2.3 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.

64.2.4 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 for the given Sub-Ring ID (min.: 0, max.: 4042, default: 0).

64.2.5 loop-protection clear-statistics

Clear loop protection interface statistics.

- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: loop-protection clear-statistics

64.3 show

Display device options and settings.

64.3.1 show loop-protection global

Loop protection settings.

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

64.3.2 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.	

65 Parallel Redundancy Protocol (PRP)

65.1 prp

Configure parallel redundancy protocol (PRP) parameters and clear tables and counters.

65.1.1 prp operation

Enable or disable the parallel redundancy protocol (PRP).
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `prp operation`

- `no prp operation`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no prp operation`

65.1.2 prp instance

Configure PRP instances
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `prp instance <P-1> operation port-a port-b supervision evaluate send redbox-exclusively speed <P-2> dup-detection-aging <P-3>`

`operation`: Enable or disable the PRP instance.
`port-a`: Enable or disable the first port of the PRP line.
`port-b`: Enable or disable the second port of the PRP line.
`supervision`: Configure the PRP supervision tx and rx packet handling.
`evaluate`: Enable or disable evaluation of received supervision packets.
`send`: Enable or disable sending of supervision packets.
`redbox-exclusively`: Enable sending of supervision packets for this RedBox exclusively. Use the no form of the command to send supervision packets for each connected VDAN and this RedBox (if send is enabled).
`speed`: Configure the speed of LRE interfaces.
`dup-detection-aging`: Configure the duplicate detection aging time (in ms).

Parameter	Value	Meaning
P-1	1..1	Enter PRP instance number (only 1 supported).
P-2	100	100 Mbit/s
	1000	1000 Mbit/s
P-3	10..20000	Enter a number in the given range.

- `no prp instance`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no prp instance <P-1> operation port-a port-b supervision evaluate send redbox-exclusively speed dup-detection-aging`

65.2 show

Display device options and settings.

65.2.1 show prp global

Display the global preferences.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show prp global`

65.2.2 show prp instance

Display the PRP instances.

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

Parameter	Value	Meaning
P-1	1..1	Enter PRP instance number (only 1 supported).

65.2.3 show prp node-table

Display the node table (received supervision packets).

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show prp node-table [<P-1>]

Parameter	Value	Meaning
P-1	1..1	Enter PRP instance number (only 1 supported).

65.2.4 show prp proxy-node-table

Display the proxy node table.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show prp proxy-node-table [<P-1>]

Parameter	Value	Meaning
P-1	1..1	Enter PRP instance number (only 1 supported).

65.2.5 show prp counters

Display the PRP counters.

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

Parameter	Value	Meaning
P-1	1..1	Enter PRP instance number (only 1 supported).

65.3 clear

Clear several items.

65.3.1 clear prp proxy-node-table

Clear proxy-node-table.

- Mode: Privileged Exec Mode
- Privilege Level: Operator
- Format: clear prp proxy-node-table [<P-1>]

Parameter	Value	Meaning
P-1	1..1	Enter PRP instance number (only 1 supported).

65.3.2 clear prp node-table

Clear node-table (received supervision packets).

- Mode: Privileged Exec Mode
- Privilege Level: Operator
- Format: clear prp node-table [<P-1>]

Parameter	Value	Meaning
P-1	1..1	Enter PRP instance number (only 1 supported).

65.3.3 clear prp counters

Clear PRP counters.

- Mode: Privileged Exec Mode
- Privilege Level: Operator
- Format: clear prp counters [<P-1>]

Parameter	Value	Meaning
P-1	1..1	Enter PRP instance number (only 1 supported).

66 MAC Notification

66.1 mac

Set MAC parameters.

66.1.1 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`

66.1.2 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.

66.2 mac

Set MAC parameters.

66.2.1 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`

66.2.2 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.

66.3 mac

MAC interface commands.

66.3.1 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`

66.4 mac

MAC interface commands.

66.4.1 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`

66.5 show

Display device options and settings.

66.5.1 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`

66.5.2 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`

67 MAC Sec

67.1 mka

Configure the MACsec Key Agreement (MKA) settings.

67.1.1 mka policy add

Create an MKA policy.

- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `mka policy add <P-1>`

Parameter	Value	Meaning
P-1	string	MKA policy name Possible values: Alphanumeric ASCII character string with 1 to 16 characters.

67.1.2 mka policy delete

Delete an MKA policy.

- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `mka policy delete <P-1>`

Parameter	Value	Meaning
P-1	string	MKA policy name Possible values: Alphanumeric ASCII character string with 1 to 16 characters.

67.1.3 mka policy modify

Modify an MKA policy.

- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `mka policy modify <P-1> key-server-priority <P-2> cipher-suite <P-3> conf-offset <P-4> secure-announcements <P-5>`

`key-server-priority`: Configure the Key Server priority for an MKA participant.
`cipher-suite`: Configure the cipher suite for encrypting traffic with MACsec.
`conf-offset`: Configure the confidentiality offset for MACsec encryption.
`secure-announcements`: Configure the secure announcements for MACsec.

Parameter	Value	Meaning
P-1	string	MKA policy name Possible values: Alphanumeric ASCII character string with 1 to 16 characters.
P-2	0..255	<number> Key Server priority \n Possible values: 0 to 255.
P-3	gcm-aes-128	Set the value to gcm-aes-128.
	gcm-aes-256	Set the value to gcm-aes-256.
P-4	0	Set the confidentiality offset value to 0.
	30	Set the confidentiality offset value to 30.
	50	Set the confidentiality offset value to 50.
P-5	enable	Enable the option.
	disable	Disable the option.

67.2 key-chain

Configure a key chain and enter the key chain configuration mode.

67.2.1 key-chain macsec add

Add a key to the specified key chain.

- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `key-chain macsec add <P-1> <P-2>`

Parameter	Value	Meaning
P-1	string	Key chain name Possible values: Alphanumeric ASCII character string with 1 to 16 characters.
P-2	string	Key name Possible values: Hexadecimal character string with an even number of characters, 2 to 64 characters.

67.2.2 key-chain macsec delete

Delete a key from the specified key chain.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: key-chain macsec delete <P-1> <P-2>

Parameter	Value	Meaning
P-1	string	Key chain name Possible values: Alphanumeric ASCII character string with 1 to 16 characters.
P-2	string	Key name Possible values: Hexadecimal character string with an even number of characters, 2 to 64 characters.

67.2.3 key-chain macsec modify

Modify key information for the specified key chain.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: key-chain macsec modify <P-1> <P-2> cryptographic-algo <P-3> key-string <P-4> time-range <P-5>

cryptographic-algo: Configure the cryptographic algorithm of the key.
key-string: Configure the key string of the key.
time-range: Configure the time range for the key.
Note: Time ranges configured must not overlap.

Parameter	Value	Meaning
P-1	string	Key chain name Possible values: Alphanumeric ASCII character string with 1 to 16 characters.
P-2	string	Key name Possible values: Hexadecimal character string with an even number of characters, 2 to 64 characters.
P-3	gcm-aes-128	Set the value to gcm-aes-128.
	gcm-aes-256	Set the value to gcm-aes-256.
P-4	string	Key string Possible values: Hexadecimal character string with 0, 32 or 64 characters.
P-5	string	Time range Possible values: Alphanumeric ASCII character string with 0 to 31 characters.

67.3 macsec

Configure MACsec parameters on an interface.

67.3.1 macsec operation

Configure MACsec mode on an interface.

- Mode: Interface Range Mode
- Privilege Level: Administrator
- Format: macsec operation <P-1>

Parameter	Value	Meaning
P-1	disable	Set the MACsec operation to disabled.
	switch-to-switch	Set the MACsec operation to switch-to-switch. Note: Selected interface must not be a LAG member.

67.3.2 macsec replay-protection

Configure MACsec replay protection on an interface.
Note: For the configuration to take effect, MACsec must be disabled on interface.
- Mode: Interface Range Mode
- Privilege Level: Administrator
- Format: macsec replay-protection <P-1> window-size <P-2>

window-size: Configure MACsec window size for replay protection on an interface.

Parameter	Value	Meaning
P-1	enable	Enable the option.
	disable	Disable the option.
P-2	0..4294967295	Enter a number in the given range.

67.4 mka

Configure MACsec Key Agreement (MKA) by interface.

67.4.1 mka policy

Configure an MKA policy.
- Mode: Interface Range Mode
- Privilege Level: Administrator
- Format: mka policy <P-1>

Parameter	Value	Meaning
P-1	string	MKA policy name Possible values: Alphanumeric ASCII character string with 1 to 16 characters.

- no mka policy
  Disable the option
  - Mode: Interface Range Mode
  - Privilege Level: Administrator
  - Format: no mka policy

67.4.2 mka pre-shared-key

Configure an MKA pre-shared key-chain name.
- Mode: Interface Range Mode
- Privilege Level: Administrator
- Format: mka pre-shared-key <P-1>

Parameter	Value	Meaning
P-1	string	Pre-shared key Possible values: Alphanumeric ASCII character string with 0 to 16 characters.

- no mka pre-shared-key
  Disable the option
  - Mode: Interface Range Mode
  - Privilege Level: Administrator
  - Format: no mka pre-shared-key

67.5 show

Display device options and settings.

67.5.1 show macsec interface

Display the MACsec interface configuration.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show macsec interface <P-1>

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

67.5.2 show macsec status

Display the MACsec status configuration.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show macsec status <P-1>

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

67.5.3 show macsec statistics

Display the MACsec statistics configuration.

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

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

67.5.4 show mka policy

Display the MKA policy summary.

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

Parameter	Value	Meaning
P-1	string	MKA policy name Possible values: Alphanumeric ASCII character string with 1 to 16 characters.

67.5.5 show mka session summary

Display the status summary about the running MKA session on an interface.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show mka session summary <P-1>

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

67.5.6 show mka session detail

Display detailed status information about the running MKA session on an interface.

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

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

67.5.7 show mka statistics global

Display the global MKA statistics.

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

67.5.8 show mka statistics interface

Display the interface MKA statistics.

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

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

67.5.9 show key-chain

Display the configured key chain.

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

Parameter	Value	Meaning
P-1	string	Key chain name Possible values: Alphanumeric ASCII character string with 1 to 16 characters.

67.6 clear

Clear several items.

67.6.1 clear mka statistics interface

Resets the MKA statistics for the specified port.

- Mode: Privileged Exec Mode
- Privilege Level: Operator
- Format: clear mka statistics interface <P-1>

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

67.6.2 clear mka statistics all

Resets the MKA statistics for all ports.

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

67.6.3 clear macsec statistics interface

Resets the MACsec statistics for the specified port.

- Mode: Privileged Exec Mode
- Privilege Level: Operator
- Format: clear macsec statistics interface <P-1>

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

67.6.4 clear macsec statistics all

Resets the MACsec statistics for all ports.

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

68 MAC VLAN

68.1 vlan

Creation and configuration of VLANS.

68.1.1 vlan association mac

Configure an association between a MAC address and a VLAN.

- Mode: `VLAN Database Mode`
- Privilege Level: `Operator`
- Format: `vlan association mac <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 vlan association mac`
  Disable the option
  - Mode: `VLAN Database Mode`
  - Privilege Level: `Operator`
  - Format: `no vlan association mac <P-1> <P-2>`

68.2 show

Display device options and settings.

68.2.1 show vlan association mac

Display the association MAC address and VLAN table.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show vlan association mac [<P-1>]`

Parameter	Value	Meaning
`P-1`	aa:bb:cc:dd:ee:ff	`Enter a MAC address.`
	1..4042	`Enter a VLAN ID.`

69 Module Inventory Service

69.1 service-discovery

Specifies the global service discovery configuration.

69.1.1 service-discovery operation

Enable or disable service discovery.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `service-discovery operation`

- `no service-discovery operation`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no service-discovery operation`

69.1.2 service-discovery service inventory

Enable or disable module inventory service.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `service-discovery service inventory`

- `no service-discovery service inventory`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no service-discovery service inventory <P-1>`

69.2 service-discovery

Configures the service discovery port settings.

69.2.1 service-discovery monitor link

Enable or disable, if the link status of this port has to be monitored by module inventory service.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `service-discovery monitor link`

- `no service-discovery monitor link`
  Disable the option
  - Mode: `Interface Range Mode`
  - Privilege Level: `Operator`
  - Format: `no service-discovery monitor link`

69.2.2 service-discovery monitor poe

Enable or disable, if the POE status of this port has to be monitored by module inventory service.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `service-discovery monitor poe`

- `no service-discovery monitor poe`
  Disable the option
  - Mode: `Interface Range Mode`
  - Privilege Level: `Operator`
  - Format: `no service-discovery monitor poe`

69.3 show

Display device options and settings.

69.3.1 show service-discovery global

Displays the service discovery global configuration.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show service-discovery global`

69.3.2 show service-discovery port

Displays the service discovery port configuration.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show service-discovery port [<P-1>]`

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

70 Management Access

70.1 network

Configure the inband and outband connectivity.

70.1.1 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).

70.1.2 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>] [profinet-io <P-12>]

[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.
[profinet-io]: Configure if PROFINET 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.
P-12	enable	Enable the option.
	disable	Disable the option.

70.1.3 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.

70.1.4 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> profinet-io <P-12>

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.
profinet-io: Configure if PROFINET 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.
P-12	enable	Enable the option.
	disable	Disable the option.

70.1.5 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

70.1.6 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>

70.2 show

Display device options and settings.

70.2.1 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

70.2.2 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.

70.2.3 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

70.3 clear

Clear several items.

70.3.1 clear management-counters

Clear management access counters.
- Mode: Privileged Exec Mode
- Privilege Level: Operator
- Format: clear management-counters

71 Management Access Interface

71.1 physical-interfaces

Configure the parameters of the physical interfaces.

71.1.1 physical-interfaces envm operation

Enable or disable the external memory (ENVM). For the changes to take effect, save the settings and reboot the device.

- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `physical-interfaces envm operation`

- `no physical-interfaces envm operation`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Administrator`
  - Format: `no physical-interfaces envm operation`

71.1.2 physical-interfaces serial operation

Enable or disable the serial interface. For the changes to take effect, save the settings and reboot the device.

- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `physical-interfaces serial operation`

- `no physical-interfaces serial operation`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Administrator`
  - Format: `no physical-interfaces serial operation`

71.2 show

Display device options and settings.

71.2.1 show physical-interfaces envm

Display the current state and the state after next reboot of the external memory (ENVM).

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show physical-interfaces envm`

71.2.2 show physical-interfaces serial

Display the current state and the state after next reboot of the serial interface.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show physical-interfaces serial`

72 Management Address

72.1 network

Configure the inband and outband connectivity.

72.1.1 network management mac

Configure the locally administered MAC address.
- Mode: `Privileged Exec Mode`
- Privilege Level: `Operator`
- Format: `network management mac [local-address <P-1>]`

`[local-address]`: Enter the local admin MAC address (xx:xx:xx:xx:xx:xx).If the local address is nonzero, the device starts with this MAC address at the next boot. If the MAC address is changed, they must be stored by the configuration manager. A MAC address with a set multicast bit will not be accepted

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

72.1.2 network management port

Configure management access per port. Setting to 'all' will allowed access from all ports.
- Mode: `Privileged Exec Mode`
- Privilege Level: `Operator`
- Format: `network management port <P-1>`

Parameter	Value	Meaning
`P-1`	all or slot no./port no.	

72.2 show

Display device options and settings.

72.2.1 show network management mac

Display the MAC address settings.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show network management mac`

72.2.2 show network management port

Display the management access port.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show network management port`

73 Modbus

73.1 modbus-tcp

Configure Modbus TCP/IP server settings.

73.1.1 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`

73.1.2 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`

73.1.3 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

73.1.4 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).

73.2 show

Display device options and settings.

73.2.1 show modbus-tcp

Display the Modbus TCP/IP server settings.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show modbus-tcp`

74 Multicast Routing

74.1 ip

Set IP parameters.

74.1.1 ip mcast staticroute add

Add a new multicast static route instance.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip mcast staticroute add <P-1> <P-2> rpf-address <P-3>`

`rpf-address`: Set the RPF address.

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	0.0.0.0	
	128.0.0.0	
	192.0.0.0	
	224.0.0.0	
	240.0.0.0	
	248.0.0.0	
	252.0.0.0	
	254.0.0.0	
	255.0.0.0	
	255.128.0.0	
	255.192.0.0	
	255.224.0.0	
	255.240.0.0	
	255.248.0.0	
	255.252.0.0	
	255.254.0.0	
	255.255.0.0	
	255.255.128.0	
	255.255.192.0	
	255.255.224.0	
	255.255.240.0	
	255.255.248.0	
	255.255.252.0	
	255.255.254.0	
	255.255.255.0	
	255.255.255.128	
	255.255.255.192	
	255.255.255.224	
	255.255.255.240	
	255.255.255.248	
	255.255.255.252	
	255.255.255.254	
	255.255.255.255	
P-3	A.B.C.D	IP address.

74.1.2 ip mcast staticroute modify

Modify parameters of a multicast static route instance.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip mcast staticroute modify <P-1> <P-2> [operation <P-3>] [rpf-address <P-4>] [preference <P-5>]`

`[operation]`: Enable or disable a multicast static route instance.
`[rpf-address]`: The RPF address.
`[preference]`: The preference of the static multicast route.

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

Parameter	Value	Meaning
P-2	0.0.0.0	
	128.0.0.0	
	192.0.0.0	
	224.0.0.0	
	240.0.0.0	
	248.0.0.0	
	252.0.0.0	
	254.0.0.0	
	255.0.0.0	
	255.128.0.0	
	255.192.0.0	
	255.224.0.0	
	255.240.0.0	
	255.248.0.0	
	255.252.0.0	
	255.254.0.0	
	255.255.0.0	
	255.255.128.0	
	255.255.192.0	
	255.255.224.0	
	255.255.240.0	
	255.255.248.0	
	255.255.252.0	
	255.255.254.0	
	255.255.255.0	
	255.255.255.128	
	255.255.255.192	
	255.255.255.224	
	255.255.255.240	
	255.255.255.248	
	255.255.255.252	
	255.255.255.254	
	255.255.255.255	
P-3	enable	Enable the option.
	disable	Disable the option.
P-4	A.B.C.D	IP address.
P-5	1..255	Enter a number in the given range.

74.1.3 ip mcast staticroute delete

Delete a multicast static route instance.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip mcast staticroute delete <P-1> <P-2>

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

Parameter	Value	Meaning
P-2	0.0.0.0	
	128.0.0.0	
	192.0.0.0	
	224.0.0.0	
	240.0.0.0	
	248.0.0.0	
	252.0.0.0	
	254.0.0.0	
	255.0.0.0	
	255.128.0.0	
	255.192.0.0	
	255.224.0.0	
	255.240.0.0	
	255.248.0.0	
	255.252.0.0	
	255.254.0.0	
	255.255.0.0	
	255.255.128.0	
	255.255.192.0	
	255.255.224.0	
	255.255.240.0	
	255.255.248.0	
	255.255.252.0	
	255.255.254.0	
	255.255.255.0	
	255.255.255.128	
	255.255.255.192	
	255.255.255.224	
	255.255.255.240	
	255.255.255.248	
	255.255.255.252	
	255.255.255.254	
	255.255.255.255	

74.1.4 ip mcast operation

Enable or disable IP multicast routing on the router.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip mcast operation`

- `no ip mcast operation`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no ip mcast operation`

74.1.5 ip mcast software-dscp-value

Configures the DSCP value that is written into multicast packets that are routed in software.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip mcast software-dscp-value <P-1>`

Parameter	Value	Meaning
P-1	0..64	Enter a number in the given range.

74.2 ip

IP interface commands.

74.2.1 ip mcast ttl-threshold

This command sets the datagram TTL threshold for the interface.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip mcast ttl-threshold <P-1>

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

74.2.2 ip mcast boundary

Configure an administratively scoped IP multicast boundary (Range: 239.0.0.0-239.255.255.255).
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip mcast boundary <P-1> <P-2>

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	A.B.C.D	IP address.

- no ip mcast boundary
  Disable the option
  - Mode: Interface Range Mode
  - Privilege Level: Operator
  - Format: no ip mcast boundary <P-1> <P-2>

74.3 show

Display device options and settings.

74.3.1 show ip mcast global

Display the general IP multicast information.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip mcast global

74.3.2 show ip mcast boundary

Display the administratively scoped IP multicast boundaries.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip mcast boundary [<P-1>]

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

74.3.3 show ip mcast interface

Display the interface specific information.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip mcast interface [<P-1>]

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

74.3.4 show ip mcast mroute static

Display the multicast static routes.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip mcast mroute static

74.3.5 show ip mcast mroute detail

Display the multicast routing table details.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip mcast mroute detail [<P-1> [<P-2>]]

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	A.B.C.D	IP address.

