SIEMENS

SIMATIC NET

Industrial Ethernet switches SCALANCE XM-400/XR-500 Command Line Interface

Configuration Manual

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Introduction 1

1.1 Information on the configuration manual (CLI)

Validity of the configuration manual

This Configuration Manual covers the following products:

- SCALANCE XR-500
  - SCALANCE XR552-12M
  - SCALANCE XR528-6M

  The devices are available with or without routing functions. For the devices without routing functions, the functions can be enabled by a KEY-PLUG.
- SCALANCE XM-400
  - SCALANCE XM408-8C
  - SCALANCE XM416-4C

  The devices are available with or without routing functions.

This Configuration Manual applies to the following software version:

- SCALANCE XR-500 firmware as of version 4.0
- SCALANCE XM-400 firmware as of version 4.0

Purpose of the Configuration Manual

This Configuration Manual is intended to provide you with the information you require to install, commission and operate IE switches. It provides you with the information you require to configure the IE switches.

Orientation in the documentation

Apart from the configuration manual you are currently reading, the products also have the following documentation:

- Configuration Manual:
  - SCALANCE XM-400/XR-500 Web Based Mangement

  This document is intended to provide you with the information you require to commission and configure IE switches using Web Based Management.
- Operating instructions:
  - SCALANCE XR-500M
  - MM900 media modules for SCALANCE XR-500M
  - Fan unit FAN597-1 for SCALANCE XR-500M
  - Power supply PS598-1 for SCALANCE XR-500M
  - SCALANCE XM-400
  - Extender for SCALANCE XM-400

  These documents contain information on installing and connecting up and approvals for the products.

The following documentation is also available from SIMATIC NET on the topic of Industrial Ethernet:

- System manual "Industrial Ethernet / PROFINET"
- System manual "Industrial Ethernet / PROFINET - Passive network components"

All these documents are available in digital form on the SCALANCE X DVD.

SIMATIC NET glossary

Explanations of many of the specialist terms used in this documentation can be found in the SIMATIC NET glossary.

You will find the SIMATIC NET glossary here:

- SIMATIC NET Manual Collection or product DVD
  The DVD ships with certain SIMATIC NET products.
- On the Internet under the following entry ID:
  50305045 (http://support.automation.siemens.com/WW/view/en/50305045)

1.2 Security information

Siemens provides automation and drive products with industrial security functions that support the secure operation of plants or machines. They are an important component in a holistic industrial security concept. With this in mind, our products undergo continuous development. We therefore recommend that you keep yourself informed with respect to our product updates. Please find further information and newsletters on this subject at: http://support.automation.siemens.com.

To ensure the secure operation of a plant or machine it is also necessary to take suitable preventive action (e.g. cell protection concept) and to integrate the automation and drive components into a state-of-the-art holistic industrial security concept for the entire plant or machine. Any third-party products that may be in use must also be taken into account. Please find further information at: http://www.siemens.com/industrialsecurity

General information 2

2.1 General information on the Command Line Interface

Introduction

All the configuration settings for the device can be made using the Command Line Interface (CLI). The CLI therefore provides the same options as Web Based Management (WBM). You should read the detailed explanations of the parameters in the manual "Configuration with Web Based Management".

The CLI also allows remote configuration over Telnet.

Starting the CLI in a Windows console

Follow the steps outlined below to start the Command Line Interface in a Windows console:

1. Open a Windows console and type in the command "telnet" followed by the IP address of the device you are configuring:
   `C:\>telnet <IP address>`
2. Enter your login and password.

As an alternative, you can also enter the command "telnet" followed by the IP address of the device you are configuring in the Start > Run menu.

Note

Requirement for use of the CLI

You should only use the command line interface if you are an experienced user.

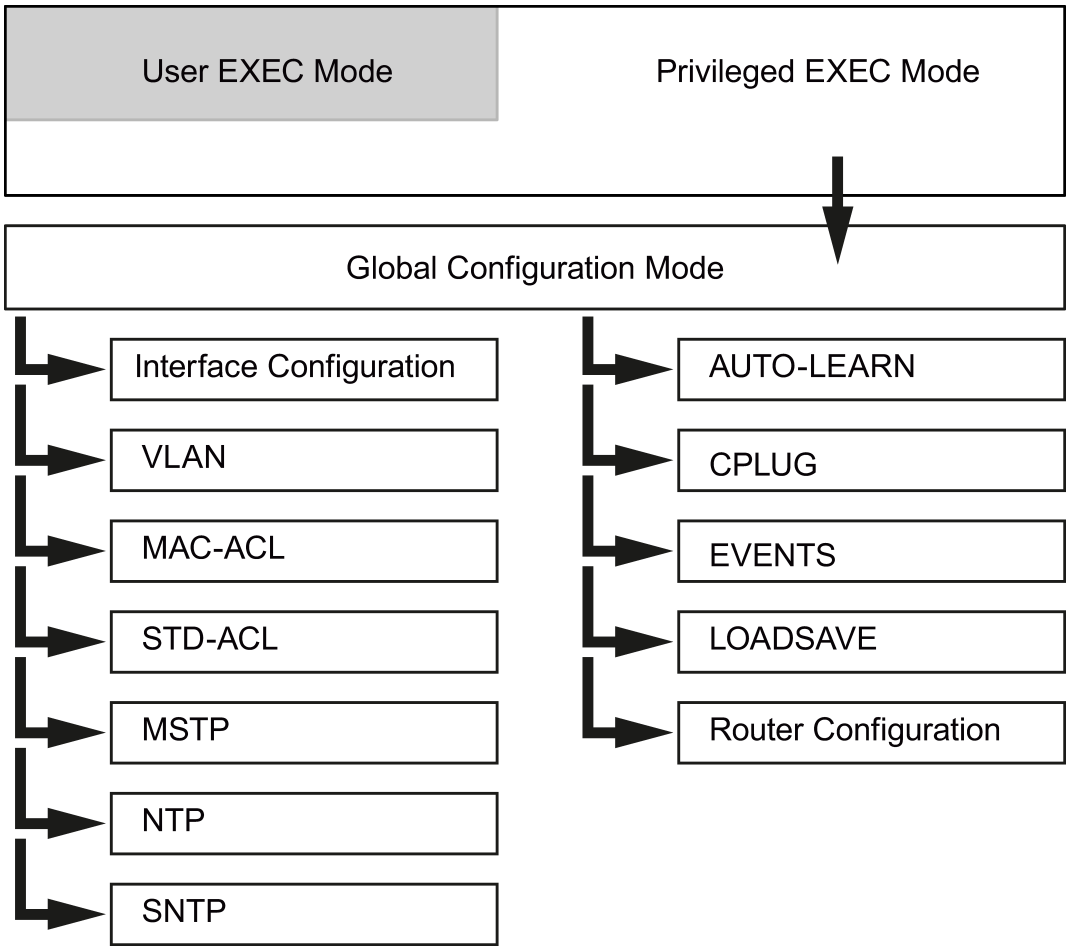
Even commands that bring about fundamental changes to the configuration are executed without a prompt for confirmation.

Errors in the configuration can mean that no further operation is possible in the entire network.

2.2 Structure of the Command Line Interface

Grouping of the commands in the various modes

The commands of the Command Line Interface are grouped according to various modes. Apart from a few exceptions (`help`, `exit`), commands can only be called up in the mode to which they are assigned. This grouping allows different levels of access rights for each individual group of commands. The following graphic is an overview of the available modes.