74.3.6 show ip mcast mroute summary

Display the multicast routing table summary.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip mcast mroute summary [<P-1> [<P-2>]]

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	A.B.C.D	IP address.

75 Media Redundancy Protocol (MRP)

75.1 mrp

Configure the MRP settings.

75.1.1 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.

75.1.2 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).

75.1.3 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).

75.1.4 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.

75.1.5 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.

75.1.6 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.	

75.1.7 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.

75.1.8 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.
	30ms	Maximum recovery delay of 30ms in the MRP domain.
	10ms	Maximum recovery delay of 10ms in the MRP domain.

75.1.9 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.

75.1.10 mrp domain modify vlan

Configure the VLAN identifier of the MRP domain (min.: 0, max.: 4042, default: 0).

- 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 (min.: 0, max.: 4042, default: 0).

75.1.11 mrp domain add default-domain

Default MRP domain ID.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `mrp domain add default-domain`

75.1.12 mrp domain add domain-id

MRP domain ID. Format: 16 bytes in decimal notation. (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. (Example: 1.2.3.4.5.6.7.8.9.10.11.12.13.14.15.16).

75.1.13 mrp domain delete

Delete the current MRP domain.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `mrp domain delete`

75.1.14 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`

75.2 show

Display device options and settings.

75.2.1 show mrp

Display the MRP settings.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show mrp`

76 MRP IEEE

76.1 mrp-ieee

Configure IEEE MRP parameters and protocols, MVRP for dynamic VLAN registration and MMRP for dynamic MAC registration on a port.

76.1.1 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.

76.1.2 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.

76.1.3 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.

76.2 show

Display device options and settings.

76.2.1 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.	

77 MRP IEEE MMRP

77.1 mrp-ieee

Configure IEEE MRP protocols.

77.1.1 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>`

77.2 show

Display device options and settings.

77.2.1 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`

77.2.2 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.	

77.2.3 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`

77.2.4 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.	

77.2.5 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.

77.2.6 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.

77.3 mrp-ieee

Configure IEEE MRP protocols, MVRP for dynamic VLAN registration and MMRP for dynamic MAC registration.

77.3.1 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

77.3.2 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

77.4 clear

Clear several items.

77.4.1 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

77.5 mrp-ieee

Configure IEEE MRP parameters and protocols, MVRP for dynamic VLAN registration and MMRP for dynamic MAC registration on a port.

77.5.1 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`

77.5.2 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`

77.6 show

Display device options and settings.

77.6.1 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`

78 MRP IEEE MSRP

78.1 mrp-ieee

Configure IEEE MRP protocols, MVRP for dynamic VLAN registration and MMRP for dynamic MAC registration.

78.1.1 mrp-ieee msrp operation

Enable or disable MSRP globally.
- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `mrp-ieee msrp operation`

- `no mrp-ieee msrp operation`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Administrator`
  - Format: `no mrp-ieee msrp operation`

78.1.2 mrp-ieee msrp boundary-propagate

Enable or disable the boundary propagation.
- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `mrp-ieee msrp boundary-propagate`

- `no mrp-ieee msrp boundary-propagate`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Administrator`
  - Format: `no mrp-ieee msrp boundary-propagate`

78.1.3 mrp-ieee msrp talker-pruning

Enable or disable the talker pruning.
- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `mrp-ieee msrp talker-pruning`

- `no mrp-ieee msrp talker-pruning`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Administrator`
  - Format: `no mrp-ieee msrp talker-pruning`

78.1.4 mrp-ieee msrp max-fan-in-ports

Configure the maximum fan-in ports.
- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `mrp-ieee msrp max-fan-in-ports <P-1>`

Parameter	Value	Meaning
P-1	1..52	The number of the max fan-in ports (default: 12)

78.2 show

Display device options and settings.

78.2.1 show mrp-ieee msrp statistics global

Display the global statistics.

- Mode: Command is in all modes available.
- Privilege Level: Administrator
- Format: show mrp-ieee msrp statistics global

78.2.2 show mrp-ieee msrp statistics interface

Display the statistics for an interface.

- Mode: Command is in all modes available.
- Privilege Level: Administrator
- Format: show mrp-ieee msrp statistics interface <P-1>

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

78.3 clear

Clear several items.

78.3.1 clear mrp-ieee msrp

Clear all the MSRP statistics.

- Mode: Privileged Exec Mode
- Privilege Level: Administrator
- Format: clear mrp-ieee msrp

79 MRP IEEE MVRP

79.1 mrp-ieee

Configure IEEE MRP protocols, MVRP for dynamic VLAN registration and MMRP for dynamic MAC registration.

79.1.1 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`

79.1.2 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`

79.2 mrp-ieee

Configure IEEE MRP parameters and protocols, MVRP for dynamic VLAN registration and MMRP for dynamic MAC registration on a port.

79.2.1 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`

79.2.2 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`

79.3 show

Display device options and settings.

79.3.1 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`

79.3.2 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.	

79.3.3 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`

79.3.4 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.	

79.4 clear

Clear several items.

79.4.1 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`

80 Network Address Translation (NAT)

80.1 nat

Manage NAT rules

80.1.1 nat dnat commit

Commit pending changes for DNAT (commits all NAT changes).

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `nat dnat commit`

80.1.2 nat dnat add

Add rule to DNAT

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `nat dnat add <P-1> [cfg <P-2> <P-3> <P-4> <P-5> <P-6> <P-7> <P-8> [<P-9>]]`

`[cfg]`: Configure the rule immediately

Parameter	Value	Meaning
P-1	1..255	DNAT rule number
P-2	a.b.c.d	Source IP address
	a.b.c.d/n	CIDR mask
	!a.b.c.d	!<a.b.c.d> Everything BUT this address
	!a.b.c.d/n	!<a.b.c.d/n> Everything BUT this CIDR mask
	any	any Any
P-3	number	number UDP/TCP Source Port
	nu-nu	nu-nu Port Range
	nu,nu-nu	nu,nu-nu List of ports (or port ranges)
	any	any Any port (or protocol without a port)
P-4	a.b.c.d	Destination IP address
	a.b.c.d/n	CIDR mask
	!a.b.c.d	!<a.b.c.d> Everything BUT this address
	!a.b.c.d/n	!<a.b.c.d/n> Everything BUT this CIDR mask
	any	any Any
P-5	number	number of the UDP/TCP Destination Port
	nu-nu	nu-nu Port Range
	number,number	nu,nu-nu List of ports (or port ranges)
	any	any Any port (or protocol without a port)
P-6	a.b.c.d	New destination IP address
P-7	number	number of the UDP/TCP New Destination Port
	any	any Any port (or protocol without a port)
P-8	icmp	Internet Control Message Protocol
	igmp	Internet Group Management Protocol
	ipip	IP-within-IP Encapsulation Protocol
	tcp	Transmission Control Protocol
	udp	User Datagram Protocol
	esp	Encapsulating Security Protocol
	ah	Authentication Header
	any	Any of the above
P-9	string	Rule description/name

80.1.3 nat dnat modify

Configure single DNAT rule

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `nat dnat modify <P-1> <P-2> <P-3> <P-4> <P-5> <P-6> <P-7> <P-8> [<P-9>]`

Parameter	Value	Meaning
P-1	1..255	DNAT rule number

Parameter	Value	Meaning
P-2	a.b.c.d	Source IP address
	a.b.c.d/n	CIDR mask
	!a.b.c.d	!<a.b.c.d> Everything BUT this address
	!a.b.c.d/n	!<a.b.c.d/n> Everything BUT this CIDR mask
	any	any Any
P-3	number	number UDP/TCP Source Port
	nu-nu	nu-nu Port Range
	nu,nu-nu	nu,nu-nu List of ports (or port ranges)
	any	any Any port (or protocol without a port)
P-4	a.b.c.d	Destination IP address
	a.b.c.d/n	CIDR mask
	!a.b.c.d	!<a.b.c.d> Everything BUT this address
	!a.b.c.d/n	!<a.b.c.d/n> Everything BUT this CIDR mask
	any	any Any
P-5	number	number of the UDP/TCP Destination Port
	nu-nu	nu-nu Port Range
	number,number	nu,nu-nu List of ports (or port ranges)
	any	any Any port (or protocol without a port)
P-6	a.b.c.d	New destination IP address
P-7	number	number of the UDP/TCP New Destination Port
	any	any Any port (or protocol without a port)
P-8	icmp	Internet Control Message Protocol
	igmp	Internet Group Management Protocol
	ipip	IP-within-IP Encapsulation Protocol
	tcp	Transmission Control Protocol
	udp	User Datagram Protocol
	esp	Encapsulating Security Protocol
	ah	Authentication Header
	any	Any of the above
P-9	string	Rule description/name

80.1.4 nat dnat delete

Delete rule from DNAT

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat dnat delete <P-1>

Parameter	Value	Meaning
P-1	1..255	DNAT rule number

80.1.5 nat dnat logtrap

Set log/trap for DNAT rule

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat dnat logtrap <P-1> <P-2> <P-3>

Parameter	Value	Meaning
P-1	1..255	DNAT rule number
P-2	no	Disable Logging
	yes	Enable Logging
P-3	no	Disable SNMP Trap
	yes	Enable SNMP Trap

80.1.6 nat dnat state

Enable/Disable specific DNAT rule

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat dnat state <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..255	DNAT rule number
P-2	enable	Enable the option.
	disable	Disable the option.

80.1.7 nat dnat if add

Add Interface
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat dnat if add <P-1> <P-2> <P-3>

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	1..255	DNAT rule number
P-3	0..6500	Priority

80.1.8 nat dnat if delete

Delete interface
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat dnat if delete <P-1> <P-2>

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	1..255	DNAT rule number

80.1.9 nat 1to1nat commit

Commit pending changes for 1:1 NAT (commits every NAT change).
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat 1to1nat commit

80.1.10 nat 1to1nat add

Add rule to 1:1 NAT
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat 1to1nat add <P-1> [cfg <P-2> <P-3> <P-4> [<P-5>]] [ingress <P-6>] [egress <P-7> [<P-8>]]

[cfg]: Configure the rule immediately
[ingress]: Configure ingress interface
[egress]: Configure egress interface

Parameter	Value	Meaning
P-1	1..255	1:1 NAT rule number
P-2	a.b.c.d	Virtual destination IP address
	a.b.c.d/n	CIDR mask
P-3	a.b.c.d	Actual destination IP address
	a.b.c.d/n	CIDR mask
P-4	0..6500	Priority
P-5	string	[string] Rule description/name
P-6	slot no./port no.	
P-7	slot no./port no.	
P-8	string	Rule description/name

80.1.11 nat 1to1nat modify

Configure single 1:1 NAT rule
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat 1to1nat modify <P-1> <P-2> <P-3> <P-4> [ingress <P-5>] [egress <P-6> [<P-7>]] [virtual-address <P-8>] [actual-address <P-9>] [description <P-10>]

[ingress]: Configure ingress interface
[egress]: Configure egress interface
[virtual-address]: Configure virtual destination IP address
[actual-address]: Configure actual destination IP address
[description]: Configure description

Parameter	Value	Meaning
P-1	1..255	1:1 NAT rule number
P-2	a.b.c.d	Virtual destination IP address
	a.b.c.d/n	CIDR mask
P-3	a.b.c.d	Actual destination IP address
	a.b.c.d/n	CIDR mask
P-4	0..6500	Priority

Parameter	Value	Meaning
P-5	slot no./port no.	
P-6	slot no./port no.	
P-7	string	Rule description/name
P-8	a.b.c.d	Virtual destination IP address
	a.b.c.d/n	CIDR mask
P-9	a.b.c.d	Actual destination IP address
	a.b.c.d/n	CIDR mask
P-10	string	Rule description/name

80.1.12 nat 1to1nat delete

Delete the rule from 1:1 NAT

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat 1to1nat delete <P-1>

Parameter	Value	Meaning
P-1	1..255	1:1 NAT rule number

80.1.13 nat 1to1nat logtrap

Set log/trap for 1:1 NAT rule

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat 1to1nat logtrap <P-1> <P-2> <P-3>

Parameter	Value	Meaning
P-1	1..255	1:1 NAT rule number
P-2	no	Disable Logging
	yes	Enable Logging
P-3	no	Disable SNMP Trap
	yes	Enable SNMP Trap

80.1.14 nat 1to1nat state

Enable/Disable specific 1:1 NAT rule

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat 1to1nat state <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..255	1:1 NAT rule number
P-2	enable	Enable the option.
	disable	Disable the option.

80.1.15 nat 1to1nat enable

Enable specific 1:1 NAT rule

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat 1to1nat enable <P-1>

Parameter	Value	Meaning
P-1	1..255	1:1 NAT rule number

80.1.16 nat 1to1nat disable

Disable specific 1:1 NAT rule

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat 1to1nat disable <P-1>

Parameter	Value	Meaning
P-1	1..255	1:1 NAT rule number

80.1.17 nat alg

Set the ALG options

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat alg <P-1>

Parameter	Value	Meaning
P-1	[ftp]	ftp
	[icmp]	icmp

- no nat alg
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no nat alg <P-1>

80.1.18 nat interface

Set the public interface
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat interface <P-1>

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

80.1.19 nat masq commit

Commit pending changes for Masquerading (commits every NAT change).
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat masq commit

80.1.20 nat masq add

Add rule to Masquerading
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat masq add <P-1> [cfg <P-2> <P-3> <P-4> [<P-5>]]

[cfg]: Configure the rule immediately

Parameter	Value	Meaning
P-1	1..128	Masquerading rule number
P-2	a.b.c.d	Source IP address
	a.b.c.d/n	CIDR mask
	!a.b.c.d	!<a.b.c.d> Everything BUT this address
	!a.b.c.d/n	!<a.b.c.d/n> Everything BUT this CIDR mask
	any	any Any
P-3	number	number UDP/TCP Source Port
	nu-nu	nu-nu Port Range
	nu,nu-nu	nu,nu-nu List of ports (or port ranges)
	any	any Any port (or protocol without a port)
P-4	tcp	Transmission Control Protocol
	udp	User Datagram Protocol
	any	Any protocol at all
P-5	string	Rule description/name

80.1.21 nat masq modify

Configure single Masquerading rule
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat masq modify <P-1> <P-2> <P-3> <P-4> [<P-5>]

Parameter	Value	Meaning
P-1	1..128	Masquerading rule number
P-2	a.b.c.d	Source IP address
	a.b.c.d/n	CIDR mask
	!a.b.c.d	!<a.b.c.d> Everything BUT this address
	!a.b.c.d/n	!<a.b.c.d/n> Everything BUT this CIDR mask
	any	any Any
P-3	number	number UDP/TCP Source Port
	nu-nu	nu-nu Port Range
	nu,nu-nu	nu,nu-nu List of ports (or port ranges)
	any	any Any port (or protocol without a port)

Parameter	Value	Meaning
P-4	tcp	Transmission Control Protocol
	udp	User Datagram Protocol
	any	Any protocol at all
P-5	string	Rule description/name

80.1.22 nat masq delete

Delete rule from Masquerading

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat masq delete <P-1>

Parameter	Value	Meaning
P-1	1..128	Masquerading rule number

80.1.23 nat masq logtrap

Set log/trap for Masquerading rule

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat masq logtrap <P-1> <P-2> <P-3>

Parameter	Value	Meaning
P-1	1..128	Masquerading rule number
P-2	no	Disable Logging
	yes	Enable Logging
P-3	no	Disable SNMP Trap
	yes	Enable SNMP Trap

80.1.24 nat masq ipsec-exempt

Exclude IPsec traffic from Masquerading rule

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat masq ipsec-exempt <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..128	Masquerading rule number
P-2	disabled	Apply rule to IPsec traffic
	enabled	Do not apply rule to IPsec traffic

80.1.25 nat masq state

Enable/Disable specific Masquerading rule

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat masq state <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..128	Masquerading rule number
P-2	enable	Enable the option.
	disable	Disable the option.

80.1.26 nat masq if add

Add interface

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat masq if add <P-1> <P-2> <P-3>

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	1..128	Masquerading rule number
P-3	0..6500	Priority

80.1.27 nat masq if delete

Delete interface

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat masq if delete <P-1> <P-2>

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

Parameter	Value	Meaning
P-2	1..128	Masquerading rule number

80.1.28 nat doublenat commit

Commit pending changes for Double NAT (commits all NAT changes).

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat doublenat commit

80.1.29 nat doublenat add

Add rule to Double NAT

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat doublenat add <P-1> [cfg <P-2> <P-3> <P-4> <P-5> [<P-6>]]

[cfg]: Configure the rule immediately

Parameter	Value	Meaning
P-1	1..255	Double NAT rule number
P-2	a.b.c.d	Local internal IP address
P-3	a.b.c.d	Local external IP address
P-4	a.b.c.d	Remote Internal IP Address
P-5	a.b.c.d	Remote External IP Address
P-6	string	Rule description/name

80.1.30 nat doublenat modify

Configure single Double NAT rule

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat doublenat modify <P-1> <P-2> <P-3> <P-4> <P-5> [<P-6>]

Parameter	Value	Meaning
P-1	1..255	Double NAT rule number
P-2	a.b.c.d	Local internal IP address
P-3	a.b.c.d	Local external IP address
P-4	a.b.c.d	Remote Internal IP Address
P-5	a.b.c.d	Remote External IP Address
P-6	string	Rule description/name

80.1.31 nat doublenat delete

Delete rule from Double NAT

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat doublenat delete <P-1>

Parameter	Value	Meaning
P-1	1..255	Double NAT rule number

80.1.32 nat doublenat logtrap

Set log/trap for Double NAT rule

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat doublenat logtrap <P-1> <P-2> <P-3>

Parameter	Value	Meaning
P-1	1..255	Double NAT rule number
P-2	no	Disable Logging
	yes	Enable Logging
P-3	no	Disable SNMP Trap
	yes	Enable SNMP Trap

80.1.33 nat doublenat state

Enable/Disable specific Double NAT rule

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat doublenat state <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..255	Double NAT rule number

Parameter	Value	Meaning
P-2	enable	Enable the option.
	disable	Disable the option.

80.1.34 nat doublenat if add

Add Interface

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat doublenat if add <P-1> <P-2> <P-3> <P-4>

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	ingress	Ingress
	egress	Egress
	both	Both
P-3	1..255	Double NAT rule number
P-4	0..6500	Priority

80.1.35 nat doublenat if delete

Delete interface

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat doublenat if delete <P-1> <P-2> <P-3>

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	ingress	Ingress
	egress	Egress
	both	Both
P-3	1..255	Double NAT rule number

80.2 show

Display device options and settings.

80.2.1 show nat dnat global

Display the summary.

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

80.2.2 show nat dnat rules

Display the DNAT rules.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show nat dnat rules [<P-1>]

Parameter	Value	Meaning
P-1	1..255	DNAT rule number

80.2.3 show nat dnat if

Display the DNAT interface configuration.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show nat dnat if

80.2.4 show nat dnat logtrap

Display the Log/Trap settings for the DNAT rules.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show nat dnat logtrap [<P-1>]

Parameter	Value	Meaning
P-1	1..255	DNAT rule number

80.2.5 show nat masq global

Display the summary.

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

80.2.6 show nat masq rules

Display the masquerading rules.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show nat masq rules [<P-1>]

Parameter	Value	Meaning
P-1	1..128	Masquerading rule number

80.2.7 show nat masq logtrap

Display the Log/Trap settings for the masquerading rules.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show nat masq logtrap [<P-1>]

Parameter	Value	Meaning
P-1	1..128	Masquerading rule number

80.2.8 show nat masq if

Display the masquerading interface configuration.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show nat masq if

80.2.9 show nat 1to1nat global

Display the summary.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show nat 1to1nat global

80.2.10 show nat 1to1nat rules

Display the 1:1 NAT rules.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show nat 1to1nat rules [<P-1>]

Parameter	Value	Meaning
P-1	1..255	1:1 NAT rule number

80.2.11 show nat 1to1nat logtrap

Display the Log/Trap settings for 1:1 NAT rules.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show nat 1to1nat logtrap [<P-1>]

Parameter	Value	Meaning
P-1	1..255	1:1 NAT rule number

80.2.12 show nat doublenat global

Display the summary.

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

80.2.13 show nat doublenat rules

Display the Double NAT rules.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show nat doublenat rules [<P-1>]

Parameter	Value	Meaning
P-1	1..255	Double NAT rule number

80.2.14 show nat doublenat logtrap

Display the Log/Trap settings for the Double NAT rules.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show nat doublenat logtrap [<P-1>]

Parameter	Value	Meaning
P-1	1..255	Double NAT rule number

80.2.15 show nat doublenat if

Display the Double NAT interface configuration.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show nat doublenat if

81 Network Time Protocol (NTP)

81.1 ntp

Configure NTP settings.

81.1.1 ntp client operation

Enable or disable the NTP client.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: ntp client operation <P-1>

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

81.1.2 ntp client operating-mode

Set the NTP client operating mode.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: ntp client operating-mode <P-1>

Parameter	Value	Meaning
P-1	unicast	Enable NTP client in unicast operating mode.
	broadcast	Enable NTP client in broadcast operating mode.

81.1.3 ntp server operation

Enable or disable the NTP server.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: ntp server operation <P-1>

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

81.1.4 ntp server operating-mode

Set the NTP server operating mode.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: ntp server operating-mode <P-1>

Parameter	Value	Meaning
P-1	symmetric	Enable NTP server in symmetric operating mode.
	client-server	Enable NTP server in client-server operating mode.

81.1.5 ntp server localclock-stratum

Set the stratum of the localclock.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: ntp server localclock-stratum <P-1>

Parameter	Value	Meaning
P-1	1..16	Localclock stratum.

81.1.6 ntp peers add

Add a new peer.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: ntp peers add <P-1> ip <P-2> [iburst <P-3>] [burst <P-4>] [prefer <P-5>]

ip: Set the peer address.
[iburst]: Speed up the initial synchronization (default: disabled). Used only when operating in client-unicast mode.
[burst]: Increase the precision on links with high jitter (default: disabled). Used only in client-unicast mode.
[prefer]: If correctly operating, choose this peer as synchronization source (default: disabled).

Parameter	Value	Meaning
P-1	1..4	NTP 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.
P-5	enable	Enable the option.
	disable	Disable the option.

81.1.7 ntp peers delete

Delete a peer.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: ntp peers delete <P-1>

Parameter	Value	Meaning
P-1	1..4	NTP servers index.

81.2 show

Display device options and settings.

81.2.1 show ntp client-status

Status of the NTP client connection.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ntp client-status

81.2.2 show ntp server-status

Overall operational status of the NTP server.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ntp server-status

82 OPC/UA Server (IEC62541)

82.1 opc-ua

Configure IEC62541 - OPC/UA server settings.

82.1.1 opc-ua operation

Enable or disable the IEC62541 - OPC/UA server.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `opc-ua operation`

- `no opc-ua operation`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no opc-ua operation`

82.1.2 opc-ua port

Defines the port number of the IEC62541 - OPC/UA server (default: 4840).
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `opc-ua port <P-1>`

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

82.1.3 opc-ua sessions

Configure the maximum number of sessions of the IEC62541 - OPC/UA server.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `opc-ua sessions <P-1>`

Parameter	Value	Meaning
P-1	1..5	Enter a number in the given range.

82.1.4 opc-ua security-policy

Set the security policy of the IEC62541 - OPC/UA server.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `opc-ua security-policy <P-1>`

Parameter	Value	Meaning
P-1	none	Set no security policy.
	basic128rsa15	Set security policy as basic128Rsa15.
	basic256	Set security policy as basic256.
	basic256sha256	Set security policy as basic256Sha256.

82.1.5 opc-ua users add

Add a new user.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `opc-ua users add <P-1>`

Parameter	Value	Meaning
P-1	string	<user> User name.

82.1.6 opc-ua users delete

Delete an existing user.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `opc-ua users delete <P-1>`

Parameter	Value	Meaning
P-1	string	<user> User name.

82.1.7 opc-ua users enable

Enable user.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: opc-ua users enable <P-1>

Parameter	Value	Meaning
P-1	string	<user> User name.

82.1.8 opc-ua users disable

Disable user.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: opc-ua users disable <P-1>

Parameter	Value	Meaning
P-1	string	<user> User name.

82.1.9 opc-ua users modify

Modify an existing user.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: opc-ua users modify <P-1> password [<P-2>] access-role <P-3>

password: Change user password.
access-role: Change user access role.

Parameter	Value	Meaning
P-1	string	<user> User name.
P-2	string	Enter a user-defined text, max. 64 characters.
P-3	read-only	Set access role as read-only.

82.2 show

Display device options and settings.

82.2.1 show opc-ua global

IEC62541 - OPC/UA server settings.

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

82.2.2 show opc-ua users

Display the configured users for IEC62541 - OPC/UA server.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show opc-ua users

83 Out-of-band Management

83.1 network

Configure the inband and outband connectivity.

83.1.1 network out-of-band operation

Enable or disable the out-of-band management.
- Mode: Privileged Exec Mode
- Privilege Level: Operator
- Format: network out-of-band operation

- no network out-of-band operation
  Disable the option
  - Mode: Privileged Exec Mode
  - Privilege Level: Operator
  - Format: no network out-of-band operation

83.1.2 network out-of-band protocol

Select DHCP or none as the out-of-band configuration protocol.
- Mode: Privileged Exec Mode
- Privilege Level: Operator
- Format: network out-of-band protocol <P-1>

Parameter	Value	Meaning
P-1	none	No out-of-band config protocol.
	dhcp	DHCP

83.1.3 network out-of-band parms

Set out-of-band IP address, subnet mask and gateway.
- Mode: Privileged Exec Mode
- Privilege Level: Operator
- Format: network out-of-band 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.

83.1.4 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

83.1.5 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.

83.2 show

Display device options and settings.

83.2.1 show network out-of-band

Display the out-of-band management configuration.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show network out-of-band`

83.2.2 show network usb

Show USB out-of-band management configuration.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show network usb`

84 Packet Filter

84.1 packet-filter

Creation and configuration of Firewall rules.

84.1.1 packet-filter l3 commit

Writes all changes made in the L3 firewall configuration to the device
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `packet-filter l3 commit`

84.1.2 packet-filter l3 defaultpolicy

Sets the default policy of the L3 and DynFw rule tables
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `packet-filter l3 defaultpolicy <P-1>`

Parameter	Value	Meaning
P-1	accept	Accept packets
	drop	Drop packets without notification
	reject	Drop packets and notify source

84.1.3 packet-filter l3 checksum-validation

Configures the connection tracking checksum validation in Netfilter
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `packet-filter l3 checksum-validation`

- `no packet-filter l3 checksum-validation`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no packet-filter l3 checksum-validation`

84.1.4 packet-filter l3 addrule

Adds a rule to the L3 firewall table
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `packet-filter l3 addrule <P-1> <P-2> <P-3> <P-4> <P-5> <P-6> <P-7> <P-8> <P-9> protocol-name <P-10> [description <P-11>] policy-name <P-12> [description <P-13>] [profile-index <P-14>]`

`protocol-name`: Protocol Name
`[description]`: Rule description/name for the L3 firewall rule
`policy-name`: Rule policy name for the L3 firewall rule
`[description]`: Rule description/name for the L3 firewall rule
`[profile-index]`: Profile index of the DPI profile this rule is assigned to depending on enforcer action. Value 0 no profile this rule is assigned to. You cannot assign the rule to an inactive profile if an active enforcer will mapping to it.

Parameter	Value	Meaning
P-1	1..2048	Rule index
P-2	xxx.xxx.xxx.xxx	xxx.xxx.xxx.xxx Source IP Address
	xxx.xxx.xxx.xxx/xx	xxx.xxx.xxx.xxx/xx CIDR mask
	xxx.xxx.xxx.xxx	!xxx.xxx.xxx.xxx Everything BUT this address
	!xxx.xxx.xxx.xxx/xx	!xxx.xxx.xxx.xxx/xx Everything BUT this CIDR mask
	any	any Any address
	string	Asset name from asset table
P-3	number	number UDP/TCP Source Port
	nu-nu	nu-nu Port Range
	nu,nu-nu	nu,nu-nu List of ports (or port ranges)
	any	any Any port (or protocol has no ports)

Parameter	Value	Meaning
P-4	xxx.xxx.xxx.xxx	xxx.xxx.xxx.xxx Target IP Address
	xxx.xxx.xxx.xxx/xx	xxx.xxx.xxx.xxx/xx CIDR mask
	xxx.xxx.xxx.xxx	!xxx.xxx.xxx.xxx Everything BUT this address
	!xxx.xxx.xxx.xxx/xx	!xxx.xxx.xxx.xxx/xx Everything BUT this CIDR mask
	any	any Any address
	string	Asset name from asset table
P-5	number	number UDP/TCP Target Port
	nu-nu	nu-nu Port Range
	nu,nu-nu	nu,nu-nu List of ports (or port ranges)
	any	any Any port (or protocol has no ports)
P-6	icmp	Internet Control Message Protocol
	igmp	Internet Group Management Protocol
	ipip	IP-within-IP Encapsulation Protocol
	tcp	Transmission Control Protocol
	udp	User Datagram Protocol
	esp	Encapsulating Security Protocol
	ah	Authentication Header
	any	Any of the above
P-7	string	Parameters for rule (or 'none')
P-8	accept	Accept packets.
	drop	Drop packets without notification.
	reject	Drop packets and notify source.
	enforce-modbus	Accept or drop packets by Modbus TCP/IP enforcer, protocol should be TCP or UDP.
	enforce-opc	Accept or drop packets by OPC enforcer, protocol should be TCP.
	enforce-iec104	Accept or drop packets by IEC104 enforcer, protocol should be TCP.
	enforce-ethernetip	Accept or drop packets by ENIP enforcer, protocol should be TCP.
	enforce-dnp3	Accept or drop packets by DNP3 enforcer, protocol should be TCP.
	enforce-s7	Accept or drop packets by S7 enforcer, protocol should be TCP.
P-9	accept	Accept packets.
	drop	Drop packets without notification.
	reject	Drop packets and notify source.
	enforce-opc	Accept or drop packets by OPC enforcer, protocol should be TCP.
P-10	string	Protocol Name from protocol table or tcp/udp/icmp/igmp/ipip/esp/ah/icmpv6/any
P-11	string	\t\tRule description/name
P-12	string	Rule policy name
P-13	string	\t\tRule description/name
P-14	0..32	Profile index 0 - 32

84.1.5 packet-filter l3 modifyrule

Modifies a rule to the L3 firewall table

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `packet-filter l3 modifyrule <P-1> <P-2> <P-3> <P-4> <P-5> <P-6> <P-7> <P-8> <P-9> [description <P-10>] protocol-name <P-11> [description <P-12>] [policy-name <P-13>]`

`[description]`: Rule description/name for the L3 firewall rule
`protocol-name`: Protocol Name
`[description]`: Rule description/name for the L3 firewall rule
`[policy-name]`: Policy Name for L3 firewall rule

Parameter	Value	Meaning
P-1	1..2048	Rule index
P-2	xxx.xxx.xxx.xxx	xxx.xxx.xxx.xxx Source IP Address
	xxx.xxx.xxx.xxx/xx	xxx.xxx.xxx.xxx/xx CIDR mask
	xxx.xxx.xxx.xxx	!xxx.xxx.xxx.xxx Everything BUT this address
	!xxx.xxx.xxx.xxx/xx	!xxx.xxx.xxx.xxx/xx Everything BUT this CIDR mask
	any	any Any address
	string	Asset name from asset table
P-3	number	number UDP/TCP Source Port
	nu-nu	nu-nu Port Range
	nu,nu-nu	nu,nu-nu List of ports (or port ranges)
	any	any Any port (or protocol has no ports)

Parameter	Value	Meaning
P-4	xxx.xxx.xxx.xxx	xxx.xxx.xxx.xxx Target IP Address
	xxx.xxx.xxx.xxx/xx	xxx.xxx.xxx.xxx/xx CIDR mask
	xxx.xxx.xxx.xxx	!xxx.xxx.xxx.xxx Everything BUT this address
	!xxx.xxx.xxx.xxx/xx	!xxx.xxx.xxx.xxx/xx Everything BUT this CIDR mask
	any	any Any address
	string	Asset name from asset table
P-5	number	number UDP/TCP Target Port
	nu-nu	nu-nu Port Range
	nu,nu-nu	nu,nu-nu List of ports (or port ranges)
	any	any Any port (or protocol has no ports)
P-6	icmp	Internet Control Message Protocol
	igmp	Internet Group Management Protocol
	ipip	IP-within-IP Encapsulation Protocol
	tcp	Transmission Control Protocol
	udp	User Datagram Protocol
	esp	Encapsulating Security Protocol
	ah	Authentication Header
	any	Any of the above
P-7	string	Parameters for rule (or 'none')
P-8	accept	Accept packets.
	drop	Drop packets without notification.
	reject	Drop packets and notify source.
	enforce-modbus	Accept or drop packets by Modbus TCP/IP enforcer, protocol should be TCP or UDP.
	enforce-opc	Accept or drop packets by OPC enforcer, protocol should be TCP.
	enforce-iec104	Accept or drop packets by IEC104 enforcer, protocol should be TCP.
	enforce-ethernetip	Accept or drop packets by ENIP enforcer, protocol should be TCP.
	enforce-dnp3	Accept or drop packets by DNP3 enforcer, protocol should be TCP.
	enforce-s7	Accept or drop packets by S7 enforcer, protocol should be TCP.
P-9	accept	Accept packets.
	drop	Drop packets without notification.
	reject	Drop packets and notify source.
	enforce-opc	Accept or drop packets by OPC enforcer, protocol should be TCP.
P-10	string	\t\tRule description/name
P-11	string	Protocol Name from protocol table or tcp/udp/icmp/igmp/ipip/esp/ah/icmpv6/any
P-12	string	\t\tRule description/name
P-13	string	Rule policy name

84.1.6 packet-filter l3 delrule

Deletes a rule from L3 rule table

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: packet-filter l3 delrule <P-1>

Parameter	Value	Meaning
P-1	1..2048	Rule index

84.1.7 packet-filter l3 enablerule

Enables a rule from L3 rule table. A rule can only be enabled when all the required parameters are set. You cannot enable a rule if the mapped enforcer's profile is inactive.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: packet-filter l3 enablerule <P-1>

Parameter	Value	Meaning
P-1	1..2048	Rule index

84.1.8 packet-filter l3 disablerule

Disables a rule from L3 rule table

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: packet-filter l3 disablerule <P-1>

Parameter	Value	Meaning
P-1	1..2048	Rule index

84.1.9 packet-filter l3 logmode

Set logmode for a rule from L3 rule table

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `packet-filter l3 logmode <P-1> <P-2>`

Parameter	Value	Meaning
P-1	1..2048	Rule index
P-2	log	Log when rule is applied
	trap	Send trap when rule is applied
	logtrap	Log and send trap when rule is applied
	none	Disable log and trap

84.1.10 packet-filter l3 addif

Adds an interface to a L3 firewall rule

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `packet-filter l3 addif <P-1> <P-2> <P-3> <P-4>`

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	ingress	Rule applies on ingress direction.
	egress	Rule applies on egress direction.
P-3	1..2048	Rule index
P-4	0..4294967295	Priority

84.1.11 packet-filter l3 delif

Deletes an interface of a L3 firewall rule

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `packet-filter l3 delif <P-1> <P-2> <P-3>`

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	ingress	Rule applies on ingress direction.
	egress	Rule applies on egress direction.
P-3	1..2048	Rule index

84.1.12 packet-filter l3 enableif

Enables an interface of a L3 firewall rule

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `packet-filter l3 enableif <P-1> <P-2> <P-3>`

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	ingress	Rule applies on ingress direction.
	egress	Rule applies on egress direction.
P-3	1..2048	Rule index

84.1.13 packet-filter l3 disableif

Disables an interface of a L3 firewall rule

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `packet-filter l3 disableif <P-1> <P-2> <P-3>`

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	ingress	Rule applies on ingress direction.
	egress	Rule applies on egress direction.
P-3	1..2048	Rule index

84.2 clear

Clear several items.

84.2.1 clear fw-state-table

Clear Firewall connection tracking table.
- Mode: `Privileged Exec Mode`
- Privilege Level: `Administrator`
- Format: `clear fw-state-table`

84.3 show

Display device options and settings.

84.3.1 show packet-filter l3 global

Display the packet-filter global information and settings.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show packet-filter l3 global`

84.3.2 show packet-filter l3 maxrules

Max. number of allowed rules in L3 rule table
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show packet-filter l3 maxrules`

84.3.3 show packet-filter l3 defaultpolicy

Default policy (accept(1), drop(2), reject(3))
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show packet-filter l3 defaultpolicy`

84.3.4 show packet-filter l3 ruletable

Display the L3 rule table.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show packet-filter l3 ruletable`

84.3.5 show packet-filter l3 iftable

Display the L3 interface mapping table.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show packet-filter l3 iftable`

84.3.6 show packet-filter l3 pending

Display whether uncommitted changes for L3 exist.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show packet-filter l3 pending`

85 Private VLAN

85.1 private-vlan

VLAN to be configured as private VLAN.

85.1.1 private-vlan vlan-id

Existing VLAN ID.
- Mode: `VLAN Database Mode`
- Privilege Level: `Operator`
- Format: `private-vlan vlan-id <P-1> type <P-2>`

`type`: Set Private Vlan type.

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.
P-2	primary	Set the vlan type as primary.
	isolated	Set the vlan type as isolated.
	community	Set the vlan type as community.
	unconfigured	Set the vlan type as unconfigured.

85.1.2 private-vlan add associate primary

Existing Primary VLAN.
- Mode: `VLAN Database Mode`
- Privilege Level: `Operator`
- Format: `private-vlan add associate primary <P-1> secondary <P-2>`

`secondary`: Existing Secondary VLAN/VLANs.

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.
P-2	string	Comma Separated Existing Secondary VLAN/VLANs.

85.1.3 private-vlan delete associate primary

Existing Primary VLAN.
- Mode: `VLAN Database Mode`
- Privilege Level: `Operator`
- Format: `private-vlan delete associate primary <P-1> secondary <P-2>`

`secondary`: Comma Separated Secondary VLAN/VLANs.

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.
P-2	string	Comma Separated Existing Secondary VLAN/VLANs.

85.2 switchport

Set the switchport status of a port.

85.2.1 switchport mode private-vlan

Configuration for Private VLAN
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `switchport mode private-vlan <P-1>`

Parameter	Value	Meaning
P-1	general	Set the port mode as General.
	host	Set the port mode as Host.
	promiscuous	set the port mode as Promiscuous.

85.2.2 switchport private-vlan add host-assoc primary

Primary VLAN
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `switchport private-vlan add host-assoc primary <P-1> secondary <P-2>`

secondary: secondary VLAN

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.
P-2	1..4042	Enter the VLAN ID.

85.2.3 switchport private-vlan add promiscuous-assoc primary

Primary VLAN

- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: switchport private-vlan add promiscuous-assoc primary <P-1> secondary <P-2>

secondary: comma sepearated secondary VLANs

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.
P-2	string	Comma Separated Existing Secondary VLAN/VLANs.

85.2.4 switchport private-vlan delete host-assoc primary

Primary VLAN

- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: switchport private-vlan delete host-assoc primary <P-1> secondary <P-2>

secondary: secondary VLAN

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.
P-2	1..4042	Enter the VLAN ID.

85.2.5 switchport private-vlan delete promiscuous-assoc primary

Primary VLAN

- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: switchport private-vlan delete promiscuous-assoc primary <P-1> secondary <P-2>

secondary: comma sepearated secondary VLANs

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.
P-2	string	Comma Separated Existing Secondary VLAN/VLANs.

85.3 show

Display device options and settings.

85.3.1 show vlan private-vlan

Display the Private vlan configuration.

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

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

86 Protocol Based VLAN

86.1 vlan

Creation and configuration of VLANS.

86.1.1 vlan protocol group add

Add a new group or add protocols to an existing group.
- Mode: VLAN Database Mode
- Privilege Level: Operator
- Format: vlan protocol group add <P-1> name <P-2> vlan-id <P-3> ethertype <P-4>

name: Assign a group name .
vlan-id: Associate a VLAN ID to a group.
ethertype: Add protocols to an existing group. Before adding protocols to a group please create one.

Parameter	Value	Meaning
P-1	1..128	Protocol based VLANs group index.
P-2	string	Enter 0 to 16 alpha numerical characters.
P-3	1..4042	Enter the VLAN ID.
P-4	string	<protocol-list> Enter a comma-separated list of mnemonics or values, max. 256 chars (eg.: 1536-65535, ip, arp, ipx). Hexadecimal values are entered with a leading \'0x\', eg. 0x600-0xffff.

- no vlan protocol group add
  Disable the option
  - Mode: VLAN Database Mode
  - Privilege Level: Operator
  - Format: no vlan protocol group add name vlan-id ethertype <P-4>

86.1.2 vlan protocol group modify

Modify a protocol group.
- Mode: VLAN Database Mode
- Privilege Level: Operator
- Format: vlan protocol group modify <P-1> [name <P-2>] [vlan-id <P-3>] [ethertype <P-4>]

[name]: Modify the group name.
[vlan-id]: Modify the VLAN ID of a group.
[ethertype]: Modify ethertypes from a protocol group.