User EXEC mode

This mode is active after you log in with the user name `user` in a console window. In this mode, you can use `show` commands to display the current values of configuration parameters. It is not possible to modify parameters in this mode.

To be able to modify configuration parameters, you need to change to the Privileged EXEC mode.

Privileged EXEC mode

You change to this mode if you log in with the name admin OR by entering "enable" in user exec mode. There are 2 ways of exiting the privileged exec mode:
1. The exit command logs you out; the login prompt appears.
2. The "disable" command brings you one level back from the privileged exec mode to the user exec mode. (The "disable" command is not available in user exec mode).

Global Configuration mode

In this mode, you can make basic configuration settings. In addition to this, you can also call up modes for the configuration of special interfaces or functions, for example to configure a VLAN or a C-PLUG. You change to this mode by entering `configure terminal` in the Privileged EXEC mode. You exit this mode by entering `end`.

Other configuration modes

From the Global Configuration mode, you can change to other configuration modes for special tasks. These are either general configuration modes (for example line configuration, interface configuration) or protocol-specific configuration modes (SNTP, NTP).

2.3 Configuration limits

Configuration limits of the device

The following table lists the configuration limits for Web Based Management and the Command Line Interpreter of the device.

The usability of various functions depends on the device type you are using and whether or not a KEY-PLUG is inserted.

	Configurable function	Maximum number
System	Syslog server	3
	E-mail server	3
	SNMPv1 trap recipient	10
Layer 2	Virtual LANs (port-based; including VLAN 1)	257
	Protocol-based VLAN groups per port	12
	IPv4 subnet-based VLANs	150
	Multiple Spanning Tree instances	16
	Link aggregations or Etherchannels each with a maximum of 8 ports per aggregation	8
	Ports in a link aggregation	8
	Static MAC addresses in the forward database (FDB)	256
	Multicast addresses without active GMRP	512
	Multicast addresses with active GMRP	50
	VLANs whose data traffic can be mirrored to a monitor port	255
Security	IP addresses from a RADIUS server	3
	Management ACLs (access rules for management)	10
	Rules for port ACL MAC	128
	Ingress and egress rules for port ACL MAC	256
	Rules for port ACL IP	128
	Ingress and egress rules for port ACL IP	256
Layer 3	Layer 3 interfaces	127
	Entries in the hardware routing table	4096
	Static routes	100
	Possible routes to the same destination	8
	DHCP Relay Agent interfaces	127
	DHCP Relay Agent servers	4
	VRRP router interfaces (VLAN interfaces only)	52
	OSPF areas per device	5
	OSPF area range entries per OSPF area (intra-area summary)	3
	OSPF interfaces	40
	OSPF interfaces per OSPF area	40
	OSPF virtual links (within an autonomous system)	8

	Configurable function	Maximum number
	OSPF interface authentication key	200 (40 interfaces each with 5 keys)
	OSPF virtual link authentication key	40 (8 virtual links each with 5 keys)

2.4 The CLI command prompt

Overview

The Command Line Interface prompt shows the following information:

- The mode in which the CLI is currently operating.
  Most commands can only be called in a particular mode. You should therefore check the CLI mode based on the command prompt.
  - User Exec mode: `CLI>`
  - Privileged Exec mode and configuration modes: `CLI(...)#`
- The selected interface when the CLI is in an Interface Configuration mode.
  In the Interface Configuration mode, the parameters are configured for one specific interface. The command prompt is displayed in the form `CLI(config-if-$$$)#` where the placeholder `$$$` is replaced by the identifier of the Interface. You select the Interface by setting suitable parameters for the `interface` command.
- An identifier when the Trial mode is enabled.
  If you first test changes to the configuration and then want to discard them, disable the auto save function with the `no auto-save` command. You are then in Trial mode.
  Changes to the configuration that you have not saved are indicated by an asterisk in front of the command prompt: `*CLI(...)#`.
  You save the changes to the configuration with the command `write startup-config`.
  With the `auto-save` command, you enable the auto save function again.

Note

Upper and lower case

The Command Line Interface does not distinguish between upper case and lower case letters.

Make sure, however, that names used by the operating system or other programs are correctly written.

Blank

To use blanks in a text, enter the text in quotes, for example "H e l l o"

2.5 Symbols of the CLI commands

Symbols for representing CLI commands

When setting parameters for CLI commands, the following characters are used:

Character	Meaning	
< ... >	mandatory parameter	Instead of the expression in parenthesis, you must enter a value
[...]	optional parameter	Instead of the expression in parenthesis, you can enter a value
(...)	Value or range of values	Enter a value to replace the expression in parenthesis
(... - ...)	Range of values	Enter a value from this range
{ ... }	Selection list	Select one more elements from the list
{ ... | ... }	exclusive selection	Select exactly one element from this list

These characters are used in combinations to describe mandatory and optional entries.

There is a general description of some of these combinations below:

Character combinations	Meaning
< variable >	Instead of the expression in parentheses<>, enter a permitted value
< variable (a - b) >	Instead of the expression in parentheses <>, enter a value from the range "a" to "b"
[< variable 1 >< variable 2 >]	The parameter pair is optional. If you use the parameter assignment, you need to enter a permitted value to replace both expressions in parenthesis <>
[keyword < variable (a - b)>]	The parameter assignment is optional. If you use the keyword, you need to enter a value from the range "a" to "b" to replace the expression in parenthesis <>
[keyword < variable (a - b) unit >]	The parameter assignment is optional. If you use the keyword, you need to enter a value from the range "a" to "b" to replace the expression in parenthesis <>. "Unit" is one of the variables and is also replaced by the entry.
[keyword { A | B | C }]	The parameter assignment is optional. If you use the keyword, you need to specify exactly one of the values "A", "B" or "C"
keyword { [A] [B] [C] }	After the keyword, enter one or more of the values "A", "B" or "C"

2.6 Addresses and interface names

2.6.1 Address types, address ranges and address masks

Overview

Since the various types of addresses can be represented by different notations, the notations used in the Command Line Interface are shown below:

- IP v4 addresses
  Addresses for the Internet Protocol version 4 are written in the decimal notation of four numbers from the range 0 to 255, separated by a period.
- Network masks
  A network mask is a series of bits that describes the network part of an IP address.
  The notation is normally decimal in keeping with the IP address.
- Alternative notation for network masks
  In contrast to the notation described above, network masks can also be represented as a number of 1 bits. The mask of the decimal representation 255.255.0.0 is then written as /16.
  The syntax is then for example: <ipaddress> / 16
  Note that there must be a space before and after the "/".
- MAC addresses
  In the syntax of the Command Line Interface, a MAC address is represented as a sequence of 6 bytes in hexadecimal format, in each case separated by a colon.
  The syntax is then, e.g. `aa:bb:cc:dd:ee:ff`.
- Multicast addresses
  Layer 2 multicast addresses as used on this device use the notation of MAC addresses.
  For permitted address ranges, check the rules or ask your network administrator.

2.6.2 Naming interfaces

Overview

The device has several types of interface that are addressed in different ways:

- Physical interfaces on the SCALANCE X500:
  - Permanently installed interfaces
    The interfaces permanently installed on the SCALANCE X500 are called module 0.
  - Interfaces of modules
    The slots for modules are called module 1 followed by numbers. The numbering range depends on the hardware configuration. The numbering is fixed and does not depend on the number of modules being used.