Parameter	Value	Meaning
P-1	1..128	Protocol based VLANs group index.
P-2	string	Enter 0 to 16 alpha numerical characters.
P-3	1..4042	Enter the VLAN ID.
P-4	string	<protocol-list> Enter a comma-separated list of mnemonics or values, max. 256 chars (eg.: 1536-65535, ip, arp, ipx). Hexadecimal values are entered with a leading \'0x\', eg. 0x600-0xffff.

86.1.3 vlan protocol group delete

Delete a protocol group.
- Mode: VLAN Database Mode
- Privilege Level: Operator
- Format: vlan protocol group delete <P-1> [ethertype <P-2>]

[ethertype]: Remove ethertypes from a protocol group.

Parameter	Value	Meaning
P-1	1..128	Protocol based VLANs group index.
P-2	string	<protocol-list> Enter a comma-separated list of mnemonics or values, max. 256 chars (eg.: 1536-65535, ip, arp, ipx). Hexadecimal values are entered with a leading \'0x\', eg. 0x600-0xffff.

86.2 vlan

Configure 802.1Q port parameters for VLANs.

86.2.1 vlan protocol group add

Add this interface to a group.

- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: vlan protocol group add <P-1>

Parameter	Value	Meaning
P-1	1..128	Protocol based VLANs group index.

86.2.2 vlan protocol group delete

Remove this interface from a group.

- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: vlan protocol group delete <P-1>

Parameter	Value	Meaning
P-1	1..128	Protocol based VLANs group index.

86.3 show

Display device options and settings.

86.3.1 show vlan protocol

Display the protocol based VLANs summary information.

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

Parameter	Value	Meaning
P-1	1..128	Protocol based VLANs group index.

87 Protocol Independent Multicast (PIM)

87.1 ip

Set IP parameters.

87.1.1 ip pim dense operation

Enable or disable the PIM-DM globally.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip pim dense operation`

- `no ip pim dense operation`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no ip pim dense operation`

87.1.2 ip pim dense holdtimes

Configure the value in seconds inserted into the Holdtime field of a Prune message sent on any interface.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip pim dense holdtimes <P-1>`

Parameter	Value	Meaning
P-1	60..64800	Enter the holdtimes value (default: 210).

87.1.3 ip pim sparse operation

Enable or disable the PIM-SM globally.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip pim sparse operation`

- `no ip pim sparse operation`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no ip pim sparse operation`

87.1.4 ip pim sparse ssm add

Create a SSM entry for the PIM-SM router.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip pim sparse ssm add <P-1> <P-2>`

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

Parameter	Value	Meaning
P-2	0.0.0.0	
	128.0.0.0	
	192.0.0.0	
	224.0.0.0	
	240.0.0.0	
	248.0.0.0	
	252.0.0.0	
	254.0.0.0	
	255.0.0.0	
	255.128.0.0	
	255.192.0.0	
	255.224.0.0	
	255.240.0.0	
	255.248.0.0	
	255.252.0.0	
	255.254.0.0	
	255.255.0.0	
	255.255.128.0	
	255.255.192.0	
	255.255.224.0	
	255.255.240.0	
	255.255.248.0	
	255.255.252.0	
	255.255.254.0	
	255.255.255.0	
	255.255.255.128	
	255.255.255.192	
	255.255.255.224	
	255.255.255.240	
	255.255.255.248	
	255.255.255.252	
	255.255.255.254	
	255.255.255.255	

87.1.5 ip pim sparse ssm enable

Enable SSM admin mode for specified entry.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip pim sparse ssm enable <P-1> <P-2>

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

Parameter	Value	Meaning
P-2	0.0.0.0	
	128.0.0.0	
	192.0.0.0	
	224.0.0.0	
	240.0.0.0	
	248.0.0.0	
	252.0.0.0	
	254.0.0.0	
	255.0.0.0	
	255.128.0.0	
	255.192.0.0	
	255.224.0.0	
	255.240.0.0	
	255.248.0.0	
	255.252.0.0	
	255.254.0.0	
	255.255.0.0	
	255.255.128.0	
	255.255.192.0	
	255.255.224.0	
	255.255.240.0	
	255.255.248.0	
	255.255.252.0	
	255.255.254.0	
	255.255.255.0	
	255.255.255.128	
	255.255.255.192	
	255.255.255.224	
	255.255.255.240	
	255.255.255.248	
	255.255.255.252	
	255.255.255.254	
	255.255.255.255	

87.1.6 ip pim sparse ssm disable

Disable SSM admin mode for specified entr.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip pim sparse ssm disable <P-1> <P-2>

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

Parameter	Value	Meaning
P-2	0.0.0.0	
	128.0.0.0	
	192.0.0.0	
	224.0.0.0	
	240.0.0.0	
	248.0.0.0	
	252.0.0.0	
	254.0.0.0	
	255.0.0.0	
	255.128.0.0	
	255.192.0.0	
	255.224.0.0	
	255.240.0.0	
	255.248.0.0	
	255.252.0.0	
	255.254.0.0	
	255.255.0.0	
	255.255.128.0	
	255.255.192.0	
	255.255.224.0	
	255.255.240.0	
	255.255.248.0	
	255.255.252.0	
	255.255.254.0	
	255.255.255.0	
	255.255.255.128	
	255.255.255.192	
	255.255.255.224	
	255.255.255.240	
	255.255.255.248	
	255.255.255.252	
	255.255.255.254	
	255.255.255.255	

87.1.7 ip pim sparse ssm delete

Delete a SSM entry for the PIM-SM router.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip pim sparse ssm delete <P-1> <P-2>`

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

Parameter	Value	Meaning
P-2	0.0.0.0	
	128.0.0.0	
	192.0.0.0	
	224.0.0.0	
	240.0.0.0	
	248.0.0.0	
	252.0.0.0	
	254.0.0.0	
	255.0.0.0	
	255.128.0.0	
	255.192.0.0	
	255.224.0.0	
	255.240.0.0	
	255.248.0.0	
	255.252.0.0	
	255.254.0.0	
	255.255.0.0	
	255.255.128.0	
	255.255.192.0	
	255.255.224.0	
	255.255.240.0	
	255.255.248.0	
	255.255.252.0	
	255.255.254.0	
	255.255.255.0	
	255.255.255.128	
	255.255.255.192	
	255.255.255.224	
	255.255.255.240	
	255.255.255.248	
	255.255.255.252	
	255.255.255.254	
	255.255.255.255	

87.1.8 ip pim sparse rp-address add

Create a static RP for the PIM-SM router.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip pim sparse rp-address add <P-1> <P-2> address <P-3> [override <P-4>]

address: Set the RP address.
[override]: Change the dynamic override option.

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

Parameter	Value	Meaning
P-2	0.0.0.0	
	128.0.0.0	
	192.0.0.0	
	224.0.0.0	
	240.0.0.0	
	248.0.0.0	
	252.0.0.0	
	254.0.0.0	
	255.0.0.0	
	255.128.0.0	
	255.192.0.0	
	255.224.0.0	
	255.240.0.0	
	255.248.0.0	
	255.252.0.0	
	255.254.0.0	
	255.255.0.0	
	255.255.128.0	
	255.255.192.0	
	255.255.224.0	
	255.255.240.0	
	255.255.248.0	
	255.255.252.0	
	255.255.254.0	
	255.255.255.0	
	255.255.255.128	
	255.255.255.192	
	255.255.255.224	
	255.255.255.240	
	255.255.255.248	
	255.255.255.252	
	255.255.255.254	
	255.255.255.255	
P-3	A.B.C.D	IP address.
P-4	true	True
	false	False

87.1.9 ip pim sparse rp-address modify

Modify a static RP for the PIM-SM router.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip pim sparse rp-address modify <P-1> <P-2> [address <P-3>] [override <P-4>]

[address]: Set the RP address.
[override]: Change the dynamic override option.

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

Parameter	Value	Meaning
P-2	0.0.0.0	
	128.0.0.0	
	192.0.0.0	
	224.0.0.0	
	240.0.0.0	
	248.0.0.0	
	252.0.0.0	
	254.0.0.0	
	255.0.0.0	
	255.128.0.0	
	255.192.0.0	
	255.224.0.0	
	255.240.0.0	
	255.248.0.0	
	255.252.0.0	
	255.254.0.0	
	255.255.0.0	
	255.255.128.0	
	255.255.192.0	
	255.255.224.0	
	255.255.240.0	
	255.255.248.0	
	255.255.252.0	
	255.255.254.0	
	255.255.255.0	
	255.255.255.128	
	255.255.255.192	
	255.255.255.224	
	255.255.255.240	
	255.255.255.248	
	255.255.255.252	
	255.255.255.254	
	255.255.255.255	
P-3	A.B.C.D	IP address.
P-4	true	True
	false	False

87.1.10 ip pim sparse rp-address delete

Delete a static RP for the PIM-SM router.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip pim sparse rp-address delete <P-1> <P-2>

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

Parameter	Value	Meaning
P-2	0.0.0.0	
	128.0.0.0	
	192.0.0.0	
	224.0.0.0	
	240.0.0.0	
	248.0.0.0	
	252.0.0.0	
	254.0.0.0	
	255.0.0.0	
	255.128.0.0	
	255.192.0.0	
	255.224.0.0	
	255.240.0.0	
	255.248.0.0	
	255.252.0.0	
	255.254.0.0	
	255.255.0.0	
	255.255.128.0	
	255.255.192.0	
	255.255.224.0	
	255.255.240.0	
	255.255.248.0	
	255.255.252.0	
	255.255.254.0	
	255.255.255.0	
	255.255.255.128	
	255.255.255.192	
	255.255.255.224	
	255.255.255.240	
	255.255.255.248	
	255.255.255.252	
	255.255.255.254	
	255.255.255.255	

87.1.11 ip pim sparse rp-address enable

Enable RP static admin mode.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip pim sparse rp-address enable <P-1> <P-2>

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

Parameter	Value	Meaning
P-2	0.0.0.0	
	128.0.0.0	
	192.0.0.0	
	224.0.0.0	
	240.0.0.0	
	248.0.0.0	
	252.0.0.0	
	254.0.0.0	
	255.0.0.0	
	255.128.0.0	
	255.192.0.0	
	255.224.0.0	
	255.240.0.0	
	255.248.0.0	
	255.252.0.0	
	255.254.0.0	
	255.255.0.0	
	255.255.128.0	
	255.255.192.0	
	255.255.224.0	
	255.255.240.0	
	255.255.248.0	
	255.255.252.0	
	255.255.254.0	
	255.255.255.0	
	255.255.255.128	
	255.255.255.192	
	255.255.255.224	
	255.255.255.240	
	255.255.255.248	
	255.255.255.252	
	255.255.255.254	
	255.255.255.255	

87.1.12 ip pim sparse rp-address disable

Disable RP static admin mode.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip pim sparse rp-address disable <P-1> <P-2>

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

Parameter	Value	Meaning
P-2	0.0.0.0	
	128.0.0.0	
	192.0.0.0	
	224.0.0.0	
	240.0.0.0	
	248.0.0.0	
	252.0.0.0	
	254.0.0.0	
	255.0.0.0	
	255.128.0.0	
	255.192.0.0	
	255.224.0.0	
	255.240.0.0	
	255.248.0.0	
	255.252.0.0	
	255.254.0.0	
	255.255.0.0	
	255.255.128.0	
	255.255.192.0	
	255.255.224.0	
	255.255.240.0	
	255.255.248.0	
	255.255.252.0	
	255.255.254.0	
	255.255.255.0	
	255.255.255.128	
	255.255.255.192	
	255.255.255.224	
	255.255.255.240	
	255.255.255.248	
	255.255.255.252	
	255.255.255.254	
	255.255.255.255	

87.1.13 ip pim sparse rp-candidate add

Set a local IP address as RP candidate.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip pim sparse rp-candidate add <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.

Parameter	Value	Meaning
P-3	0.0.0.0	
	128.0.0.0	
	192.0.0.0	
	224.0.0.0	
	240.0.0.0	
	248.0.0.0	
	252.0.0.0	
	254.0.0.0	
	255.0.0.0	
	255.128.0.0	
	255.192.0.0	
	255.224.0.0	
	255.240.0.0	
	255.248.0.0	
	255.252.0.0	
	255.254.0.0	
	255.255.0.0	
	255.255.128.0	
	255.255.192.0	
	255.255.224.0	
	255.255.240.0	
	255.255.248.0	
	255.255.252.0	
	255.255.254.0	
	255.255.255.0	
	255.255.255.128	
	255.255.255.192	
	255.255.255.224	
	255.255.255.240	
	255.255.255.248	
	255.255.255.252	
	255.255.255.254	
	255.255.255.255	

87.1.14 ip pim sparse rp-candidate delete

Delete an RP candidate from PIM-SM router.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip pim sparse rp-candidate delete <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.

Parameter	Value	Meaning
P-3	0.0.0.0	
	128.0.0.0	
	192.0.0.0	
	224.0.0.0	
	240.0.0.0	
	248.0.0.0	
	252.0.0.0	
	254.0.0.0	
	255.0.0.0	
	255.128.0.0	
	255.192.0.0	
	255.224.0.0	
	255.240.0.0	
	255.248.0.0	
	255.252.0.0	
	255.254.0.0	
	255.255.0.0	
	255.255.128.0	
	255.255.192.0	
	255.255.224.0	
	255.255.240.0	
	255.255.248.0	
	255.255.252.0	
	255.255.254.0	
	255.255.255.0	
	255.255.255.128	
	255.255.255.192	
	255.255.255.224	
	255.255.255.240	
	255.255.255.248	
	255.255.255.252	
	255.255.255.254	
	255.255.255.255	

87.1.15 ip pim sparse rp-candidate enable

Enable an RP candidate from PIM-SM router.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip pim sparse rp-candidate enable <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.

Parameter	Value	Meaning
P-3	0.0.0.0	
	128.0.0.0	
	192.0.0.0	
	224.0.0.0	
	240.0.0.0	
	248.0.0.0	
	252.0.0.0	
	254.0.0.0	
	255.0.0.0	
	255.128.0.0	
	255.192.0.0	
	255.224.0.0	
	255.240.0.0	
	255.248.0.0	
	255.252.0.0	
	255.254.0.0	
	255.255.0.0	
	255.255.128.0	
	255.255.192.0	
	255.255.224.0	
	255.255.240.0	
	255.255.248.0	
	255.255.252.0	
	255.255.254.0	
	255.255.255.0	
	255.255.255.128	
	255.255.255.192	
	255.255.255.224	
	255.255.255.240	
	255.255.255.248	
	255.255.255.252	
	255.255.255.254	
	255.255.255.255	

87.1.16 ip pim sparse rp-candidate disable

Disable an RP candidate from PIM-SM router.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip pim sparse rp-candidate disable <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.

Parameter	Value	Meaning
P-3	0.0.0.0	
	128.0.0.0	
	192.0.0.0	
	224.0.0.0	
	240.0.0.0	
	248.0.0.0	
	252.0.0.0	
	254.0.0.0	
	255.0.0.0	
	255.128.0.0	
	255.192.0.0	
	255.224.0.0	
	255.240.0.0	
	255.248.0.0	
	255.252.0.0	
	255.254.0.0	
	255.255.0.0	
	255.255.128.0	
	255.255.192.0	
	255.255.224.0	
	255.255.240.0	
	255.255.248.0	
	255.255.252.0	
	255.255.254.0	
	255.255.255.0	
	255.255.255.128	
	255.255.255.192	
	255.255.255.224	
	255.255.255.240	
	255.255.255.248	
	255.255.255.252	
	255.255.255.254	
	255.255.255.255	

87.1.17 ip pim sparse bsr-candidate add

Add the bootstrap candidate option.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip pim sparse bsr-candidate add <P-1> address <P-2> [hash-mask <P-3>] [bsm-interval <P-4>] [priority <P-5>]`

`address`: Set a local IP address as BSR candidate.
`[hash-mask]`: Set BSR candidate hash-mask length.
`[bsm-interval]`: Set BSR advertisement interval.
`[priority]`: Set BSR candidate priority.

Parameter	Value	Meaning
P-1	1..4294967295	Enter the zone index.
P-2	A.B.C.D	IP address.
P-3	0..128	Enter a number in the given range.
P-4	1..16383	Enter a number in the given range.
P-5	0..255	Enter a number in the given range.

87.1.18 ip pim sparse bsr-candidate modify

Modify the bootstrap candidate parameters.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip pim sparse bsr-candidate modify <P-1> address <P-2> hash-mask <P-3> bsm-interval <P-4> priority <P-5>`

`address`: Set a local IP address as BSR candidate.
`hash-mask`: Set BSR candidate hash-mask length.
`bsm-interval`: Set BSR advertisement interval.
`priority`: Set BSR candidate priority.

Parameter	Value	Meaning
P-1	1..4294967295	Enter the zone index.
P-2	A.B.C.D	IP address.
P-3	0..128	Enter a number in the given range.

Parameter	Value	Meaning
P-4	1..16383	Enter a number in the given range.
P-5	0..255	Enter a number in the given range.

87.1.19 ip pim sparse bsr-candidate delete

Delete the bootstrap candidate option.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip pim sparse bsr-candidate delete <P-1>

Parameter	Value	Meaning
P-1	1..4294967295	Enter the zone index.

87.1.20 ip pim sparse bsr-candidate enable

Enable the bootstrap candidate option.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip pim sparse bsr-candidate enable <P-1>

Parameter	Value	Meaning
P-1	1..4294967295	Enter the zone index.

87.1.21 ip pim sparse bsr-candidate disable

Disable the bootstrap candidate option.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip pim sparse bsr-candidate disable <P-1>

Parameter	Value	Meaning
P-1	1..4294967295	Enter the zone index.

87.1.22 ip pim trapflag

Enable or disable PIM related traps.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip pim trapflag

- no ip pim trapflag
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no ip pim trapflag

87.2 ip

IP interface commands.

87.2.1 ip pim operation

Enable or disable PIM on the interface.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip pim operation

- no ip pim operation
  Disable the option
  - Mode: Interface Range Mode
  - Privilege Level: Operator
  - Format: no ip pim operation

87.2.2 ip pim hello-interval

Configure the hello interval in seconds on the interface.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip pim hello-interval <P-1>

Parameter	Value	Meaning
P-1	0..18000	Enter the hello interval (default: 30).

87.2.3 ip pim sparse bsr-border

Configure BSR Border for the interface.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip pim sparse bsr-border

- no ip pim sparse bsr-border
  Disable the option
  - Mode: Interface Range Mode
  - Privilege Level: Operator
  - Format: no ip pim sparse bsr-border

87.2.4 ip pim sparse dr-priority

Configure DR priority for the interface.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip pim sparse dr-priority <P-1>

Parameter	Value	Meaning
P-1	0..4294967294	Enter the designated router priority (default: 1).

87.2.5 ip pim sparse join-prune-interval

Configure the join/prune interval for the interface in seconds.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip pim sparse join-prune-interval <P-1>

Parameter	Value	Meaning
P-1	0..18000	Enter the join-prune interval (default: 30).

87.3 show

Display device options and settings.

87.3.1 show ip pim global

Display the PIM global configuration.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip pim global

87.3.2 show ip pim interface

Display the PIM interface status parameters.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip pim interface [<P-1>]

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

87.3.3 show ip pim neighbor

Display the PIM neighbors information.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip pim neighbor [<P-1>]

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

87.3.4 show ip pim rp static

Display the static RP information.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip pim rp static

87.3.5 show ip pim rp mapping

Display the group to RP mapping info.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip pim rp mapping [<P-1>]

Parameter	Value	Meaning
P-1	fixed	
	static	
	config-ssm	
	bsr	
	auto-rp	
	embedded	
	static-override	

87.3.6 show ip pim rp candidate

Display the RP candidate info.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip pim rp candidate

87.3.7 show ip pim bsr candidate

Display the BSR candidate information.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip pim bsr candidate

87.3.8 show ip pim bsr elected

Display the BSR elected information.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip pim bsr elected

87.3.9 show ip pim ssm

Display the information regarding SSM.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip pim ssm

87.3.10 show ip pim rp-hash

Display the PIM-SM RP information for a specific group.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ip pim rp-hash <P-1>

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

88 Power Over Ethernet (PoE)

88.1 inlinepower

Configure the global inline power settings.

88.1.1 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`

88.1.2 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`

88.1.3 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.`

88.1.4 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`

88.2 inlinepower

Configure inline power interface settings.

88.2.1 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

88.2.2 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

88.2.3 inlinepower auto-shutdown-end

Configure the interface-related inline power autoshutdown 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).

88.2.4 inlinepower auto-shutdown-start

Configure the interface-related inline power autoshutdown 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).

88.2.5 inlinepower auto-shutdown-timer

Configure the interface-related inline power autoshutdown 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`

88.2.6 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

88.2.7 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.

88.2.8 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.

88.2.9 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

88.2.10 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).

88.3 show

Display device options and settings.

88.3.1 show inlinepower global

Display the inline power global settings.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show inlinepower global

88.3.2 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.	

88.3.3 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.	

89 Port Locking

89.1 port-locking

Port-locking configuration.

89.1.1 port-locking operation

Enables or disables port locking.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: port-locking operation

- no port-locking operation
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no port-locking operation

89.1.2 port-locking mode

Configure the port locking mode.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: port-locking mode <P-1>

Parameter	Value	Meaning
P-1	ports-and-mac-addresses	Lock MAC addresses and disable unused ports.
	ports-only	Disable unused ports only.
	mac-addresses-only	Lock MAC addresses and do NOT disable unused ports.

89.1.3 port-locking uplink detection-mode

Configure how port locking should detect Uplink-ports.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: port-locking uplink detection-mode <P-1>

Parameter	Value	Meaning
P-1	num-mac-addr	Detect an uplink port based on number of MAC-addresses.
	stp-pdu-detection	Detect an uplink port based on reception of Spanning Tree PDUs.

89.1.4 port-locking uplink freeze-addresses

Configure port locking to freeze MAC-addresses on uplink ports.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: port-locking uplink freeze-addresses <P-1>

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

89.1.5 port-locking uplink report-addresses

Configure port locking to report new MAC-addresses on uplink ports.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: port-locking uplink report-addresses <P-1>

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

89.1.6 port-locking fallback-timer

Configure the port locking fallback timer in seconds.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: port-locking fallback-timer <P-1>

Parameter	Value	Meaning
P-1	0..86400	Fallback timer in seconds.

89.1.7 port-locking ignore-uplinks

Configure if uplinks should be ignored or not (Enable/Disable).
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: port-locking ignore-uplinks <P-1>

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

89.1.8 port-locking arp-inspection operation

Enables or disables the ARP inspection mode.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: port-locking arp-inspection operation

- no port-locking arp-inspection operation
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Administrator
  - Format: no port-locking arp-inspection operation

89.1.9 port-locking arp-inspection verify src-mac

If enabled, the source MAC address in the ethernet packet needs to match the sender MAC address in an ARP request/response packet body.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: port-locking arp-inspection verify src-mac <P-1>

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

89.1.10 port-locking arp-inspection verify dest-mac

If enabled, the destination MAC address in the (unicast) ethernet packet needs to match the MAC address in an ARP response packet body.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: port-locking arp-inspection verify dest-mac <P-1>

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

89.1.11 port-locking arp-inspection verify ip

If enabled, the sender protocol address (always) and the target protocol address (response) in the ARP packet body need to be a public unicast IP address. Such addresses exclude 0.0.0.0, multicast/broadcast addresses, reserved addresses, and loopback addresses.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: port-locking arp-inspection verify ip <P-1>

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

89.1.12 port-locking arp-inspection verify subnet

If enabled, the sender protocol address needs to belong to the subnet range of the device IP address.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: port-locking arp-inspection verify subnet <P-1>

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

89.1.13 port-locking arp-inspection trap verification-error

If enabled, SNMP traps are sent if header verification fails on the snooped ARP frame.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: port-locking arp-inspection trap verification-error <P-1>

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

89.1.14 port-locking arp-inspection trap db-verification

If enabled, SNMP traps are sent if an existing entry of the ARP database was modified in Learning mode.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: port-locking arp-inspection trap db-verification <P-1>

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

89.1.15 port-locking arp-inspection trap db-alarm

If enabled, SNMP traps are sent if a new ARP database entry was created, or an existing ARP database entry was modified in Inspection mode.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: port-locking arp-inspection trap db-alarm <P-1>

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

89.2 port-locking

Port-locking configuration.

89.2.1 port-locking operation

Enable/Disable port locking on the interface.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: port-locking operation

- no port-locking operation
  Disable the option
  - Mode: Interface Range Mode
  - Privilege Level: Operator
  - Format: no port-locking operation

89.2.2 port-locking mac-address add

Add static MAC address to the interface.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: port-locking mac-address add <P-1> <P-2>

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

Parameter	Value	Meaning
P-2	1..4042	VLAN ID

89.2.3 port-locking mac-address delete

Remove static MAC address from the interface.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: port-locking 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

89.2.4 port-locking trap-mode

Enable/Disable violation trap mode on the interface.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: port-locking trap-mode <P-1>

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

89.3 show

Display device options and settings.

89.3.1 show port-locking global

Show global port-locking settings.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show port-locking global

89.3.2 show port-locking interface

Display the port-locking information for the interface.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show port-locking interface [<P-1>]

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

89.3.3 show port-locking dynamic

Display the dynamically learned MAC addresses.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show port-locking dynamic <P-1>

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

89.3.4 show port-locking static

Display the statically locked MAC addresses.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show port-locking static <P-1>

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

89.3.5 show port-locking violation

Display the port locking violation information.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show port-locking violation <P-1>

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

89.3.6 show port-locking arp-inspection global

Show ARP inspection global variables.

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

89.3.7 show port-locking arp-inspection database

Show ARP inspection database values.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show port-locking arp-inspection database

89.4 clear

Clear several items.

89.4.1 clear arp-inspection-db

Clear the agent's ARP database.

- Mode: Privileged Exec Mode
- Privilege Level: Operator
- Format: clear arp-inspection-db

90 Port Monitor

90.1 port-monitor

Configure the Port Monitor condition settings.

90.1.1 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`

90.2 port-monitor

Configure the Port Monitor condition settings.

90.2.1 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.

90.2.2 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.

90.2.3 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`

90.2.4 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.

90.2.5 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.

90.2.6 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

90.2.7 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

90.2.8 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.

90.2.9 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.

90.2.10 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.

90.2.11 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.

90.2.12 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.

90.2.13 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

90.2.14 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

90.2.15 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>] [<P-7>]

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
P-7	[fdx-1000]0	1000 Mbit/s - full duplex

90.2.16 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

90.2.17 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.

90.2.18 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>]

90.3 show

Display device options and settings.

90.3.1 show port-monitor operation

Display the Port Monitor operation.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show port-monitor operation

90.3.2 show port-monitor brief

Display the Port Monitor summary.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show port-monitor brief

90.3.3 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

90.3.4 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.	

90.3.5 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.	

90.3.6 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.	

90.3.7 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.	

90.3.8 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.	

91 Port Security

91.1 port-security

Port security

91.1.1 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`

91.1.2 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>`

91.2 port-security

Port security

91.2.1 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`

91.2.2 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.

91.2.3 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.

91.2.4 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

91.2.5 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

91.2.6 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

91.2.7 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

91.2.8 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

91.2.9 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]`

91.2.10 port-security auto-disable

Enable or disable autodisable for the interface.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `port-security auto-disable`

- `no port-security auto-disable`
  Disable the option
  - Mode: `Interface Range Mode`
  - Privilege Level: `Operator`
  - Format: `no port-security auto-disable`

91.3 show

Display device options and settings.

91.3.1 show port-security global

Port Security global status
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show port-security global`

91.3.2 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.	

91.3.3 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.	

91.3.4 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.	

91.3.5 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.	

92 Profinet IO

92.1 profinet

Configures the PROFINET functionality on this device.

92.1.1 profinet operation

Enables or disables the PROFINET functionality on this device.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `profinet operation`

- `no profinet operation`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no profinet operation`

92.1.2 profinet preserve vlan-0 tag

Configures the VLAN 0 preserve functionality on this device
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `profinet preserve vlan-0 tag <P-1>`

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

92.1.3 profinet name-of-station

Sets the name of the station.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `profinet name-of-station <P-1>`

Parameter	Value	Meaning
P-1	string	Enter the name of the station, alphanumeric ascii string, max. 240 characters.

92.2 profinet

Configures the PROFINET functionality on this device.

92.2.1 profinet dcp-mode

Sets the PROFINET DCP mode on an interface.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `profinet dcp-mode <P-1>`

Parameter	Value	Meaning
P-1	none	Sets the PROFINET DCP mode on an interface to none (neither ingress or egress). The agent does not respond to frames received on this interface. The interface does not forward frames received on other interfaces.
	ingress	Sets the PROFINET DCP mode on an interface to ingress only. The agent responds to frames received on this interface. The interface does not forward frames received on other interfaces.
	egress	Sets the PROFINET DCP mode on an interface to egress only. The agent does not respond to frames received on this interface. The interface forwards frames received on other interfaces.
	both	Sets the PROFINET DCP mode on an interface to both (ingress and egress). The agent responds to frames received on this interface. The interface forwards frames received on other interfaces.

92.3 copy

Copy different kinds of items.

92.3.1 copy gsdml-profinet system remote

Copy the GSDML file from the device to the file server
- Mode: `Privileged Exec Mode`
- Privilege Level: `Operator`
- Format: `copy gsdml-profinet system remote <P-1> [source-interface <P-2>]`

`[source-interface]`: Specify the source-interface to be used (physical or logical). The frames will not necessarily be sent on this interface, only the IP address of the interface will be used as source IP.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.
P-2	slot no./port no.	

92.3.2 copy gsdml-profinet system envm

Copy the GSDML file from the device to external non-volatile memory.
- Mode: `Privileged Exec Mode`
- Privilege Level: `Operator`
- Format: `copy gsdml-profinet system envm`

92.4 show

Display device options and settings.

92.4.1 show profinet global

Display the PROFINET global settings.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show profinet global`

92.4.2 show profinet port

Display the port-related PROFINET settings.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show profinet port`

93 Protocol

93.1 protocol

Protocol configuration.

93.1.1 protocol add

Add a Protocol configuration to the protocol table.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `protocol add <P-1> name <P-2> [description <P-3>] [protocol-type <P-4>] [ethertype <P-5>] [proto-number <P-6>] [port <P-7>]`

`name`: Specify the Protocol Name
`[description]`: Specify the Protocol Description
`[protocol-type]`: Specify the Protocol Type
`[ethertype]`: Specify the ethernet type
`[proto-number]`: Specify the Protocol number
`[port]`: Specify the Port

Parameter	Value	Meaning
P-1	1..50	Protocol Index
P-2	string	Protocol Name
P-3	string	Protocol Description
P-4	any	any protocol
	ethernet	ethernet protocol
	icmp	internet control message protocol
	tcp	transmission control protocol
	udp	user datagram protocol
P-5	xxx	value Ethertype
	appletalk	Appletalk
	arp	ARP
	ibmsna	IBMSNA
	ipv4	IPv4
	ipv6	IPv6
	ipx-old	IPX-OLD
	mplsmcast	MPLS Multicast
	mplsucast	MPLS Unicast
	netbios	NetBIOS
	novell	NOVELL
	pppoedisc	PPPOEDISC
	rarp	RARP
	pppoesess	PPPOESESS
	ipxnew	IPXNEW
	profinet	PROFINET
	powerlink	POWERLINK
	ethercat	ETHERCAT
	vlan8021q	IEEE802_1Q VLAN
P-6	..	
P-7	any	any Any port/portless protocol
	a-b	a-b Port Range
	a,b	a,b Port List (may be longer than two ports)
	a-b,c-d	a-b,c-d List of Port Ranges (may be longer than two ranges)
	1 to 65535	1 to 65535 Port Number

93.1.2 protocol modify

Modifies a protocol configuration present in the protocol table.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `protocol modify <P-1> [name <P-2>] [description <P-3>] [protocol-type <P-4>] [ethertype <P-5>] [proto-number <P-6>] [port <P-7>]`

`[name]`: Specify the Protocol Name
`[description]`: Specify the Protocol Description
`[protocol-type]`: Specify the Protocol Type

[ethertype]: Specify the ethernet type
[proto-number]: Specify the Protocol Number
[port]: Specify the Port

Parameter	Value	Meaning
P-1	1..50	Protocol Index
P-2	string	Protocol Name
P-3	string	Protocol Description
P-4	any	any protocol
	ethernet	ethernet protocol
	icmp	internet control message protocol
	tcp	transmission control protocol
	udp	user datagram protocol
P-5	xxx	value Ethertype
	appletalk	Appletalk
	arp	ARP
	ibmsna	IBMSNA
	ipv4	IPv4
	ipv6	IPv6
	ipx-old	IPX-OLD
	mplsmcast	MPLS Multicast
	mplsucast	MPLS Unicast
	netbios	NetBIOS
	novell	NOVELL
	pppoedisc	PPPOEDISC
	rarp	RARP
	pppoesess	PPPOESESS
	ipxnew	IPXNEW
	profinet	PROFINET
	powerlink	POWERLINK
	ethercat	ETHERCAT
	vlan8021q	IEEE802_1Q VLAN
P-6	..	
P-7	any	any Any port/portless protocol
	a-b	a-b Port Range
	a,b	a,b Port List (may be longer than two ports)
	a-b,c-d	a-b,c-d List of Port Ranges (may be longer than two ranges)
	1 to 65535	1 to 65535 Port Number

93.1.3 protocol delete

Delete a protocol configurtion present in the protocol table.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: protocol delete <P-1>

Parameter	Value	Meaning
P-1	1..50	Protocol Index

93.2 show

Display device options and settings.

93.2.1 show protocol list

Display all configured protocol list

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

94 Precision Time Protocol (PTP)

94.1 ptp

Enable or disable the Precision Time Protocol (IEEE 1588-2008).

94.1.1 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`

94.1.2 ptp clock-mode

Configure PTPv2 (IEEE1588-2008) clock mode. If 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.`

94.1.3 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	

94.1.4 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	

94.1.5 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`

94.1.6 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

94.1.7 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	

94.1.8 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

94.1.9 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

94.1.10 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	

94.1.11 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.

94.1.12 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

94.1.13 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	

94.1.14 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.

94.1.15 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.

94.1.16 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.

94.1.17 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	

94.1.18 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>`

94.2 ptp

Enable or disable the Precision Time Protocol (IEEE 1588-2008) on a port.

94.2.1 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`

94.2.2 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	-2000000000..2000000000	

94.2.3 ptp v2-transparent-clock pdelay-interval

Configure the Peer Delay Interval in seconds {1|2|4|8|16|32}. This 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	

94.2.4 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`

94.2.5 ptp v2-boundary-clock pdelay-interval

Configure the Peer Delay Interval in seconds {1|2|4|8|16|32}. This 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	

94.2.6 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	

94.2.7 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	

94.2.8 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	

94.2.9 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..2000000000	

94.2.10 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	

94.2.11 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	

94.2.12 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	

94.2.13 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	

94.2.14 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

94.3 show

Display device options and settings.

94.3.1 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.

95 Private VLAN

95.1 private-vlan

VLAN to be configured as private VLAN.

95.1.1 private-vlan vlan-id

Existing VLAN ID.
- Mode: `VLAN Database Mode`
- Privilege Level: `Operator`
- Format: `private-vlan vlan-id <P-1> type <P-2>`

`type`: Set Private Vlan type.

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.
P-2	primary	Set the vlan type as primary.
	isolated	Set the vlan type as isolated.
	community	Set the vlan type as community.
	unconfigured	Set the vlan type as unconfigured.

95.1.2 private-vlan add associate primary

Existing Primary VLAN.
- Mode: `VLAN Database Mode`
- Privilege Level: `Operator`
- Format: `private-vlan add associate primary <P-1> secondary <P-2>`

`secondary`: Existing Secondary VLAN/VLANs.

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.
P-2	string	Comma Separated Existing Secondary VLAN/VLANs.

95.1.3 private-vlan delete associate primary

Existing Primary VLAN.
- Mode: `VLAN Database Mode`
- Privilege Level: `Operator`
- Format: `private-vlan delete associate primary <P-1> secondary <P-2>`

`secondary`: Comma Separated Secondary VLAN/VLANs.

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.
P-2	string	Comma Separated Existing Secondary VLAN/VLANs.

95.2 switchport

Set the switchport status of a port.

95.2.1 switchport mode private-vlan

Configuration for Private VLAN
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `switchport mode private-vlan <P-1>`

Parameter	Value	Meaning
P-1	general	Set the port mode as General.
	host	Set the port mode as Host.
	promiscuous	set the port mode as Promiscuous.

95.2.2 switchport private-vlan add host-assoc primary

Primary VLAN
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `switchport private-vlan add host-assoc primary <P-1> secondary <P-2>`

secondary: secondary VLAN

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.
P-2	1..4042	Enter the VLAN ID.

95.2.3 switchport private-vlan add promiscuous-assoc primary

Primary VLAN

- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: switchport private-vlan add promiscuous-assoc primary <P-1> secondary <P-2>

secondary: comma sepearated secondary VLANs

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.
P-2	string	Comma Separated Existing Secondary VLAN/VLANs.

95.2.4 switchport private-vlan delete host-assoc primary

Primary VLAN

- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: switchport private-vlan delete host-assoc primary <P-1> secondary <P-2>

secondary: secondary VLAN

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.
P-2	1..4042	Enter the VLAN ID.

95.2.5 switchport private-vlan delete promiscuous-assoc primary

Primary VLAN

- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: switchport private-vlan delete promiscuous-assoc primary <P-1> secondary <P-2>

secondary: comma sepearated secondary VLANs

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.
P-2	string	Comma Separated Existing Secondary VLAN/VLANs.

95.3 show

Display device options and settings.

95.3.1 show vlan private-vlan

Display the Private vlan configuration.

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

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

96 Password Management

96.1 passwords

Manage password policies and options.

96.1.1 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.

96.1.2 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.

96.1.3 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.

96.1.4 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.

96.1.5 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.

96.1.6 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.

96.1.7 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.

96.2 show

Display device options and settings.

96.2.1 show passwords

Display the password policies and options.

- Mode: Command is in all modes available.
- Privilege Level: Administrator
- Format: show passwords

97 Radius

97.1 authorization

Configure authorization parameters.

97.1.1 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`

97.2 radius

Configure RADIUS parameters.

97.2.1 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`

97.2.2 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.

97.2.3 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

97.2.4 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.

97.2.5 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.

97.2.6 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

97.2.7 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.

97.2.8 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.

97.2.9 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).

97.2.10 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).

97.2.11 radius source-interface

Configure the RADIUS client source interface (physical or logical). The frames will not necessarily be sent on this interface, only the IP address of the interface will be used as source IP.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: radius source-interface <P-1>

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

97.3 show

Display device options and settings.

97.3.1 show radius global

Display the global RADIUS configuration.

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

97.3.2 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.

97.3.3 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.

97.3.4 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.

97.3.5 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.

97.4 clear

Clear several items.

97.4.1 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.

98 Redundant Coupling Protocol (RCP)

98.1 redundant-coupling

Set RCP parameters.

98.1.1 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`

98.1.2 redundant-coupling timeout

Set RCP timeout in milliseconds. If you enter a value which is not a multiple of 5, then the device rounds up the value to the nearest multiple of 5.
- 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.`

98.1.3 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.`

98.1.4 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.	

98.1.5 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.	

98.1.6 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.	

98.1.7 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.	

98.2 show

Display device options and settings.

98.2.1 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

98.2.2 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

98.2.3 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

99 Remote Authentication

99.1 ldap

Configure LDAP settings.

99.1.1 ldap 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

99.1.2 ldap 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.

99.1.3 ldap 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.

99.1.4 ldap 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.

99.1.5 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.

99.1.6 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.

99.1.7 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.

99.1.8 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.

99.1.9 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.

99.1.10 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.

99.1.11 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.

99.1.12 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.

99.1.13 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.

99.1.14 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.

99.1.15 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.
P-2	slot no./port no.	
P-3	attribute	
	group	
P-4	string	Enter a user-defined text, max. 255 characters.

99.1.16 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.

99.1.17 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.

99.1.18 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.

99.2 show

Display device options and settings.

99.2.1 show ldap global

Display the LDAP configuration parameters and information.
- Mode: `Command is in all modes available.`
- Privilege Level: `Administrator`
- Format: `show ldap global`

99.2.2 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.

99.2.3 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.

99.3 copy

Copy different kinds of items.

99.3.1 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>] [source-interface <P-3>]`

`nvm`: Copy CA certificate file (*.pem) from the remote AD server to the device.
`[source-interface]`: Specify the source-interface to be used (physical or logical). The frames will not necessarily be sent on this interface, only the IP address of the interface will be used as source IP.

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.
P-3	slot no./port no.	

99.3.2 copy ldapcacert envm

Copy CA certificate file (*.pem) from external non-volatile memory to the specified destination.
- Mode: `Privileged Exec Mode`
- Privilege Level: `Administrator`
- Format: `copy ldapcacert 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.

99.4 clear

Clear several items.

99.4.1 clear ldapcacert all

Clear all Ldap Certificate and CRL files.

- Mode: `Privileged Exec Mode`
- Privilege Level: `Administrator`
- Format: `clear ldapcacert all`

100Remote Monitoring (RMON)

100.1 rmon-alarm

Create a RMON alarm action.