  Each module has 4 ports numbered 1 to 4.
  The port name is made up of the module number and the port number, for example 0/1 is module 0, port 1.
- Physical interfaces on the SCALANCE XM400:
  - Interfaces of the basic device
    The interfaces of the basic device SCALANCE XM400 are called module 1.
  - Interfaces of extenders
    The port extenders are called module 2 and module 3 starting from the basic device. The number of port extenders depends on the number of ports of the basic device.

  The port name is made up of the module number and the port number, for example 1/5 is module 1, port 5.
- Logical interfaces:
  - VLAN
    To be able to use a VLAN, create it with the `vlan` command.
  - The device supports up to 40 OSPF interfaces and 127 VLAN ports.
  - Aggregated links, aggregated ports, port channel, etherchannel
    These terms are used for the same function:
    Several ports or connections between two devices are logically bundled together (aggregated) to achieve a higher data transmission rate and a lower failure risk.

Combo ports

Combo port is the name for two communication ports. A combo port has the two following jacks:

- a fixed RJ-45 port
- an SFP transceiver slot that can be equipped individually

Of these two ports, only one can ever be active.

You can set the active port with the command `media-type`.

Naming the interface in the `interface` command and in other commands

If you call up the `interface` command to configure an interface in the Global configuration mode, enter the interface you want to configure.

The interfaces are addressed with commands with the syntax `interface <interface-type> <interface-id>`. Note the section below for more information on the notation of the address.

VLAN and port channel interfaces are selected using the number that you assigned in the `vlan` or `channel-group` command.

`interface-type` can have the following values:

- `extreme-ethernet`
- `gigabit-ethernet`
- `vlan`

The interface ID is represented as follows:

- The short form `gi` stands for `gigabit-ethernet` and the short form `ex` stands for `extreme-ethernet`.
- Enter a blank followed by the slot and port number of the Interface separated by a slash.

The permitted ranges of values depend on the hardware configuration in your device.

This notation also applies to other commands that address an Interface.

Examples

You call a gigabit Ethernet interface in the second port of slot 1 with the `interface gi 1/2` command. For Fast Ethernet use `fa`.

Port channel ports are called as follows: `interface po1`
VLAN ports are called as follows: `interface vlan 2`

Identification of the interfaces in the command prompt of the Interface configuration mode

Since you configure precisely one of the existing interfaces in the Interface configuration mode, the command prompt shows not only the mode but also the name of this interface.

The command prompt is as follows:

`cli(config-if-$$$)#`

The placeholder `$$$` is replaced by the following name of the interface:

Type of interface	Command prompt
`cpu0`	`cli(config-if-cpu0)#`
`vlan`	`cli(config-if-vlan-$)#`
`port-channel`	`cli(config-if-po-$)#`
`gigabitethernet`	`cli(config-if-Gi$-$)#`
`extreme-ethernet`	`cli(config-if-Ex$-$)#`
`Router-Port`	`cli(config-RPort-Gi$-$)#`

The placeholders `$` or `$-$` denote the numbering of the interface.

2.7 General CLI commands

This section describes commands that you can call up in any mode.

2.7.1 clear screen

Description

With this command, you clear the screen.

The command prompt is displayed.

Syntax

Call the command without parameters:

```
clear screen
```

Result

The screen is cleared.

The command prompt is displayed.

2.7.2 end

Description

With this command, you close all configuration modes.

You are then in the Privileged EXEC mode.

Requirement

You are in a configuration mode.

Syntax

Call the command without parameters:

```
end
```

Result

You are in the Privileged EXEC mode.

The command prompt is as follows:

```
cli#
```

2.7.3 exit

Description

With this command, you close the current mode.

You are then at the next higher level in the user modes.

If you are in Privileged EXEC Modus or in User EXEC Modus mode, you will be logged out.

Syntax

Call the command without parameters:

```
exit
```

Result

The current mode was exited.

2.7.4 Help functions and supported input

The Command Line Interface provides various functions that are helpful when making entries in the command line:

- `help`
- ?
- Command completion with the tab key
- Automatic completion of incomplete commands
- Paging in the list of most recently used commands
- Display of the list of most recently used commands (`show history`)

2.7.4.1 help

Description

With this command, you display the help entry for a command or the command list.

Help on a specific command

Syntax

Call up help with the following parameters:

```
help [command]
```

Here, you replace `[command]` with the command for which you require help.

If the command for which you require help consists of several words, enter these words without spaces.

Result

The syntax of the command is displayed.

Command overview

Syntax

If you call up help without parameters, you will obtain a list of all permitted commands in the current mode:

```
help
```

Result

Both the mode-specific as well as the global commands are displayed.

Note

Incomplete command names

If you have specified an incomplete command when calling help, a list of all commands that start with the term you have entered is created.

2.7.4.2 The command "?"

Description

With this command, you call up the command list.

Syntax

Enter a question mark to obtain a list of all permitted commands in the current mode:

```
?
```

For this command, you do not need to press the enter key.

The command executes immediately after you type the character.

Both the mode-specific as well as the global commands are displayed.

Note

Incomplete command names

If you have specified an incomplete command when calling the help function, a list of all commands that start with the term you have entered is created.

Note

Output in pages

With long lists, the results are displayed as pages. If `-- more --` appears at the lower edge of the display, you can move to the next page with the spacebar. If the display is in pages, you cannot page back. You exit the page display with the `q` key.

2.7.4.3 Completion of command entries

Description

The command interpreter of the Command Line Interface supports you when you enter commands.

As soon as the first characters of the command have been entered in the input line, the system can complete the entry as long as the character string is unambiguous.

This can be repeated after entering further characters.

Procedure

Enter the first characters of the command.

Press the TAB key.

Result

The command interpreter completes the input as long as the command is unambiguous.

If you enter a character string that cannot be completed to form a command, an error message is displayed.

- The command is not unique: `% Ambiguous Command`
- The command is unknown: `% Invalid Command`
- The command is incomplete: `% Incomplete command`

If the entry is not yet complete, enter further characters.

With `?`, you obtain a list of the possible commands.

Repeat this if necessary until the command is complete and can execute.

2.7.4.4 Abbreviated notation of commands

Description

The command interpreter of the Command Line Interface also detects commands if only the first character of the command or its parts is entered.

This is only possible if all the parts of the abbreviated input can be assigned to exactly one command or to the parts of the command.

Example

The `show event config` command can be replaced by the expression `sh e c`.

2.7.4.5 Reusing the last used commands

Description

The Command Line Interface saves the last 14 commands used in a list assigned to the particular mode. This can then only be called up in the relevant mode.

Example: In the Global Configuration mode, all entered commands are saved. If you entered commands earlier in the Interface Configuration mode, these commands are not included in the list of the Global Configuration mode. You can only call up and reuse these commands in the Interface Configuration mode.

Procedure

You can page through the list of the commands most recently used using the arrow up and arrow down keys.

If the command you are looking for is displayed, you can edit the command line as required and execute the command with the enter key.

Further notes

You display the list of commands last used with the `show history` command. This function is available in every mode.

2.7.4.6 Working through a command sequence

Separators for multiple commands in one line

You can call up several commands one after the other in one line in the CLI.

Separate the commands with a semicolon ";".

After completing your input, start the processing of this command sequence with the enter key.