100.1.1 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.

100.1.2 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.

100.1.3 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.

100.1.4 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.

100.1.5 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.
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.

100.2 show

Display device options and settings.

100.2.1 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.	

100.2.2 show rmon alarm

Display the configuration on RMON alarms.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show rmon alarm

101Script File

101.1 script

CLI Script File.

101.1.1 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.

101.1.2 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.

101.1.3 script list system

List all the script files available in the device memory.
- Mode: `Privileged Exec Mode`
- Privilege Level: `Administrator`
- Format: `script list system`

101.1.4 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`

101.1.5 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.

101.2 copy

Copy different kinds of items.

101.2.1 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.

101.2.2 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 [source-interface <P-2>] nvm <P-3> [source-interface <P-4>]

running-config: Copy script file from file server to running-config.
[source-interface]: Specify the source-interface to be used (physical or logical). The frames will not necessarily be sent on this interface, only the IP address of the interface will be used as source IP.
nvm: Copy script file to non-volatile memory.
[source-interface]: Specify the source-interface to be used (physical or logical). The frames will not necessarily be sent on this interface, only the IP address of the interface will be used as source IP.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.
P-2	slot no./port no.	
P-3	string	Enter a user-defined text, max. 32 characters.
P-4	slot no./port no.	

101.2.3 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> [source-interface <P-4>]

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.
[source-interface]: Specify the source-interface to be used (physical or logical). The frames will not necessarily be sent on this interface, only the IP address of the interface will be used as source IP.

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.
P-4	slot no./port no.	

101.2.4 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.

101.2.5 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.

101.2.6 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] [source-interface <P-2>]

[all]: Copy all running configuration to file server.
[source-interface]: Specify the source-interface to be used (physical or logical). The frames will not necessarily be sent on this interface, only the IP address of the interface will be used as source IP.

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

Parameter	Value	Meaning
P-2	slot no./port no.	

101.3 show

Display device options and settings.

101.3.1 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.

101.3.2 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.

102Secure Boot

102.1 secure-boot

Enable or disable Secure Boot functionality.

102.1.1 secure-boot operation

Enable or disable the Secure Boot functionality.
- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `secure-boot operation <P-1>`

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

102.2 show

Display device options and settings.

102.2.1 show support-mode status

Display the Support Mode status.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show support-mode status`

102.2.2 show support-mode challenge

Display the Support Mode challenge value.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show support-mode challenge`

102.3 copy

Copy different kinds of items.

102.3.1 copy token remote

Copy the Support Mode token from the remote server to the specified destination.
- Mode: `Privileged Exec Mode`
- Privilege Level: `Administrator`
- Format: `copy token remote <P-1> nvm [<P-2>]`

nvm: Copy the Support Mode token from the remote 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.

102.3.2 copy token envm

Copy the Support Mode token from external non-volatile memory to the specified destination.
- Mode: `Privileged Exec Mode`
- Privilege Level: `Administrator`
- Format: `copy token envm <P-1> nvm [<P-2>]`

nvm: Copy the Support Mode token 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.

103Selftest

103.1 selftest

Configure the selftest settings.

103.1.1 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.

103.1.2 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`

103.1.3 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 loose access to the device permanently in case of loosing administrator password or misconfiguration.
- 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`

103.1.4 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`

103.1.5 selftest push-button

Enable or disable the push button functionality on the device.
- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `selftest push-button`

- `no selftest push-button`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Administrator`
  - Format: `no selftest push-button`

103.2 show

Display device options and settings.

103.2.1 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`

103.2.2 show selftest settings

Display the selftest settings.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show selftest settings`

104 sFlow

104.1 sflow

Configure sFlow

104.1.1 sflow receiver

Configure sflow receiver.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `sflow receiver <P-1> owner <P-2> [ip <P-3>] [timeout <P-4>] timeout <P-5> maxdatagram <P-6> ip <P-7> port <P-8>`

`owner`: Configure sflow owner.
`[ip]`: Configure sflow receiver IP address.
`[timeout]`: Configure sflow receiver timeout.
`timeout`: Configure sflow receiver timeout.
`maxdatagram`: Configure sflow maximum size of the receiver datagram.
`ip`: Configure sflow receiver IP address.
`port`: Configure sflow receiver port.

Parameter	Value	Meaning
P-1	1..8	Enter a sFlow receiver index.
P-2	string	Enter receiver owner string, max. 127 characters.
P-3	A.B.C.D	IP address.
P-4	-1..2147483647	Enter timeout: -1:no timeout, 0:reset configuration, 1 - 2147483647. Note: timeout setting will not be saved.
P-5	-1..2147483647	Enter timeout: -1:no timeout, 0:reset configuration, 1 - 2147483647. Note: timeout setting will not be saved.
P-6	200..3996	Enter maximum datagram size between 200 and 3996.
P-7	A.B.C.D	IP address.
P-8	1..65535	Enter port number between 1 and 65535

104.2 sflow

Configure sflow sampler and poller.

104.2.1 sflow poller receiver

Set a receiver for this poller.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `sflow poller receiver <P-1> [interval <P-2>]`

`[interval]`: Set an interval for this poller.

Parameter	Value	Meaning
P-1	0..8	Enter a sFlow receiver index, 0 to reset configuration.
P-2	0..86400	Enter poller interval between 0 and 86400. Enter 0 to disable the poller.

104.2.2 sflow poller interval

Set an interval for this poller.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `sflow poller interval <P-1>`

Parameter	Value	Meaning
P-1	0..86400	Enter poller interval between 0 and 86400. Enter 0 to disable the poller.

104.2.3 sflow sampler receiver

Set a receiver for this sampler.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `sflow sampler receiver <P-1> [rate <P-2>]`

`[rate]`: Configure sflow sampler rate.

Parameter	Value	Meaning
P-1	0..8	Enter a sFlow receiver index, 0 to reset configuration.
P-2	0	Disable sampling
	256-65536	Set sampling rate. The device changes the value to the closest value that the device hardware supports.

104.2.4 sflow sampler rate

Configure sflow sampler rate.

- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: sflow sampler rate <P-1>

Parameter	Value	Meaning
P-1	0	Disable sampling
	256-65536	Set sampling rate. The device changes the value to the closest value that the device hardware supports.

104.2.5 sflow sampler maxheadersize

Configure sflow sampler maximum header size.

- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: sflow sampler maxheadersize <P-1>

Parameter	Value	Meaning
P-1	20..256	Enter maximum header size between 20 and 256

104.3 show

Display device options and settings.

104.3.1 show sflow agent

Display the sflow agent settings.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show sflow agent

104.3.2 show sflow receivers

Display the sflow receiver settings.

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

Parameter	Value	Meaning
P-1	1..8	Enter a sFlow receiver index.

104.3.3 show sflow pollers

Display the sflow poller settings.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show sflow pollers

104.3.4 show sflow samplers

Display the sflow sampler settings.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show sflow samplers

105Small Form-factor Pluggable (SFP)

105.1 show

Display device options and settings.

105.1.1 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.	

106 Signal Contact

106.1 signal-contact

Configure the signal contact settings.

106.1.1 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 associated manual setting (subcommand 'state').`
	monitor	`The signal contact's status is determined by the associated monitor settings.`
	device-status	`The signal contact's status is determined by the device status.`
	security-status	`The signal contact's status is determined by the security status.`
	dev-sec-status	`The signal contact's status is determined by the device status and security status.`

106.1.2 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`

106.1.3 signal-contact monitor module-removal

Sets the monitoring of the module removal.
- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `signal-contact <P-1> monitor module-removal`

Parameter	Value	Meaning
`P-1`	signal contact no.	

- `no signal-contact monitor module-removal`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Administrator`
  - Format: `no signal-contact <P-1> monitor module-removal`

106.1.4 signal-contact monitor fan-failure

Sets the monitoring of the fan module failure.
- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `signal-contact <P-1> monitor fan-failure`

Parameter	Value	Meaning
`P-1`	signal contact no.	

- no signal-contact monitor fan-failure
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Administrator
  - Format: no signal-contact <P-1> monitor fan-failure

106.1.5 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

106.1.6 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

106.1.7 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

106.1.8 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

106.1.9 signal-contact monitor power-status

Sets the monitoring of the power supply.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: signal-contact <P-1> monitor power-status <P-2>

Parameter	Value	Meaning
P-1	signal contact no.	
P-2	1	Number of power supply.

- no signal-contact monitor power-status
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Administrator
  - Format: no signal-contact <P-1> monitor power-status <P-2>

106.1.10signal-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>

106.1.11signal-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

106.1.12signal-contact monitor humidity

Sets the monitoring of the device humidity.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: signal-contact <P-1> monitor humidity

Parameter	Value	Meaning
P-1	signal contact no.	

- no signal-contact monitor humidity
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Administrator
  - Format: no signal-contact <P-1> monitor humidity

106.1.13signal-contact monitor stp-blocking

Sets the monitoring of ports blocked by STP.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: signal-contact <P-1> monitor stp-blocking

Parameter	Value	Meaning
P-1	signal contact no.	

- no signal-contact monitor stp-blocking
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Administrator
  - Format: no signal-contact <P-1> monitor stp-blocking

106.1.14signal-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).

106.1.15signal-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

106.1.16signal-contact module

Configure the monitoring of the specific module.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: signal-contact <P-1> module <P-2>

Parameter	Value	Meaning
P-1	signal contact no.	
P-2	slot no./port no.	

- no signal-contact module
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Administrator
  - Format: no signal-contact <P-1> module <P-2>

106.1.17signal-contact fan-module

Configure the monitoring of the specific fan module.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: signal-contact <P-1> fan-module <P-2>

Parameter	Value	Meaning
P-1	signal contact no.	
P-2	1..1	Number of fan modules.

- no signal-contact fan-module
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Administrator
  - Format: no signal-contact <P-1> fan-module <P-2>

106.2 signal-contact

Configure the signal contact interface settings.

106.2.1 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`

106.3 show

Display device options and settings.

106.3.1 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 module fan-module events all`

`mode`: Display the signal contact mode.
`monitor`: Display the signal contact monitor settings.
`state`: Display the signal contact state (open/close). Note: This covers the signal contact`s administrative setting 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 network ports.
`module`: Display the settings of the monitoring of the specific modules.
`fan-module`: Display the settings of the monitoring of the specific fan modules.
`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.	

107Signed Firmware

107.1 firmware

Configure firmware parameters. The CLI is not available when the Secure Boot is enabled.

107.1.1 firmware allow-unsigned

Allow to upload unsigned device software.

- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `firmware allow-unsigned <P-1>`

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

107.2 show

Display device options and settings.

107.2.1 show firmware allow-unsigned

Display allow unsigned firmware upgrade preferences. The CLI is not available when the Secure Boot is enabled.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show firmware allow-unsigned`

107.2.2 show firmware ca-cert

Display the information of the firmware signing certificates.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show firmware ca-cert`

108 Slot

108.1 slot

Configure module status.

108.1.1 slot operation

Enable or disable slot

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `slot <P-1> operation`

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

- `no slot operation`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no slot <P-1> operation`

108.1.2 slot module

Remove a virtual module

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `slot <P-1> module <P-2>`

Parameter	Value	Meaning
`P-1`	slot no./port no.	
`P-2`	remove-virtual	`Remove a virtual module`

108.2 show

Display device options and settings.

108.2.1 show slot

Display the module parameters.

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

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

109Static Multicast Routing

109.1 ip

Set IP parameters.

109.1.1 ip mcast operation

Enables or disables multicast routing globally on the device.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip mcast operation

- no ip mcast operation
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no ip mcast operation

109.1.2 ip static-mcast operation

Enables or disables static multicast routing globally on the device.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip static-mcast operation

- no ip static-mcast operation
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no ip static-mcast operation

109.1.3 ip static-mcast mgroup add

Add a new static multicast group instance.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip static-mcast mgroup add <P-1> inbound <P-2> [source-address <P-3>] [source-mask <P-4>] group-address <P-5> [group-mask <P-6>]

inbound: Configure inbound interface
[source-address]: Configure IPv4 source address
[source-mask]: Configure IPv4 source netmask
group-address: Configure IPv4 group address
[group-mask]: Configure IPv4 group netmask

Parameter	Value	Meaning
P-1	..	
P-2	slot no./port no.	
P-3	A.B.C.D	IP address.
P-4	0..32	Prefix length netmask.
P-5	A.B.C.D	IP address.
P-6	0..32	Prefix length netmask.

109.1.4 ip static-mcast mgroup modify

Modify a new static multicast group instance.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip static-mcast mgroup modify <P-1> inbound <P-2> [source-address <P-3>] [source-mask <P-4>] group-address <P-5> [group-mask <P-6>]

inbound: Configure inbound interface
[source-address]: Configure IPv4 source address
[source-mask]: Configure IPv4 source netmask
group-address: Configure IPv4 group address
[group-mask]: Configure IPv4 group netmask

Parameter	Value	Meaning
P-1	..	
P-2	slot no./port no.	
P-3	A.B.C.D	IP address.
P-4	0..32	Prefix length netmask.
P-5	A.B.C.D	IP address.
P-6	0..32	Prefix length netmask.

109.1.5 ip static-mcast mgroup delete

Delete an existing static multicast group instance.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip static-mcast mgroup delete <P-1>

Parameter	Value	Meaning
P-1	..	

109.1.6 ip static-mcast mgroup enable

Enables a rule from static multicast group table.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip static-mcast mgroup enable <P-1>

Parameter	Value	Meaning
P-1	..	

109.1.7 ip static-mcast mgroup disable

Disables a rule from static multicast group table.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip static-mcast mgroup disable <P-1>

Parameter	Value	Meaning
P-1	..	

109.1.8 ip static-mcast mroute add

Add a new static multicast route instance.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip static-mcast mroute add <P-1> inbound <P-2> [source-address <P-3>] [source-mask <P-4>] group-address <P-5> [group-mask <P-6>] outbound <P-7>

inbound: Configure inbound interface
[source-address]: Configure IPv4 source address
[source-mask]: Configure IPv4 source netmask
group-address: Configure IPv4 group address
[group-mask]: Configure IPv4 group netmask
outbound: Configure outbound interface

Parameter	Value	Meaning
P-1	..	
P-2	slot no./port no.	
P-3	A.B.C.D	IP address.
P-4	0..32	Prefix length netmask.
P-5	A.B.C.D	IP address.
P-6	0..32	Prefix length netmask.
P-7	slot/port	Enter a single interface in slot/port format.
	interface range	Enter interface range in the slot/port format use hyphen for range e.g 1/2-1/4.
	interface list	Enter interface list in the slot/port format use comma to separate e.g 1/2,1/4,... .
	vlan/<vlan-id>	vlan/<vlan-id> Enter a single vlan interface e.g vlan/222.
	vlan range	Enter vlan interface range e.g. vlan/1-vlan/3.
	vlan list	Enter vlan interface list use comma to separate e.g. vlan/1,vlan/3.

109.1.9 ip static-mcast mroute modify

Modify a new static multicast route instance.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip static-mcast mroute modify <P-1> inbound <P-2> [source-address <P-3>] [source-mask <P-4>] group-address <P-5> [group-mask <P-6>] [outbound <P-7>]`

`inbound`: Configure inbound interface
`[source-address]`: Configure IPv4 source address
`[source-mask]`: Configure IPv4 source netmask
`group-address`: Configure IPv4 group address
`[group-mask]`: Configure IPv4 group netmask
`[outbound]`: Configure outbound interface

Parameter	Value	Meaning
P-1	..	
P-2	slot no./port no.	
P-3	A.B.C.D	IP address.
P-4	0..32	Prefix length netmask.
P-5	A.B.C.D	IP address.
P-6	0..32	Prefix length netmask.
P-7	slot/port	Enter a single interface in slot/port format.
	interface range	Enter interface range in the slot/port format use hyphen for range e.g 1/2-1/4.
	interface list	Enter interface list in the slot/port format use comma to separate e.g 1/2,1/4,... .
	vlan/<vlan-id>	vlan/<vlan-id> Enter a single vlan interface e.g vlan/222.
	vlan range	Enter vlan interface range e.g. vlan/1-vlan/3.
	vlan list	Enter vlan interface list use comma to separate e.g. vlan/1,vlan/3.

109.1.10ip static-mcast mroute delete

Delete an existing static multicast route instance.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip static-mcast mroute delete <P-1>`

Parameter	Value	Meaning
P-1	..	

109.1.11ip static-mcast mroute enable

Enables a rule from static multicast route table.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip static-mcast mroute enable <P-1>`

Parameter	Value	Meaning
P-1	..	

109.1.12ip static-mcast mroute disable

Disables a rule from static multicast route table.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip static-mcast mroute disable <P-1>`

Parameter	Value	Meaning
P-1	..	

109.2 ip

IP interface commands.

109.2.1 ip static-mcast operation

Enable or disable a multicast static route instance.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip static-mcast operation`

- `no ip static-mcast operation`
  Disable the option
  - Mode: `Interface Range Mode`
  - Privilege Level: `Operator`
  - Format: `no ip static-mcast operation`

109.3 show

Display device options and settings.

109.3.1 show ip mcast global

Display the global multicast information.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show ip mcast global`

109.3.2 show ip static-mcast global

Display the global static multicast information.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show ip static-mcast global`

109.3.3 show ip static-mcast interface

Display the interface specific information.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show ip static-mcast interface [<P-1>]`

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

109.3.4 show ip static-mcast mgroup

Display the multicast routing group information.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show ip static-mcast mgroup`

109.3.5 show ip static-mcast mroute

Display the multicast routing table information.
- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show ip static-mcast mroute`

110Switched Monitoring (SMON)

110.1 monitor

Configure port mirroring.

110.1.1 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>] remote-vlan <P-4> [destination-port <P-5>] [reflector-port <P-6>] source interface <P-7> direction <P-8> operation vlan <P-9> remote-vlan <P-10> mode allow-mgmt`

`destination`: Configure the probe interface.
`interface`: Configure interface.
`[secondary-interface]`: Configure secondary interface.
`remote-vlan`: Set the destination RSPAN VLAN used to tag the mirrored frames.
`[destination-port]`: Configure the RSPAN destination interface.
`[reflector-port]`: Configure the reflector port.
`source`: Configure the source interface.
`interface`: Configure interface
`direction`: Select interface.
`operation`: Enable/disable mirroring on an interface.
`vlan`: Set the VLAN to mirror.
`remote-vlan`: Set the source RSPAN VLAN on which mirrored frames are expected on the destination switch.
`mode`: Enable/Disable port mirroring session. Note: does\nnot affect the source or destination interfaces.
`allow-mgmt`: Enable/Disable port responsiveness while mirroring.\nNote: Does not affect the source interfaces.\nNot effective with RSPAN config.

Parameter	Value	Meaning
`P-1`	1	`Monitor session index.`
`P-2`	slot no./port no.	
`P-3`	slot no./port no.	
`P-4`	integer	VLAN Mirror Remote VLAN ID List.
`P-5`	slot no./port no.	
`P-6`	slot no./port no.	
`P-7`	slot no./port no.	
`P-8`	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.`
`P-9`	0..4042	`Enter the VLAN for the given Sub-Ring ID (min.: 0, max.: 4042, default: 0).`
`P-10`	integer	VLAN Mirror Remote VLAN ID List.

- `no monitor session`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no monitor session <P-1> destination interface [secondary-interface] remote-vlan [destination-port] [reflector-port] source interface <P-7> direction operation vlan remote-vlan mode allow-mgmt`

110.2 remote-vlan

110.2.1 remote-vlan

Set the VLAN used by RSPAN. The VLAN must already be created.

- Mode: `VLAN Database Mode`
- Privilege Level: `Operator`
- Format: `remote-vlan <P-1>`

Parameter	Value	Meaning
`P-1`	integer	VLAN Mirror Remote VLAN ID List.

110.3 show

Display device options and settings.

110.3.1 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.`

110.4 clear

Clear several items.

110.4.1 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.`

111Simple Network Management Protocol (SNMP)

111.1 snmp

Configure of SNMP versions and traps.

111.1.1 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`

111.1.2 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`

111.1.3 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`

111.1.4 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).

111.1.5 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

111.1.6 snmp notification user add

Add SNMPv3 notification user.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: snmp notification user add <p-1> <p-2> [auth <p-3> <p-4>] [priv <p-5> <p-6>]

Parameter	Value	Meaning
P-1	name	User name (1 to 32 characters).
P-2	auth-no-priv	Authentication no privacy.
	auth-priv	Authentication and privacy.
	no-auth	No authentication, no privacy.
P-3	md5	MD5 as SNMPv3 notification user authentication mode.
	sha1	SHA1 as SNMPv3 notification user authentication mode.
P-4	passphrase	Passphrase (8 to 64 characters).
P-5	des	DES as SNMPv3 notification privacy method.
	aes	AES as SNMPv3 notification privacy method.
P-6	passphrase	Passphrase (8 to 64 characters).

111.1.7 snmp notification user delete

Delete SNMPv3 notification user.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: snmp notification user delete <p-1>

Parameter	Value	Meaning
P-1	name	User name (1 to 32 characters).

111.1.8 snmp notification host add

Add SNMPv3 notification host.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: snmp notification host add <p-1> <p-2> user <p-3> <p-4><p-5>

Parameter	Value	Meaning
P-1	name	User name (1 to 32 characters).
P-2	a.b.c.d	Single IPv4 address.
	a.b.c.d:n	IPv4 address with port.
	[a:b:c:d:e:f:g:h]	Single IPv6 address.
	[a:b:c:d:e:f:g:h]:n	IPv6 address with port.
P-3	name	User name (1 to 32 characters).
P-4	auth-no-priv	Authentication no privacy.
	auth-priv	Authentication and privacy.
	no-auth	No authentication, no privacy.

111.1.9 snmp notification host delete

Delete SNMPv3 notification host.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: snmp notification host delete <p-1>

Parameter	Value	Meaning
P-1	name	User name (1 to 32 characters).

111.2 show

Display device options and settings.

111.2.1 show snmp access

Display the SNMP access configuration settings.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show snmp access`

111.2.2 show snmp notification users

Display the SNMP v3 notification user configuration.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show snmp notification users`

111.2.3 show snmp notification hosts

Display the SNMP v3 trap host configuration.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show snmp notification hosts`

112SNMP Community

112.1 snmp

Configure of SNMP versions and traps.

112.1.1 snmp community ro

SNMP v1/v2 read-only community.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: snmp community ro <P-1>

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

112.1.2 snmp community rw

SNMP v1/v2 read-write community.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: snmp community rw <P-1>

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

112.2 show

Display device options and settings.

112.2.1 show snmp community

Display the SNMP v1/2 community.

- Mode: Command is in all modes available.
- Privilege Level: Administrator
- Format: show snmp community

113SNMP Logging

113.1 logging

Logging configuration.

113.1.1 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>

113.1.2 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 and 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

113.1.3 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>

113.1.4 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 and 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

113.2 show

Display device options and settings.

113.2.1 show logging snmp

Display the SNMP logging settings.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show logging snmp`

114Simple Network Time Protocol (SNTP)

114.1 sntp

Configure SNTP settings.

114.1.1 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`

114.1.2 sntp client operating-mode

Set the operating mode of the SNTP client. In unicast-mode, the client sends a request to the SNTP Server. In 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.

114.1.3 sntp client request-interval

Set the SNTP client request interval in seconds. The 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.

114.1.4 sntp client broadcast-rcv-timeout

Set the SNTP client broadcast receive timeout in seconds. The 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.

114.1.5 sntp client disable-after-sync

If this option is activated, the SNTP client disables itself once 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`

114.1.6 sntp client interface

Change the SNTP client so that it sends packets with the source IP of the selected interface
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: sntp client interface <P-1>

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

114.1.7 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.

114.1.8 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.

114.1.9 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>

114.1.10sntp 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

114.1.11sntp server interface

Change the SNTP server so that it sends packets with the source IP of the selected interface
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: sntp server interface <P-1>

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

114.1.12 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).

114.1.13 sntp server only-if-synchronized

Set the disabling of the SNTP server function, if 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

114.1.14 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

114.1.15 sntp server broadcast address

Set the SNTP server's broadcast or multicast IP address (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.

114.1.16 sntp server broadcast port

Set the destination socket port number used to send broadcast 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).

114.1.17 sntp server broadcast interval

Set the SNTP server's interval in seconds for sending broadcast 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.

114.1.18 sntp server broadcast vlan

Set the SNTP server's broadcast VLAN ID used for sending broadcast 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.

114.2 show

Display device options and settings.

114.2.1 show sntp global

Display the SNTP configuration parameters and information.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show sntp global

114.2.2 show sntp client status

Display the SNTP client status.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show sntp client status

114.2.3 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.

114.2.4 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

114.2.5 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

115Spanning Tree

115.1 spanning-tree

Enable or disable the Spanning Tree protocol.

115.1.1 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

115.1.2 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

115.1.3 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

115.1.4 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.

115.1.5 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).

115.1.6 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.

115.1.7 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.

115.1.8 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.

115.1.9 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.

115.1.10spanning-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

115.1.11spanning-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.	

115.1.12spanning-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.	

115.1.13spanning-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

115.1.14spanning-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

115.1.15spanning-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

115.1.16spanning-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

115.1.17spanning-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.	

115.1.18spanning-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).

115.1.19spanning-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.

115.1.20spanning-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).

115.1.21spanning-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.

115.1.22spanning-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.

115.1.23spanning-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

115.1.24spanning-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.	

115.1.25spanning-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.	

115.1.26spanning-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.

115.1.27spanning-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.

115.1.28spanning-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.

115.1.29spanning-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.

115.1.30spanning-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.

115.1.31spanning-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.

115.1.32 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.

115.2 spanning-tree

Enable or disable the Spanning Tree protocol on a port.

115.2.1 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

115.2.2 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

115.2.3 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

115.2.4 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

115.2.5 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

115.2.6 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

115.2.7 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

115.2.8 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

115.2.9 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.

115.2.10 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.

115.2.11spanning-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.

115.3 show

Display device options and settings.

115.3.1 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

115.3.2 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

115.3.3 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.

115.3.4 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.	

115.3.5 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.

115.3.6 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.	

116 Subring Management

116.1 sub-ring

Sub-ring manager operations.

116.1.1 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`

116.1.2 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 for the given Sub-Ring ID (min.: 0, max.: 4042, default: 0).
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).

116.1.3 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.

116.1.4 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.

116.1.5 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.

116.1.6 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 for the given Sub-Ring ID (min.: 0, max.: 4042, default: 0).
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).

116.2 show

Display device options and settings.

116.2.1 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

116.2.2 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.

117Secure Shell (SSH)

117.1 ssh

Set SSH parameters.

117.1.1 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

117.1.2 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).

117.1.3 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).

117.1.4 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.

117.1.5 ssh outbound max-sessions

Set the maximum number of concurrent outbound SSH sessions (default: 5).
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: ssh outbound max-sessions <P-1>

Parameter	Value	Meaning
P-1	1..5	Maximum number of concurrent SSH sessions.

117.1.6 ssh outbound timeout

Set the SSH connection idle timeout in minutes (default: 5).
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: ssh outbound timeout <P-1>

Parameter	Value	Meaning
P-1	0..160	Idle timeout of a session in minutes (default: 5).

117.1.7 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

117.1.8 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.

117.1.9 ssh known-hosts add

Add SSH known host entry.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: ssh known-hosts add <P-1> address <P-2> key-type <P-3> key-fingerprint <P-4>

address: Configure the SSH known host address.
key-type: Configure the SSH known host key type.
key-fingerprint: Configure the SSH known host SHA256 key fingerprint.

Parameter	Value	Meaning
P-1	1..50	Maximum number of SSH known hosts entries.
P-2	A.B.C.D	IP address.
P-3	rsa	Configure the key type to RSA.
	dsa	Configure the key type to DSA.
	ecdsa	Configure the key type to ECDSA.
	ed25519	Configure the key type to ED25519.
P-4	string	Enter a text in the base64 format consisting of 43 or 44 characters.

117.1.10ssh known-hosts delete

Delete the SSH known host entry.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: ssh known-hosts delete <P-1>

Parameter	Value	Meaning
P-1	1..50	Maximum number of SSH known hosts entries.

117.1.11ssh known-hosts modify

Modify a SSH known host entry.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: ssh known-hosts modify <P-1> key-fingerprint <P-2> status <P-3>

key-fingerprint: Modify the SHA256 key fingerprint of the SSH known host entry.
status: Modify the status of the SSH known host entry.

Parameter	Value	Meaning
P-1	1..50	Maximum number of SSH known hosts entries.
P-2	string	Enter a text in the base64 format consisting of 43 or 44 characters.
P-3	enable	Enable the option.
	disable	Disable the option.

117.2 ssh

117.2.1 ssh

Establish an SSH connection to a remote host.
- Mode: "User Mode" and "Privileged Exec Mode"
- Privilege Level: Guest
- Format: ssh <P-1> [<P-2>]

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.
P-2	1..65535	Enter port number between 1 and 65535

117.3 copy

Copy different kinds of items.

117.3.1 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 [source-interface <P-2>]

nvm: Copy the SSH key from a server to non-volatile memory.
[source-interface]: Specify the source-interface to be used (physical or logical). The frames will not necessarily be sent on this interface, only the IP address of the interface will be used as source IP.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.
P-2	slot no./port no.	

117.3.2 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.

117.4 show

Display device options and settings.

117.4.1 show ssh server

Display the SSH server information.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ssh server

117.4.2 show ssh known-hosts

Display the SSH known hosts information.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ssh known-hosts [<P-1>]

Parameter	Value	Meaning
P-1	1..50	Maximum number of SSH known hosts entries.

117.4.3 show ssh

Display the SSH server and client information.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show ssh`

118 Storm Control

118.1 storm-control

Configure the global storm-control settings.

118.1.1 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`

118.2 traffic-shape

Traffic shape commands.

118.2.1 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.

118.3 mtu

118.3.1 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.

118.4 mtu

118.4.1 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.

118.5 mtu

118.5.1 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.

118.6 storm-control

Storm control commands

118.6.1 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`

118.6.2 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.

118.6.3 storm-control ingress threshold

Set threshold value. The rate limiter function calculates the threshold based on data packets sized 512 bytes. When the unit is set to pps, the maximum value is 24414 for 100Mb/s and 244140 for 1000Mb/s.
- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `storm-control ingress 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.

118.6.4 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`

118.6.5 storm-control ingress unicast threshold

Set the threshold value for unicast frames with unknown destination.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `storm-control ingress unicast 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.

118.6.6 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`

118.6.7 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.

118.6.8 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`

118.6.9 storm-control ingress multicast threshold

Set the threshold value for multicast frames.

- 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.

118.6.10storm-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.

118.6.11 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`

118.6.12 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.`

118.7 show

Display device options and settings.

118.7.1 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`

118.7.2 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.	

118.7.3 show traffic-shape

Display the traffic shape parameters.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show traffic-shape`

118.7.4 show mtu

Display the MTU parameters.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show mtu`

119System

119.1 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.

119.1.1 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.

119.1.2 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.

119.1.3 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.

119.1.4 system port-led-mode

Configure the port led signalling (frontpanel or servicepanel).

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: system port-led-mode <P-1>

Parameter	Value	Meaning
P-1	portpanel	Set LED control to portpanel.
	servicepanel	Set LED control to servicepanel.

119.1.5 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

119.1.6 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).

119.1.7 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`

119.2 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.

119.2.1 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).

119.2.2 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).

119.3 humidity

Configure the upper and lower humidity limits of the device. The device allows you to set the threshold as an integer from 0 through 100.

119.3.1 humidity upper-limit

Configure the upper humidity limit.

- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `humidity upper-limit <P-1>`

Parameter	Value	Meaning
P-1	0..100	Upper humidity threshold ([%], default 95%).

119.3.2 humidity lower-limit

Configure the lower humidity limit.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: humidity lower-limit <P-1>

Parameter	Value	Meaning
P-1	0..100	Lower humidity threshold ([%], default 5).

119.4 hardware

The Hardware LAN bypass feature ensures that traffic passes freely between interface pairs when system is fully up and is running an Operating System or when system is in a shutdown state

119.4.1 hardware runtime-bypass

Enable or disable Run-time hardware LAN bypass.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: hardware runtime-bypass

- no hardware runtime-bypass
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no hardware runtime-bypass

119.4.2 hardware systemoff-bypass

Enable or disable System-off hardware LAN bypass.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: hardware systemoff-bypass

- no hardware systemoff-bypass
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no hardware systemoff-bypass

119.5 show

Display device options and settings.

119.5.1 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

119.5.2 show system info

Display the system related information.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show system info

119.5.3 show system port-led-mode

Display the LED control settings.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show system port-led-mode

119.5.4 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

119.5.5 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

119.5.6 show system temperature limits

Display the temperature limits.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show system temperature limits

119.5.7 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

119.5.8 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

119.5.9 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

119.5.10show system humidity limits

Display the humidity limits.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show system humidity limits

119.5.11show system humidity extremes

Display the minimum and maximum recorded humidity.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show system humidity extremes

119.5.12show system humidity histogram

Display the humidity histogram of the device.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show system humidity histogram

119.5.13show 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

119.5.14 show psu slot

Display the power supply slots.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show psu slot

119.5.15 show psu unit

Display the information for the power supply units.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show psu unit

119.5.16 show fan

Display the information for the fan modules.

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

119.5.17 show hardware runtime-bypass

Display runtime-bypass state of hardware bypass.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show hardware runtime-bypass

119.5.18 show hardware systemoff-bypass

Display systemoff-bypass state of hardware bypass.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show hardware systemoff-bypass

120TACACS+

120.1 tacacs

Configure TACACS+ parameters.

120.1.1 tacacs server timeout

Configure the global TACACS+ server timeout value.
- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `tacacs server timeout <P-1>`

Parameter	Value	Meaning
P-1	1..30	Timeout in seconds (default: 5).

120.1.2 tacacs server key

Configure the global TACACS+ server secret key.
- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `tacacs server key [<P-1>]`

Parameter	Value	Meaning
P-1	string	<key> TACACS+ authentication server key.

120.1.3 tacacs server source-interface

Configure the global TACACS+ source interface.
- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `tacacs server source-interface <P-1>`

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

120.1.4 tacacs server add

Add TACACS+ server.
- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `tacacs server add <P-1> [port <P-2>] [priority <P-3>] [timeout <P-4>] [link-local-intf <P-5>] [key [<P-6>]]`

`[port]`: Configure the TACACS+ server port number.
`[priority]`: Configure the TACACS+ server priority.
`[timeout]`: Configure the TACACS+ server timeout value.
`[link-local-intf]`: Configure the TACACS+ server link-local source interface.
`[key]`: Configure the TACACS+ server secret key.

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	1..65535	Enter port number between 1 and 65535 (default: 49).
P-3	0..65535	Enter server priority (0 is the highest priority).
P-4	1..30	Timeout in seconds (default: 5).
P-5	slot no./port no.	
P-6	string	<key> TACACS+ authentication server key.

120.1.5 tacacs server modify

Change TACACS+ server parameters.
- Mode: `Global Config Mode`
- Privilege Level: `Administrator`
- Format: `tacacs server modify <P-1> [port <P-2>] [priority <P-3>] [timeout <P-4>] [link-local-intf <P-5>] [key [<P-6>]]`

`[port]`: Configure the TACACS+ server port number.
`[priority]`: Configure the TACACS+ server priority.

[timeout]: Configure the TACACS+ server timeout value.
[link-local-intf]: Configure the TACACS+ server link-local interface.
[key]: Configure the TACACS+ server secret key.

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	1..65535	Enter port number between 1 and 65535 (default: 49).
P-3	0..65535	Enter server priority (0 is the highest priority).
P-4	1..30	Timeout in seconds (default: 5).
P-5	slot no./port no.	
P-6	string	<key> TACACS+ authentication server key.

120.1.6 tacacs server delete

Delete a TACACS+ server.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: tacacs server delete <P-1>

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

120.1.7 tacacs command-authorization operation

Enable or disable TACACS+ command based authorization.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: tacacs command-authorization operation

- no tacacs command-authorization operation
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Administrator
  - Format: no tacacs command-authorization operation

120.1.8 tacacs accounting command mode

Configure TACACS+ command accounting record type.
- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: tacacs accounting command mode <P-1>

Parameter	Value	Meaning
P-1	none	TACACS+ command accounting is disabled.
	stop-only	Enable stop-only command accounting via TACACS+. This additionally enables accounting of login session event (one start record) and logout session event (one stop record).

120.2 show

Display device options and settings.

120.2.1 show tacacs global

Display the global TACACS+ configuration.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show tacacs global

120.2.2 show tacacs server

Display the configured TACACS+ servers.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show tacacs server

121 Telnet

121.1 telnet

Set Telnet parameters.

121.1.1 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`

121.1.2 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).

121.1.3 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.

121.1.4 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.

121.2 telnet

121.2.1 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).

121.3 show

Display device options and settings.

121.3.1 show telnet

Display the telnet server information.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show telnet`

122 Time Range

122.1 time

Create or delete time range.

122.1.1 time range

Create or delete time range.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `time range <P-1> [absolute] [start <P-2> <P-3> <P-4> <P-5>] [end <P-6> <P-7> <P-8> <P-9>] [periodic <P-10> <P-11>] to [<P-12>] <P-13>`

`[absolute]`: Create or delete absolute time entry.
`[start]`: Set start time and date.
`[end]`: Set end time and date.
`[periodic]`: Create or delete periodic time entry. It must not overlap with any other periodic entry defined for this time range.
`to`: Set end of periodic time entry.

Parameter	Value	Meaning
P-1	string	Enter the time range name, max. 31 characters.
P-2	hh:mm	Time of day, in 24-hour format.
P-3	1..31	Day of the month.
P-4	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-5	1993..2035	Year.
P-6	hh:mm	Time of day, in 24-hour format.
P-7	1..31	Day of the month.
P-8	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-9	1993..2035	Year.
P-10	sunday	Sunday
	monday	Monday
	tuesday	Tuesday
	wednesday	Wednesday
	thursday	Thursday
	friday	Friday
	saturday	Saturday
	daily	Daily
	weekdays	Weekdays
	weekend	Weekend
	list of days	A comma-separated combination of days
P-11	hh:mm	Time of day, in 24-hour format.

Parameter	Value	Meaning
P-12	sunday	Sunday
	monday	Monday
	tuesday	Tuesday
	wednesday	Wednesday
	thursday	Thursday
	friday	Friday
	saturday	Saturday
P-13	hh:mm	Time of day, in 24-hour format.

- no time range
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no time range <P-1> [absolute] [start] [end] [periodic] to [<P-12>] <P-13>

122.2 show

Display device options and settings.

122.2.1 show time-range

Display the time range and its time entries.

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

Parameter	Value	Meaning
P-1	string	Enter the time range name, max. 31 characters.

123 Tracking

123.1 track

Configure tracking instances on the device.

123.1.1 track add

Create a tracking instance.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: track add <P-1> <P-2>

Parameter	Value	Meaning
P-1	interface	interface tracking
	ping	ping tracking
	logical	logical tracking
P-2	1..256	Enter a number in the given range.

123.1.2 track delete

Delete a tracking instance.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: track delete <P-1> <P-2>

Parameter	Value	Meaning
P-1	interface	interface tracking
	ping	ping tracking
	logical	logical tracking
P-2	1..256	Enter a number in the given range.

123.1.3 track enable

Activate a tracking instance.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: track enable <P-1> <P-2>

Parameter	Value	Meaning
P-1	interface	interface tracking
	ping	ping tracking
	logical	logical tracking
P-2	1..256	Enter a number in the given range.

123.1.4 track disable

Deactivate a tracking instance.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: track disable <P-1> <P-2>

Parameter	Value	Meaning
P-1	interface	interface tracking
	ping	ping tracking
	logical	logical tracking
P-2	1..256	Enter a number in the given range.

123.1.5 track trap

Enable / Disable the StateChange trap for the corresponding tracking instance.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: track trap <P-1> <P-2>

Parameter	Value	Meaning
P-1	interface	interface tracking
	ping	ping tracking
	logical	logical tracking
P-2	1..256	Enter a number in the given range.

- `no track trap`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no track trap <P-1> <P-2>`

123.1.6 track description

Set the description for the corresponding tracking instance.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `track description <P-1> <P-2> <P-3>`

Parameter	Value	Meaning
P-1	interface	interface tracking
	ping	ping tracking
	logical	logical tracking
P-2	1..256	Enter a number in the given range.
P-3	string	Enter a user-defined text, max. 255 characters.

123.1.7 track modify interface

Modify the configuration of an interface tracking instance.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `track modify interface <P-1> [interface <P-2>] [linkup-delay <P-3>] [linkdown-delay <P-4>]`

`[interface]`: Set the interface number of the interface tracking instance.
`[linkup-delay]`: Set the linkup-delay of the interface tracking instance
`[linkdown-delay]`: Set the linkdown-delay of the interface tracking instance

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	slot no./port no.	
P-3	0..255	Enter a number in the given range.
P-4	0..255	Enter a number in the given range.