Example

The command sequence `CLI#conf t; int gi 1/1; shut; no switchport; no shut; no ip address; end; write startup`

has the same effect as:

```
CLI#conf t
CLI(config)#int gi 1/1
CLI(config-IF-gi1-1)#shutdown
CLI(config-IF-gi1-1)#no switchport
CLI(config-IF-gi1-1)#no shutdown
CLI(config-IF-gi1-1)#no ip address
CLI#write startup
```

2.7.4.7 show history

Description

This command shows the last 14 commands you entered.

The commands are listed in the order in which they were called up. The `show history` command is listed as the last command to be entered.

The list depends on the mode. In the Global configuration mode, the last 14 commands entered in this mode are displayed. These commands are not included in the list of the Interface configuration mode.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show history
```

Result

The list of used commands is displayed.

Configuration

3

This part contains the sections that describe the following:

- System settings
- Saving / loading configurations and firmware

3.1 System

This section describes commands with which general system properties can be displayed and configured.

3.1.1 The "show" commands

This section describes commands with which you display various settings.

3.1.1.1 show cli-console-timeout

Description

This command shows the global configuration for the timeout of the CLI console.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show cli-console-timeout
```

Result

The configuration for the timeout is displayed.

3.1.1.2 show coordinates

Description

This command shows the system coordinates.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show coordinates
```

Result

The system coordinates are displayed.

3.1.1.3 show device information

Description

This command shows information about the device.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show device information
```

Result

The information about the device is displayed.

3.1.1.4 show env temperature

Description

This command shows the temperature of the system.

Requirement

You are in the Privileged EXEC mode.

The command prompt is as follows:

`cli#`

Syntax

Call the command without parameters:

```
show env temperature
```

Result

The temperature of the system is displayed.

3.1.1.5 show hardware

Description

This command shows the type and number as well as the position of the installed interface cards of the system.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show hardware
```

Result

The table of interface cards is displayed.

The slot ID, the status and the type or name of the card is listed.

3.1.1.6 show interface mtu

Description

With this command, you show the setting for the Maximum Transmission Unit (MTU) of the interfaces on the device.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show interface mtu [{Vlan<vlan-id(1-4094)>|
                     portchannel<port-channel-id(1-8)>|
                     <interface-type><interface-id>}]
```

The parameters have the following meaning:

Parameter	Description	Range of values
`Vlan`	Keyword for a VLAN connection	-
`vlan-id`	Number of the addressed VLAN	1 ... 4094
`portchannel`	Keyword for a port channel connection	-
`port-channel-id`	Number of the addressed port channel	1 ... 8
`interface-type`	Type of interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If no parameters are specified, the settings for all interfaces are displayed.

Note

If you use an MM900 with an optical interface, use `gigabitethernet` for the `interface-type` parameter. For further information on the media modules, refer to the compact operating instructions of the MM900 media modules for SCALANCE XR-500M.

Result

The settings are displayed.

3.1.1.7 show interfaces

Description

This command shows the status and the configuration of one, several or all interfaces.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show interfaces
   [{
     [<interface-type><interface-id>]
     [{description|stormcontrol|flowcontrol|status}]
    |
     {vlan<vlan-id(1-4094)>}
    |
     port-channel<port-channel-id(1-8)>
   }]
```

The parameters have the following meaning:

Parameters	Description	Range of values
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name
`description`	Shows the description of the interface	-
`stormcontrol`	Shows the storm control settings	-
`flowcontrol`	Shows the flow control settings	-
`status`	Shows the status of the interface	-
`vlan`	Keyword for a VLAN connection	-
`vlan-id`	Number of the addressed VLAN	1 ... 4094
`port-channel`	Keyword for a port channel connection	-
`port-channel-id`	Number of the addressed port channel	1 ... 8

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you do not select any parameters from the parameter list, the status and configuration of all available interfaces will be displayed.

Result

The status and the configuration of the selected interfaces are displayed.

3.1.1.8 show interfaces ... counters

Description

This command shows the counters of one, several or all interfaces.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show interfaces
   [{<interface-type><interface-id>]|{vlan<vlan-
id(1-4094)>}]counters
```

The parameters have the following meaning:

Parameters	Description	Range of values
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name
`vlan`	Keyword for a VLAN connection	-
`vlan-id`	Number of the addressed VLAN	1 ... 4094

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you do not select any parameter from the parameter list, the entries are displayed for all available counters.

Result

The counters of the selected interfaces are displayed.

3.1.1.9 show ip interface

Description

This command shows the configuration of one, several or all IP interfaces.

Requirement

You are in the User EXEC mode or in Privileged EXEC.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show ip interface [Vlan<vlan-id(1-4094)>]
                  [<interface-type><interface-id>]
                  [loopback<loopback-id(0)>]
```

The parameters have the following meaning:

Parameters	Description	Values
`Vlan`	Keyword for a VLAN connection	-
`vlan-id`	Number of the addressed VLAN	1 ... 4094
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name
`loopback`	Keyword for a loopback	-
`loopback-id`	Number of the addressed loopback	0

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you do not select any parameter from the parameter list, the configuration is displayed for all available IP interfaces.

Result

The configuration of the selected IP interface is displayed.

3.1.1.10 show pnio

Description

This command shows the current PROFINET IO configuration.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show pnio
```

Result

The current PROFINET IO configuration is displayed.

3.1.1.11 show broadcast-block config

Description

This command shows the broadcast blocking settings for ports.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

`show broadcast-block config [port<interface-type><interface-id)>]`

The parameters have the following meaning:

Parameters	Description	Range of values
`port`	Keyword for a port description	-
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The broadcast blocking settings for ports are displayed.

3.1.1.12 show unicast-block config

Description

This command shows the unicast blocking settings for ports.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show unicast-block config [port<interface-type><interface-id)>]
```

The parameters have the following meaning:

Parameters	Description	Range of values
`port`	Keyword for a port description	-
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The unicast blocking settings for ports are displayed.

3.1.1.13 show multicast-block config

Description

This command shows the multicast blocking settings for ports.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show multicast-block config[port<interface-type><interface-id)>]
```

The parameters have the following meaning:

Parameter	Description	Range of values
`port`	Keyword for a port description	-
`interface-type`	Type of interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If no parameters are specified, the settings for all ports are displayed.

Result

The multicast blocking settings for ports are displayed.

3.1.1.14 show versions

Description

This command shows the version information of the entire system.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show versions
```

Result

The version information of the entire system is displayed.

3.1.2 clear counters

Description

With this command, you reset the counters of an interface.

Requirement

You are in the Privileged EXEC mode.

The command prompt is as follows:

`cli#`

Syntax

Call up the command with the following parameters:

```
clear counters [<interface-type><interface-id>]
```

The parameters have the following meaning:

Parameters	Description	Values
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If no parameters are specified, the counters for all interfaces are reset.

Result

The counters of the interface are reset.

Further notes

You can display the statistical information of the interfaces with the `show interfaces counters` command.

3.1.3 configure terminal

Description

With this command, you change to the Global configuration mode.

Requirement

You are in the Privileged EXEC mode.

The command prompt is as follows:

```
cli#
```

Syntax

Call the command without parameters:

```
configure terminal
```

Result

You are now in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Further notes

You exit the Global configuration mode with the `end` command.

3.1.4 disable

Description

With this command, you close the Privileged EXEC mode.

You are then in the User EXEC mode.

Requirement

You are in the Privileged EXEC mode.

The command prompt is as follows:

```
cli#
```

Syntax

Call the command without parameters:

```
disable
```

Result

You are in the User EXEC mode.

The command prompt is as follows:

```
cli>
```

3.1.5 enable

Description

With this command, you change to the Privileged EXEC mode.

Requirement

You are in the User EXEC mode.

The command prompt is as follows:

```
cli>
```

Syntax

Call the command without parameters:

```
enable
```

Result

You are prompted to enter the administrator password. After logging in successfully, you are in the Privileged EXEC mode.

The command prompt is as follows:

```
cli#
```

3.1.6 lock

Description

With this command, you lock the console.

Requirement

You are in the Privileged EXEC mode.

The command prompt is as follows:

```
cli#
```

Syntax

Call the command without parameters:

```
lock
```

Result

The console is locked. The system expects the entry of the password.

Further notes

You cancel the lock by entering the Login password.

3.1.7 logout

Description

With this command, you exit the Command Line Interface.

If you are connected to the device via telnet, the session is closed.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
logout
```

Result

The CLI session is ended and the Windows Login prompt is displayed.