123.1.8 track modify ping

Modify the configuration of a ping tracking instance.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `track modify ping <P-1> [interface <P-2>] [address <P-3>] [interval <P-4>] [miss <P-5>] [success <P-6>] [timeout <P-7>] [ttl <P-8>]`

`[interface]`: Set the source interface number of the ping tracking instance.
`[address]`: Set the address of the router to be monitored.
`[interval]`: Set the number of milliseconds between the pings to the target router address.
`[miss]`: Set the number of consecutive ping misses until the tracked object is considered to be down.
`[success]`: Set the of consecutive ping successes until the tracked object is considered to be up.
`[timeout]`: Set the timeout in milliseconds for a ping reply.
`[ttl]`: Set the time to live for a ping request packet.

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	slot no./port no.	
P-3	A.B.C.D	IP address.
P-4	100..20000	value for ping tracking interval that could be between 100 and 20000.
P-5	1..10	value for ping tracking that could be between 1 and 10.
P-6	1..10	value for ping tracking that could be between 1 and 10.
P-7	10..10000	value for ping tracking time that could be between 10 and 10000.
P-8	1..255	Enter a number in the given range.

123.1.9 track modify logical

Modify the configuration of a logical tracking instance.
- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `track modify logical <P-1> <P-2> <P-3> <P-4>`

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	string	Track instance.

Parameter	Value	Meaning
P-3	and	AND operator
	or	OR operator
P-4	string	Track instance.

123.2 show

Display device options and settings.

123.2.1 show track overview

Display the information and settings for the tracking instances.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show track overview

123.2.2 show track interface

Display the information and settings for the interface tracking instances.

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

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

123.2.3 show track ping

Display the information and settings for the ping tracking instances.

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

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

123.2.4 show track logical

Display the information and settings for the logical tracking instances.

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

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

123.2.5 show track application

Display the information on tracking application registrations.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show track application

124 Traps

124.1 snmp

Configure of SNMP versions and traps.

124.1.1 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`

124.1.2 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>`

124.1.3 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)

124.1.4 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.
	[a:b:c:d:e:f:g:h]	[a:b:c:d:e:f:g:h] Single IPv6 address.
	[a:b:c:d:e:f:g:h]:n	[a:b:c:d:e:f:g:h]:n IPv6 address with port.

124.2 show

Display device options and settings.

124.2.1 show snmp traps

Display the SNMP traps.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show snmp traps`

125Time Sensitive Networks (TSN)

125.1 tsn

Configure TSN (Time Sensitive Network) settings.

125.1.1 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`

125.1.2 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.`

125.1.3 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.`

125.2 tsn

Configure TSN (Time Sensitive Network) settings for interfaces.

125.2.1 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`	integer	`Enter the maximum size of the SDU (service data unit). A value of 0 isinterpreted as the maximum SDU size supported by the underlying MAC. The SDUincludes the packet payload but excludes the source and destination MACaddresses (6 bytes each), the VLAN tag (4 bytes) and the FCS (4 bytes). Examplefor a 64 bytes Ethernet packet:64 bytes - 12 bytes (MAC) - 4 bytes (VLAN) - 4bytes (FCS) = 44 bytes (SDU).`

125.2.2 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`

125.2.3 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`

125.2.4 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.

125.2.5 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.

125.2.6 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.

125.2.7 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.
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.

125.2.8 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.

125.2.9 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.

125.2.10 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.

125.3 show

Display device options and settings.

125.3.1 show tsn global

Display the TSN global settings.

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

125.3.2 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.	

125.3.3 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.	

125.3.4 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

126 TTDP

126.1 ttdp

Configure the ttdp settings.

126.1.1 ttdp operation

Enable/disable TTDP.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ttdp operation`

- `no ttdp operation`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no ttdp operation`

126.1.2 ttdp backbone-id

Set the backbone ID for this ETBN.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ttdp backbone-id <P-1>`

Parameter	Value	Meaning
P-1	a	Line a.
	b	Line b.
	c	Line c.
	d	Line d.

126.1.3 ttdp etbn inhibit

Enable/disable inhibit inauguration for this ETBN.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ttdp etbn inhibit`

- `no ttdp etbn inhibit`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no ttdp etbn inhibit`

126.1.4 ttdp etbn role

ETBN role(switch or router).

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ttdp etbn role <P-1>`

Parameter	Value	Meaning
P-1	router	Router.
	switch	Switch.

- `no ttdp etbn role`
  Disable the option
  - Mode: `Global Config Mode`
  - Privilege Level: `Operator`
  - Format: `no ttdp etbn role`

126.1.5 ttdp consist etbn-number

Set the number of ETBNs in this consist.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ttdp consist etbn-number <P-1>

Parameter	Value	Meaning
P-1	1..63	Enter a number in the given range.

126.1.6 ttdp consist cn-number

Set the number of CNs in this consist.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ttdp consist cn-number <P-1>

Parameter	Value	Meaning
P-1	0..32	Enter a number in the given range.

126.1.7 ttdp consist local-etbn-number

Set the id of local ETBN in this consist.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ttdp consist local-etbn-number <P-1>

Parameter	Value	Meaning
P-1	1..63	Enter a number in the given range.

126.1.8 ttdp consist uuid

Set the UUID for this consist.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ttdp consist uuid <P-1>

Parameter	Value	Meaning
P-1	yyyyyyxx-xxxx-xxxx-xxxx-yyyyyyyyyyyy	Enter UUID in hexadecimal format (size should be of 32 hexadecimal numbers).

126.1.9 ttdp consist cn-to-etbn etbn

Modify the ETBN with this ID.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ttdp consist cn-to-etbn etbn <P-1> add <P-2> [port <P-3>] [use-dhcp <P-4>] delete <P-5> modify <P-6> port <P-7> use-dhcp <P-8>

add: Add a CN to the specified ETBN.
[port]: Set the port for specified CN.
[use-dhcp]: Enable/disable the use of TTDP DHCP server.
delete: Delete a CN from the specified ETBN.
modify: Modify a CN from specified ETBN.
port: Set the port for specified CN.
use-dhcp: Enable/disable the use of TTDP DHCP server.

Parameter	Value	Meaning
P-1	1..63	Enter a number in the given range.
P-2	1..32	Enter a number in the given range.
P-3	slot no./port no.	
P-4	True	True.
	False	False.
P-5	1..32	Enter a number in the given range.
P-6	1..32	Enter a number in the given range.
P-7	slot no./port no.	
P-8	True	True.
	False	False.

- no ttdp consist cn-to-etbn etbn
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no ttdp consist cn-to-etbn etbn add [port] [use-dhcp] delete modify port use-dhcp <P-8>

126.2 show

Display device options and settings.

126.2.1 show ttdp global

Display the TTDP global configuration.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ttdp global

126.2.2 show ttdp local-consist

Display the TTDP local consist configuration.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ttdp local-consist

126.2.3 show ttdp internal-info

Display the TTDP ETBN internal configuration.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ttdp internal-info

126.2.4 show ttdp local-etbn-info

Display the TTDP local ETBN configuration.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ttdp local-etbn-info

126.2.5 show ttdp networks

Display the configuration of the TTDP local consist CN.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ttdp networks

126.2.6 show ttdp consists-etbns

Display the configuration of the TTDP consist ETBN.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ttdp consists-etbns [<P-1>] [<P-2>]

Parameter	Value	Meaning
P-1	1..63	Enter a number in the given range.
P-2	1..32	Enter a number in the given range.

126.2.7 show ttdp consists-cns

Display the configuration of the TTDP consist CN.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ttdp consists-cns [<P-1>]

Parameter	Value	Meaning
P-1	1..63	Enter a number in the given range.

126.2.8 show ttdp consists

Display the TTDP train consist configuration.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ttdp consists

126.2.9 show ttdp directions

Display the TTDP local ETBN directions configuration.
- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ttdp directions

126.2.10show ttdp lines

Display the TTDP local ETBN lines configuration.

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

Parameter	Value	Meaning
P-1	1..2	Enter a number in the given range.

126.2.11show ttdp hello-statistics

Display the TTDP hello messages statistics.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ttdp hello-statistics [<P-1>] [<P-2>]

Parameter	Value	Meaning
P-1	1..63	Enter a number in the given range.
P-2	1..63	Enter a number in the given range.

126.2.12show ttdp topology corrected-connectivity-table

Display the TTDP corrected connectivity table.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ttdp topology corrected-connectivity-table [<P-1>]

Parameter	Value	Meaning
P-1	1..63	Enter a number in the given range.

126.2.13show ttdp topology connectivity-vector

Display the TTDP connectivity vector.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ttdp topology connectivity-vector [<P-1>]

Parameter	Value	Meaning
P-1	1..63	Enter a number in the given range.

126.2.14show ttdp topology etbn-vector

Display the ttdp ETBN-vectors.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ttdp topology etbn-vector [<P-1>] [<P-2>]

Parameter	Value	Meaning
P-1	1..63	Enter a number in the given range.
P-2	1..2	Enter a number in the given range.

127Unicast Routing

127.1 routing

Create routing on VLAN.

127.1.1 routing add

Enable routing on VLAN
- Mode: VLAN Database Mode
- Privilege Level: Operator
- Format: routing add <P-1>

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

127.1.2 routing delete

Disable routing on VLAN
- Mode: VLAN Database Mode
- Privilege Level: Operator
- Format: routing delete <P-1>

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

127.2 ip

Set IP parameters.

127.2.1 ip routing

Enables or disables Routing globally on the device.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip routing

- no ip routing
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no ip routing

127.2.2 ip source-routing

Enables or disables source routing
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip source-routing

- no ip source-routing
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no ip source-routing

127.2.3 ip proxy-arp max-delay

Configure the maximum time a Proxy ARP response can be delayed
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip proxy-arp max-delay <P-1>

Parameter	Value	Meaning
P-1	0..1000	Enter Proxy ARP max response delay ms

127.3 show

Display device options and settings.

127.3.1 show ip global

Display the summary information of the IP, including the ICMP rate limit configuration and the global ICMP Redirect configuration.

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

127.4 show

Display device options and settings.

127.4.1 show ip interface

Display the interface parameters.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show ip interface [<P-1>]`

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

127.4.2 show ip statistics

Display the global IP statistics.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show ip statistics`

127.4.3 show ip template

Display the information about routing resource templates.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show ip template [<P-1>]`

Parameter	Value	Meaning
`P-1`	configuration	`Active and configured template`

127.5 ip

IP interface commands.

127.5.1 ip routing

This command enables/disables routing for an interface.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip routing`

- `no ip routing`
  Disable the option
  - Mode: `Interface Range Mode`
  - Privilege Level: `Operator`
  - Format: `no ip routing`

127.5.2 ip proxy-arp operation

Enables or disables Proxy ARP on the interface.

- Mode: `Interface Range Mode`
- Privilege Level: `Operator`
- Format: `ip proxy-arp operation`

- no ip proxy-arp operation
  Disable the option
  - Mode: Interface Range Mode
  - Privilege Level: Operator
  - Format: no ip proxy-arp operation

127.5.3 ip address secondary

Designates whether an IP Address is a secondary address on this interface.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip address secondary <P-1> <P-2>

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	A.B.C.D	IP address.

- no ip address secondary
  Disable the option
  - Mode: Interface Range Mode
  - Privilege Level: Operator
  - Format: no ip address secondary <P-1>

127.5.4 ip address primary

Designates whether an IP Address is a primary address on this interface.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip address primary <P-1> <P-2>

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	A.B.C.D	IP address.

- no ip address primary
  Disable the option
  - Mode: Interface Range Mode
  - Privilege Level: Operator
  - Format: no ip address primary

127.5.5 ip mtu

Set MTU size for IP protocol
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip mtu <P-1>

Parameter	Value	Meaning
P-1	68..12266	Set the MTU value.

127.5.6 ip icmp unreachables

Enables or disables the generation of ICMP Destination Unreachable messages.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip icmp unreachables

- no ip icmp unreachables
  Disable the option
  - Mode: Interface Range Mode
  - Privilege Level: Operator
  - Format: no ip icmp unreachables

127.5.7 ip icmp redirects

Enables or disables the generation of ICMP Redirect messages.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip icmp redirects

- no ip icmp redirects
  Disable the option
  - Mode: Interface Range Mode
  - Privilege Level: Operator
  - Format: no ip icmp redirects

127.5.8 ip netdirbcast

Enables or disables net directed broadcasts.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: ip netdirbcast

- no ip netdirbcast
  Disable the option
  - Mode: Interface Range Mode
  - Privilege Level: Operator
  - Format: no ip netdirbcast

127.6 ip

Set IP parameters.

127.6.1 ip route add

Add a static route entry.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip route add <P-1> <P-2> <P-3> [preference <P-4>]

[preference]: Change the preference value of a route.

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.
P-4	1..255	Enter a number in the given range.

127.6.2 ip route modify

Modify a static route entry.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip route modify <P-1> <P-2> <P-3> [preference <P-4>]

[preference]: Change the preference value of a route.

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.
P-4	1..255	Enter a number in the given range.

127.6.3 ip route delete

Delete a static route entry.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip route delete <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.

127.6.4 ip route distance

Default preference for static routes.
- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip route distance <P-1>

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

127.6.5 ip route track add

Add a track-id for a static route entry.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip route track add <P-1> <P-2> <P-3> <P-4>

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.
P-4	string	Track instance.

127.6.6 ip route track delete

Remove a track-id for a static route entry.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip route track delete <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.

127.6.7 ip default-route add

Add a static default route entry.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip default-route add <P-1> [preference <P-2>]

[preference]: Change the preference value of a route.

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	1..255	Enter a number in the given range.

127.6.8 ip default-route modify

Modify a static default route entry.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip default-route modify <P-1> preference <P-2>

preference: Change the preference value of a route.

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	1..255	Enter a number in the given range.

127.6.9 ip default-route delete

Delete a static default route entry.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip default-route delete <P-1>

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

127.6.10ip default-route track add

Add a track-id for a static route entry.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip default-route track add <P-1> <P-2>

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	string	Track instance.

127.6.11ip default-route track delete

Remove a track-id for a static route entry.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip default-route track delete <P-1>

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

127.6.12ip reject-route add

Add a static default route entry.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip reject-route add <P-1> <P-2> [preference <P-3>]

[preference]: Change the preference value of a route.

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	A.B.C.D	IP address.
P-3	1..255	Enter a number in the given range.

127.6.13ip reject-route modify

Modify a static reject route entry.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip reject-route modify <P-1> <P-2> preference <P-3>

preference: Change the preference value of a route.

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	A.B.C.D	IP address.
P-3	1..255	Enter a number in the given range.

127.6.14ip reject-route delete

Delete a static reject route entry.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip reject-route delete <P-1> <P-2>

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	A.B.C.D	IP address.

127.6.15ip template

Select the routing template valid after the next reboot.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip template <P-1>

Parameter	Value	Meaning
P-1	default	Reset to the default template
	IPv4-Default	Default IPv4 routing template
	IPv4-Datacenter	IPv4 datacenter routing template
	IPv4-Unicast	IPv4 unicast only template
	IPv4-Multicast	IPv4 multicast enhanced template

127.6.16ip loopback add

Enable a loopback interface.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip loopback add <P-1>

Parameter	Value	Meaning
P-1	1..8	Enter the loopback id in the given range.

127.6.17ip loopback delete

Disable a loopback interface.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip loopback delete <P-1>

Parameter	Value	Meaning
P-1	1..8	Enter the loopback id in the given range.

127.6.18ip icmp redirects

Enables or disables the generation of ICMP Redirect messages.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip icmp redirects

- no ip icmp redirects
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no ip icmp redirects

127.6.19ip icmp echo-reply

Enables or disables the generation of ICMP Echo Reply messages.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip icmp echo-reply

- no ip icmp echo-reply
  Disable the option
  - Mode: Global Config Mode
  - Privilege Level: Operator
  - Format: no ip icmp echo-reply

127.6.20ip icmp rate-limit interval

Configure ICMP rate limit interval in milliseconds to compute the average rate (interval/burst-size). The rate is the average minimum time between subsequent ICMP packets, using a token bucket algorithm. In times without ICMP packets, the tokens accumulate to allow for burst of up to 6 packets. A granularity of less than 10ms is not guaranteed.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip icmp rate-limit interval <P-1>

Parameter	Value	Meaning
P-1	0..2147483647	configure the interval.

127.6.21ip icmp rate-limit interval

Specifies the average minimum time between subsequent ICMP packets for each destination, using a token bucket filter. In times without ICMP packets, the tokens accumulate to allow for bursts of up to burst-size packets. A granularity of less than 10ms is not guaranteed.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip icmp rate-limit interval <P-1>

Parameter	Value	Meaning
P-1	0..2147483647	configure the interval.

127.6.22ip icmp rate-limit burst-size

Configure ICMP rate limit burst-size to compute the average rate (interval/burst-size). A granularity of less than 10ms is not guaranteed.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip icmp rate-limit burst-size <P-1>

Parameter	Value	Meaning
P-1	1..200	configure the burst-size.

127.6.23ip icmp rate-limit burst-size

The size of the token bucket, fixed at 6 tokens.

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip icmp rate-limit burst-size <P-1>`

Parameter	Value	Meaning
P-1	1..200	configure the burst-size.

127.6.24ip source-interface file-transfers

Configure the global source-interface for file-transfers (physical or logical).

- Mode: `Global Config Mode`
- Privilege Level: `Operator`
- Format: `ip source-interface file-transfers <P-1>`

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

127.7 show

Display device options and settings.

127.7.1 show ip route all

Display the static, dynamic and local routes.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show ip route all`

127.7.2 show ip route local

Display the local routes.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show ip route local`

127.7.3 show ip route static

Display the static routes.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show ip route static`

127.7.4 show ip route entry

Display the router route entry information.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show ip route entry <P-1> <P-2>`

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	A.B.C.D	IP address.

127.7.5 show ip route tracking

Display the tracking information for static routes.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show ip route tracking`

127.7.6 show ip entry

Display the router route entry information.

- Mode: `Command is in all modes available.`
- Privilege Level: `Guest`
- Format: `show ip entry <P-1>`

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

128User Management

128.1 show

Display device options and settings.

128.1.1 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.	

128.1.2 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.	

129 Users

129.1 users

Manage Users and User Accounts.

129.1.1 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).

129.1.2 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).

129.1.3 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).

129.1.4 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).

129.1.5 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.

129.1.6 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.

129.1.7 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.
	aescfb256	AES-256 as SNMPv3 encryption method.

129.1.8 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.

129.1.9 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.

129.1.10users 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.	

129.1.11users 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.

129.1.12users 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.

129.2 show

Display device options and settings.

129.2.1 show users

Display the users and user accounts information.

- Mode: `Command is in all modes available.`
- Privilege Level: `Administrator`
- Format: `show users`

130 Virtual LAN (VLAN)

130.1 name

130.1.1 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.

130.2 vlan-unaware-mode

130.2.1 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

130.3 vlan

Creation and configuration of VLANS.

130.3.1 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.

130.3.2 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

130.4 vlan

Configure 802.1Q port parameters for VLANs.

130.4.1 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.

130.4.2 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`

130.4.3 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.

130.4.4 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.

130.4.5 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>`

130.4.6 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.

130.4.7 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.

130.4.8 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.

130.5 show

Display device options and settings.

130.5.1 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.

130.5.2 show vlan brief

Display the general VLAN parameters.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show vlan brief

130.5.3 show vlan remote-vlan

Display the RSPAN VLAN.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show vlan remote-vlan

130.5.4 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.	

130.5.5 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

130.5.6 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

130.6 network

Configure the inband and outband connectivity.

130.6.1 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.

130.6.2 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.

130.6.3 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.

131 Voice VLAN

131.1 voice

Configure voice VLAN.

131.1.1 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`

131.2 voice

Configure voice VLAN.

131.2.1 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	1..4042	Enter the VLAN ID.
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

131.2.2 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

131.2.3 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.

131.2.4 voice vlan none

Configure the none voice VLAN interface mode.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: voice vlan none

131.2.5 voice vlan untagged

Configure the untagged voice VLAN interface mode.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: voice vlan untagged

131.2.6 voice vlan disable

Disable voice VLAN on the interface.
- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: voice vlan disable

131.2.7 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

131.2.8 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.

131.3 show

Display device options and settings.

131.3.1 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

131.3.2 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.	

A Further support

Technical questions

For technical questions, please contact any Hirschmann dealer in your area or Hirschmann directly.

You find the addresses of our partners on the Internet at https://www.hirschmann.com.

A list of local telephone numbers and email addresses for technical support directly from Hirschmann is available at https://hirschmann-support.belden.com.

This site also includes a free of charge knowledge base and a software download section.

Technical Documents

The current manuals and operating instructions for Hirschmann products are available at https://www.doc.hirschmann.com.

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	Very Good	Good	Satisfactory	Mediocre	Poor
Precise description	O	O	O	O	O
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Understandability	O	O	O	O	O
Examples	O	O	O	O	O
Structure	O	O	O	O	O
Comprehensive	O	O	O	O	O
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