3.1.8 ping

Description

With this command, you request a response from a device in the network.

This allows you to check whether or not another node is reachable.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
ping [ip]<destination-address>
     [size<packet_size(0-2080)>]
     [count<packet_count(1-10)>]
     [timeout<time_out(1-100)>]
```

The parameters have the following meaning:

Parameter	Description	Range of values
`ip`	Uses an IP address	-
`destination address`	Address of the called node	Enter a valid IP address or a valid hostname
`size`	Keyword for the size of the packets to be transferred	-
`packet_size`	Keyword for the size of the packets in bytes	0 … 2080 Default: 32
`count`	Keyword for the number of packets to be requested	-
`packet_count`	Number of packets	1 … 10 Default: 3
`timeout`	Response wait time If this time expires, the request is reported as "timed out".	-
`time_out`	Time to the timeout in seconds	1 … 100 Default: 1

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you do not select any parameters from the parameter list, the default values are used.

Result

The messages relating to the response of the called node are displayed.

3.1.9 clear line vty

Description

With this command, you close a console session on the device.

With the `forceful-clear` option, you close a session and that is not reacting.

Requirement

You are in the Privileged EXEC mode.

The command prompt is as follows:

```
cli#
```

Syntax

Call up the command with the following parameters:

```
clear line vty {<line-number(2-9)>|all}[forceful-clear]
```

The parameters have the following meaning:

Parameters	Description	Values
`line-number`	Number of the connection that will be terminated	2 ... 9
`all`	terminates all connections	-
`forceful-clear`	closes a session that is not reacting	

Result

The console session is closed.

Further notes

You show the logged-on users with the `show users` command.

See also

Addresses and interface names (Page 32)

3.1.10 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

3.1.10.1 interface

Description

With this command, you change to the Interface configuration mode.

There you can edit the settings for one interface. You select the interface with the parameters of this command. If you specify a logical interface that does not exist, it will be created. The name of the selected interface is displayed in the command prompt.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
interface{cpu0|vlan<vlan-id(1-4094)>|port-channel<port-channel-
id(1-8)>|
          <interface-type><interface-id>}
```

The parameters have the following meaning:

Parameters	Description	Values
`cpu0`	The configuration mode for the "Out of Band Management interface" is called up	-
`vlan`	Keyword for a VLAN connection	-
`vlan-id`	Number of the addressed VLAN	1 … 4094
`port-channel`	Keyword for a port channel connection	-
`port-channel-id`	Number of the addressed port channel	1 … 8
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

The placeholder `$$$` is replaced by the following name of the interface:

Type of interface	Command prompt
`cpu0`	`cli(config-if-cpu0)#`
`vlan`	`cli(config-if-vlan-$)#`
`port-channel`	`cli(config-if-po-$)#`
`gigabitethernet`	`cli(config-if-Gi$-$)#`
`extreme-ethernet`	`cli(config-if-Ex$-$)#`

The placeholders `$` or `$-$` denote the numbering of the interface.

The ranges of values for the logical interfaces VLAN and port channel can be found in the table above. You can only call up interfaces that you created with the `vlan` or `channel-group` command.

The ranges of values from the physical interfaces depend on the hardware configuration.

Further notes

You exit the Interface configuration mode with the `end` or `exit` command.

You delete a logical interface with the `no interface` command.

You display the status and the configuration of the interfaces with the `show interfaces` command.

3.1.10.2 no interface

Description

With this command, you delete a logical interface.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no interface{vlan<vlan-id(1-4094)>|port-channel<port-channel-
id(1-8)>}
```

The parameters have the following meaning:

Parameters	Description	Values
`vlan`	Keyword for a VLAN connection	-
`vlan-id`	Number of the addressed VLAN	1 … 4094
`port-channel`	Keyword for a port channel connection	-
`port-channel-id`	Number of the addressed port channel	1 … 8

Result

The logical interface is deleted.

Further notes

You configure an interface with the `interface` command.

You display the status and the configuration of the interfaces with the `show interfaces` command.

3.1.10.3 cli-console-timeout

Description

With this command, you enable the automatic logout and you configure the timeout setting for the CLI.

Note

No automatic logout from the CLI

If the connection is not terminated after the set time, check the setting of the "keepalive" function on the Telnet client. If the set interval is shorter than the configured time, the lower value applies. You have set, for example, 300 seconds for the automatic logout and the "keepalive" function is set to 120 seconds. In this case, a packet is sent every 120 seconds that keeps the connection up.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
cli-console-timeout [seconds(60-600)]
```

The parameters have the following meaning:

Parameter	Description	Range of values
`seconds`	Time in seconds until automatic logout after the last entry	60 ... 600 Default: 300

Result

The time is configured and automatic logout is enabled.

Further notes

You disable automatic logout with the `no cli-console-timeout` command.

You display the current timeout setting with the `show cli-console-timeout` command.

3.1.10.4 no cli-console-timeout

Description

With this command, you disable the automatic logout.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no cli-console-timeout
```

Result

Automatic logout is disabled.

Further notes

You enable automatic logout with the `cli-console-timeout` command.

3.1.10.5 coordinates height

Description

With this command, you enter a height coordinate.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
coordinates height <meter>
```

The parameter has the following meaning:

Parameters	Description	Note
`meter`	Input box for the height coordinate	max. 32 characters To use spaces in the entry, enter the height coordinate in quotes: `coordinates height "123 456"`

Result

The height coordinate is created.

3.1.10.6 coordinates latitude

Description

With this command, you enter a latitude coordinate.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
coordinates latitude <latitude>
```

The parameter has the following meaning:

Parameters	Description	Note
`latitude`	Input box for the latitude coordinate	max. 32 characters To use spaces in the entry, enter the latitude coordinate in quotes: `coordinates latitude "123 456"`

Result

The latitude coordinate is created.

3.1.10.7 coordinates longitude

Description

With this command, you enter a longitude coordinate.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
coordinates longitude <longitude>
```

The parameter has the following meaning:

Parameters	Description	Note
`longitude`	Input box for the longitude coordinate	max. 32 characters To use spaces in the entry, enter the longitude coordinate in quotes: `coordinates longitude "123 456"`

Result

The longitude coordinate is created.

3.1.10.8 system contact

Description

With this command, you enter contact information for the system.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
system contact <string>
```

The parameter has the following meaning:

Parameters	Description	Note
`string`	Input box for contact information	max. 255 characters

Result

The contact information is created in the system.

3.1.10.9 system location

Description

With this command, you enter the location information for the system.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
system location <string>
```

The parameter has the following meaning:

Parameters	Description	Note
`string`	Input box for the location information	max. 255 characters

Result

The location information is created in the system.

3.1.10.10 system name

Description

This command, you enter a name for the system.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
system name <string>
```

The parameter has the following meaning:

Parameters	Description	Note
`string`	Input box for the name	max. 255 characters

Result

The name is created in the system.

3.1.10.11 username

Description

With this command, you change the password of a user.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
username {user|admin}password<passwd>
```

The parameters have the following meaning:

Parameters	Description
`user`	the password for the user is changed
`admin`	the password for the administrator is changed
`passwd`	Value for the password

Note

Length of the password

The password must be at least 6 characters long.

Result

The password is changed.

Note

Changing the password in Trial mode

Even if you change the password in Trial mode, this change is saved immediately.

3.1.11 Commands in the interface configuration mode

This section describes commands that you can call up in the interface configuration mode. Depending on the Interface selected, various command sets are available.

In the Global configuration mode, enter the `interface` command to change to this mode.

Commands relating to other topics that can be called in the interface configuration mode can be found in the relevant sections.

- If you exit the Interface configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the Interface configuration mode with the `end` command, you return to the Privileged EXEC mode.

3.1.11.1 alias

Description

With this command, you assign a name to an interface. The name only provides information and has no effect on the configuration.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
alias <port-name>
```

The parameter has the following meaning:

Parameters	Description	
`port-name`	Name of the interface	max. 63 characters

Result

The interface is assigned a name.

3.1.11.2 duplex

Description

Certain interfaces can be operated in full duplex mode or half duplex mode. The options here depend on the connected device.

Optical connections, for example, are always operated in full duplex mode since they have a fiber for each transmission direction.

With this command, you configure the duplex mode of an interface.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
duplex {full|half}
```

The parameters have the following meaning:

Parameter	Description
`full`	The Interface will be operated in full duplex mode. Default: `full`
`half`	The Interface will be operated in half duplex mode

Result

The duplex mode of the interface is configured.

Further notes

You can reset the duplex mode of the Interface to the default value with the `no duplex` command.

3.1.11.3 no duplex

Description

With this command, you reset the duplex mode of an interface to the default value.

The default value is `full`.

Requirement

You are in the interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no duplex
```

Result

The duplex mode of the Interface is reset to the default value.

Further notes

You configure the duplex mode of the interface with the `duplex` command.

3.1.11.4 mtu

Description

With this command, you configure the size of the Maximum Transmission Unit (MTU) for an interface.

Requirement

- The Interface must be shut down.
- You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
mtu <frame-size(64-9216)>
```

The parameter has the following meaning:

Parameter	Description	Range of values
`frame-size`	Size of the MTU in bytes	64 ... 9216 Default: 1514

Result

The setting for the size of the MTU is configured.

Further notes

You can shut down the interface with the `shutdown` command.

You display this setting with the `show interface mtu` command.

You display this setting and other information with the `show interfaces` command.

3.1.11.5 negotiation

Description

With this command, you enable autonegotiation of connection parameters on an interface.

Requirement

You are in the interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
negotiation
```

Result

The function is enabled.

Further notes

You disable the autonegotiation of connection parameters with the `no negotiation` command.

3.1.11.6 no negotiation

Description

With this command, you disable autonegotiation of connection parameters on an interface.

Requirement

You are in the interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no negotiation
```

Result

The function is disabled.

Further notes

You enable the autonegotiation of connection parameters with the `negotiation` command.

3.1.11.7 set broadcast-block

Description

With this command, you enable / disable the blocking of broadcast frames on an interface.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
set broadcast-block{enable|disable}
```

The parameters have the following meaning:

Parameter	Description
enable	The blocking of broadcast frames is enabled.
disable	The blocking of broadcast frames is disabled. Default: disabled

Result

The blocking of broadcast frames is enabled / disabled.

3.1.11.8 set multicast-block

Description

With this command, you enable / disable the blocking of multicast frames on an interface.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
set multicast-block{enable|disable}
```

The parameters have the following meaning:

Parameter	Description
enable	The blocking of multicast frames is enabled.
disable	The blocking of multicast frames is disabled. Default: disabled

Result

The blocking of multicast frames is enabled / disabled.

3.1.11.9 shutdown

Description

With this command, you shut down the interface.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
shutdown
```

Result

The Interface is shut down. A connection continues to be indicated if a switch port is turned off. The LED for the port status flashes 3 times cyclically. However no data is sent or received.

Further notes

You activate the interface with the `no shutdown` command.

You can display the status of this function and other information with the `show interfaces`command.

3.1.11.10 no shutdown

Description

With this command, you shut down an interface.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no shutdown
```

Result

The Interface is activated.

Further notes

You activate the interface with the `shutdown` command.

You can display the status of this function and other information with the `show interfaces`command.

3.1.11.11 speed

Description

With this command, you configure the transmission speed of an interface.

Note
Availability of this function
The transmission speed can only be configured for electrical data transfer.
On optical connections, the transmission speed is fixed.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
speed {10|100|1000}
```

The parameters have the following meaning:

Parameters	Description
10	Transmission speed 10 Mbps
100	Transmission speed 100 Mbps
1000	Transmission speed 1000 Mbps

Result

The transmission speed of the interface is configured.

3.1.11.12 switchport

Description

With this command, you configure the interface as a switch port.

Requirement

- The Interface is shut down.

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
switchport
```

Result

The interface is configured as a switch port. Activate the interface again.

Further notes

You shut down the interface with the `shutdown` command.

You activate the interface with the `no shutdown` command.

You configure the interface with the `no switchport` command.

You can display the status of this function and other information with the `show ip interface`command.

3.1.11.13 no switchport

Description

With this command you configure the interface as a router port. This disables all switching and layer 2 functions.

Requirement

- The Interface is shut down.

You are in the Interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no switchport
```

Result

The interface is configured as a router port.

The command prompt is as follows:

```
cli(config-if_RPort-Gi$$$)#
```

Activate the interface again.

Further notes

You shut down the interface with the `shutdown` command.

You activate the interface with the `no shutdown` command.

You configure the interface as a switch port with the `switchport` command.

You can display the status of this function and other information with the `show ip interface`command.

3.1.11.14 lldp

Description

With this command, you enable the sending and receipt of LLDP packets on the interface.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
lldp{transmit|receive}
```

The parameters have the following meaning:

Parameter	Description
`transmit`	The sending of LLDP packets is enabled. Default: enabled
`receive`	The receipt of LLDP packets is enabled. Default: enabled

Note
Enabling both options

When you call this command, you can only select one option.

If you want to enable both options, call up the command again.

Result

The setting is configured.

Further notes

You disable the sending or receipt of LLDP packets with the `no lldp` command.

3.1.11.15 no lldp

Description

With this command, you disable the sending and receipt of LLDP packets on the interface.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
no lldp{transmit|receive}
```

The parameters have the following meaning:

Parameters	Description
`transmit`	the sending of LLDP packets is enabled
`receive`	the receipt of LLDP packets is disabled

Note
Disabling both options

When you call this command, you can only select one option.

If you want to disable both options, call up the command again.

Result

The setting is configured.

Further notes

You enable the sending or receipt of LLDP packets with the `lldp` command.

3.1.11.16 media type (SCALANCE XM400 only)

Description

With this command, you configure the mode of a combo port.

Note

This command only influences combo ports.

If you attempt to configure a different port with this command, an error message will be displayed.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
media-type {auto|rj45|sfp}
```

The parameters have the following meaning:

Parameter	Description
`auto`	The `auto` mode is enabled for the combo port. In this mode, the SFP transceiver port has priority. As soon as an SFP transceiver is plugged in, an existing connection at the fixed RJ-45 port is terminated. If no SFC transceiver is plugged in, a connection can be established via the fixed RJ-45 port. Default: `auto`
`rj45`	The `rj45` mode is enabled for the combo port. In this mode, the fixed RJ-45 port is used independent of the SFP transceiver port. If an SFP transceiver is plugged in, it is disabled and the power turned off.
`sfp`	The `sfp` mode is enabled for the combo port. In this mode, the SFP transceiver port is used independent of the fixed RJ-45 port. If an RJ-45 connection is established, it is terminated because the power of the RJ-45 port is turned off.

Result

The mode of the combo port is configured.

Further notes

You display the mode of a combo port with the command `show interface` and the parameter `description`.

3.2 Load and Save

This section describes commands for displaying, copying, saving and downloading files for the device.

Note

Please note: During the installation of a previous version, the configuration data can be lost. In this case, the device starts up with the factory configuration settings after the firmware has been installed.

3.2.1 show loadsave files

Description

This command shows the current Load&Save file information.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show loadsave files
```

Result

The current Load&Save file information is displayed.

3.2.2 show loadsave tftp

Description

This command shows the current Load&Save TFTP server configuration.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show loadsave tftp
```

Result

The current Load&Save TFTP server configuration is displayed.

3.2.3 load tftp

Description

With this command, you load the files from a TFTP server.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
load tftp <ipv4-address> [port <tcp port (1-65535)>] file <filename>
filetype <filetype>
```

The parameters have the following meaning:

Parameter	Description	Values
`ipv4-addr`	Identifies the unicast IPv4 address	Enter a valid unicast IPv4 address
`port`	Keyword for the port of the server via which the TFTP connection runs	-
`tcp port`	Number of the port	1 … 65535
`filetype`	Keyword for the file type to be loaded	-
`filetype`	Name of the file type	max. 100 characters
`file`	Shows that the name follows that will be assigned to the file type	-
`filename`	Name of the file	max. 100 characters

Result

The file is loaded on the device from the TFTP server.

3.2.4 save filetype

Description

With this command, you save files on a TFTP server.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
save filetype <filetype> tftp <ipv4-address> [port <tcp port
(1-65535)>] file <filename>
```

The parameters have the following meaning:

Parameter	Description	Values
`ipv4-addr`	Identifies the unicast IPv4 address	Enter a valid unicast IPv4 address
`port`	Keyword for the port of the server via which the TFTP connection runs	-
`tcp port`	Number of the port	1 … 65535
`filetype`	Shows that the file type follows that will be loaded	-
`filetype`	Name of the file type	max. 100 characters
`file`	Shows that the name follows that will be assigned to the file type	-
`filename`	Name of the file	max. 100 characters

Result

The file is saved on the TFTP server.

3.2.5 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

3.2.5.1 loadsave

Description

With this command, you change to the LOADSAVE configuration mode.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
loadsave
```

Result

You are now in the LOADSAVE configuration mode.

The command prompt is as follows:

```
cli(config-loadsave)#
```

Further notes

You exit the LOADSAVE configuration mode with the `exit` command.

3.2.6 Commands in the LOADSAVE configuration mode

This section describes commands that you can call up in the LOADSAVE configuration mode.

In the Global Configuration mode, enter the `loadsave` command to change to this mode.

You display the valid file types for the commands in the LOADSAVE Configuration mode with the global command `show loadsave tftp`.

- If you exit the LOADSAVE configuration mode with the `exit`command, you return to the Global Configuration mode.
- If you exit the LOADSAVE configuration mode with the `end` command, you return to the Privileged EXEC mode.

3.2.6.1 delete

Description

With this command, you call up the possible files or delete a specific file.

Requirement

You are in the LOADSAVE configuration mode.

The command prompt is as follows:

```
cli(config-loadsave)#
```

Syntax

Call up the command with the following parameters:

```
delete{showfiles|filetype<filetype>}
```

The parameters have the following meaning:

Parameter	Description	Values
showfiles	Shows the available files	-
filetype	Shows that the file type follows that will be deleted	-
filetype	Name of the file type	max. 100 characters

Result

The files are displayed or the file is deleted.

3.2.6.2 tftp filename

Description

With this command, you assign a name to a file type.

The file type decides the type that is affected by the `tftp load` or `tftp save` action. The name decides the file to be copied to or from the TFTP server.

Requirement

You are in the LOADSAVE configuration mode.

The command prompt is as follows:

```
cli(config-loadsave)#
```

Syntax

Call up the command with the following parameters:

```
tftp filename {showfiles|filetype< filetype >name<filename>}
```

The parameters have the following meaning:

Parameter	Description	Values
`showfiles`	Shows the available files	-
`filetype`	Shows that the file type follows to which a name will be assigned	-
`filetype`	Name of the file type	max. 100 characters
`name`	Shows that the name follows that will be assigned to the file type	-
`filename`	Name of the file	max. 100 characters

Result

The file types are displayed or the file type is assigned a name.

3.2.6.3 tftp load

Description

With this command, you load a file from a tftp server into the file system of the device. The tftp protocol is used for the transfer. You can also display a list of available files.

Requirement

- The name of the file is specified

You are in the LOADSAVE configuration mode.

The command prompt is as follows:

```
cli(config-loadsave)#
```

Syntax

Call up the command with the following parameters:

```
tftp load{showfiles|filetype<filetype>}
```

The parameters have the following meaning:

Parameter	Description	Values
`showfiles`	Shows the available files	-
`filetype`	Shows that the file type follows that will be loaded	-
`filetype`	Name of the file type	max. 100 characters

Result

The file types are displayed or the file is downloaded to the device.

Further notes

You configure the name of the file with the `tftp filename` command.

3.2.6.4 tftp save

Description

With this command, you copy a file from the file system of the device to a tftp server. The tftp protocol is used for the transfer. You can also display a list of available files.

Requirement

- The name of the file is specified

You are in the LOADSAVE configuration mode.

The command prompt is as follows:

```
cli(config-loadsave)#
```

Syntax

Call up the command with the following parameters:

```
tftp save {showfiles|filetype<filetype>}
```

The parameters have the following meaning:

Parameter	Description	Values
`showfiles`	Shows the available files	-
`filetype`	Shows that the file type follows that will be loaded	-
`filetype`	Name of the file type	max. 100 characters

Result

The file types are displayed or the file is copied.

Further notes

You configure the name of the file with the `tftp filename` command.

3.2.6.5 tftp server

Description

With this command, you configure the access to a TFTP server.

Requirement

You are in the LOADSAVE configuration mode.

The command prompt is as follows:

```
cli(config-loadsave)#
```

Syntax

Call up the command with the following parameters:

```
tftp server {<ipv4-addr>}[port<tcp port(1-65535)>]
```

The parameters have the following meaning:

Parameter	Description	Values
`ipv4-addr`	Identifies the unicast IPv4 address	Enter a valid unicast IPv4 address
`port`	Keyword for the port of the server via which the TFTP connection runs	-
`tcp port`	Parameter	1 … 65535

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The settings are configured.

3.3 Reset and Defaults

This section describes commands for restarting the device and for restoring the original configuration.

3.3.1 restart

Description

With this command, you restart the device.

Select one of the following configuration settings:

- Device restart with the current configuration
- Device restart with the factory configuration settings.

Requirement

You are in the Privileged EXEC mode.

The command prompt is as follows:

```
cli#
```

Syntax

Call up the command with the following parameters:

```
restart[{factory}]
```

The parameters have the following meaning:

- if no parameters are specified: restarts the system with the current configuration

Parameter	Description
`factory`	Restarts the system with the factory configuration settings

Result

The device is restarted with the selected settings.

3.4 Configuration Save & Restore

This section describes commands for displaying, saving and restoring configuration settings.

3.4.1 show running-config

Description

This command shows configuration settings of the device.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show running-config
 [{
   syslog|dhcp|stp|la|pnac|vlan<vlan-id(1-4094)>|
   interface
     {
      port-channel<port-channel-id(1-8)>|
      <interface-type><interface-id>|
      vlan<vlan-id(1-4094)>
     }|
   ssh|ssl|acl|ip|snmp|radius|rmon|igmp|sntp|http|
   broadcast-blocking|multicast-blocking|locked-port|auto-logout|
time|
   ntp|auto-save|panel-button|cos-map|dscp-map|output-rate-limit|
   unicast-blocking|ospf| vrrp
}]
[all]
```

The parameters have the following meaning:

Parameter	Description	Range of values
`syslog`	Shows the configuration settings of the Syslog function	-
`dhcp`	shows the configuration settings of the Dynamic Host Configuration Protocol	-
`stp`	Shows the configuration settings of the Spanning Tree protocol	-

Parameter	Description	Range of values
`la`	Shows the configuration settings of the Link Aggregation function	-
`pnac`	shows the configuration settings of the port-based network access control	-
`vlan`	Keyword for a VLAN connection	-
`vlan-id`	Number of the addressed VLAN	1 ... 4094
`interface`	Shows that an interface description follows	-
`port-channel`	Keyword for a port channel connection	-
`port-channel-id`	Number of the addressed port channel	1 ... 8
`interface-type`	Type of interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name
`ssh`	Shows the configuration settings of the Secure Shell protocol	-
`ssl`	Shows the configuration settings of the Secure Sockets Layer protocol	-
`acl`	Shows the configuration settings of the access control lists	-
`ip`	Shows the configuration settings of the Internet Protocol	-
`snmp`	Shows the configuration settings of the Simple Network Management Protocol	-
`radius`	shows the configuration settings of the Remote Authentication Dial-In User service	-
`rmon`	Shows the configuration settings of the Remote Monitoring function	-
`igmp`	Shows the configuration settings of the Internet Group Management Protocol	-
`sntp`	Shows the configuration settings of the Simple Network Time Protocol	-
`http`	Shows the configuration settings of the Hypertext Transfer Protocol	-
`broadcast-blocking`	Shows the configuration settings of the broadcast blocking	-
`multicast-blocking`	Shows the configuration settings of the multicast blocking	-
`locked-port`	Shows the configuration settings of the locked port function	-
`auto-logout`	Shows the configuration settings of the auto logout function	-
`time`	Shows the configuration settings of the system time	-
`ntp`	Shows the configuration settings of the Network Time Protocol	-
`auto-save`	Shows the configuration settings of the auto save function	-

Parameter	Description	Range of values
panel-button	Shows the configuration settings of the Panel Button function	-
cos-map	Shows the configuration settings of the COS function	-
dscp-map	Shows the configuration settings of the DSCP map function	-
output-rate-limit	Shows the configuration settings of the output rate limit function	-
unicast-blocking	Shows the configuration settings of the unicast blocking	-
ospf	Shows the configuration settings of OSPF	-
vrrp	Shows the configuration settings of OSPF	-
all	shows all configuration settings and all default parameters. Some parameters cannot be changed.	-

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The selected configuration settings of the device are displayed.

3.4.2 write startup-config

Description

With this command, you save the changes to the configuration in the configuration file.

The use of this command is required in the Trial mode. It can also be used in "auto save" mode.

Requirement

- The Trial mode is activated.

You are in the Privileged EXEC mode.

The command prompt is as follows:

```
*cli(...)#
```

Syntax

Call the command without parameter assignment:

```
write startup-config
```

Result

The changes are saved in the configuration file.

Use the `restart` command without parameters to restart the system with this configuration.

Further notes

You enable / disable the auto save function or the Trial mode with the `auto-save` command.

3.4.3 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

3.4.3.1 auto-save

Description

The CLI can save changes to the configuration automatically.

If you first want to test changes made to the configuration so that you can discard them afterwards if necessary, you can disable the auto save function.

You are then in the Trial mode.

Changes to the configuration that you have not saved, are indicated by an asterisk in front of the command prompt: `*cli(...)#`.

You save the changes to the configuration with the `write startup-config` command.

With the `auto-save` command, you enable the auto save function.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
auto-save
```

As default the function is "enabled".

Result

The auto save function is enabled.

Further notes

You save changes to the configuration in the Trial mode with the `write startup-config` command.

You disable the function with the `no auto-save` command.

You can display the status of this function and other information with the `show device information`command.

3.4.3.2 no auto-save

Description

With this command, you disable the auto save function.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no auto-save
```

Result

The auto save function is disabled. The Trial mode is disabled.

Further notes

You enable the function with the `auto-save` command.

You can display the status of this function and other information with the `show device information`command.

3.5 PoE

3.5.1 show poe status

Description

This command shows specific information for all or for a selected PoE interface (PoE: Power over Ethernet).

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show poe status [interface <iftype> <ifnum>]
```

The parameters have the following meaning:

Parameter	Description	Values
`iftype`	Type of interface	gigabitethernet
`ifnum`	Slot no. and port no. of an interface separated by a slash	E.g. 1/2 for slot 1, port 2

Note

Calling commands without parameters

If you use the command without setting parameters, information about all PoE interfaces is displayed.

Result

The information is displayed.

3.5.2 show pse status

Description

This command shows the current settings of the PoE power supply of the device.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameter assignment:

```
show pse status
```

Result

The information is displayed.

3.5.3 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

3.5.3.1 poe pse usage

Description

With this command, you set a value (as a percentage) for the Usage Threshold parameter. This specifies how many percent of the maximum power the connected devices will use. As soon as the power being used by the end devices exceeds this percentage, an event is triggered. An event is also entered in the logbook.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

`cli(config)#`

Syntax

Call up the command with the following parameters:

```
poe pse usage <percent>
```

The parameters have the following meaning:

Parameter	Description
`percent`	Value for Usage Threshold as a percentage.

Result

The value for Usage Threshold is configured.

3.5.3.2 no poe pse usage

Description

With this command, you set the Usage Threshold parameter to the default value of 80%.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameter assignment:

```
poe pse usage
```

Result

Usage Threshold is set to 80%.

3.5.4 Commands in the Interface Configuration mode

This section describes commands that you can call up in the Interface Configuration modePoE. Depending on the Interface selected, various command sets are available.

In the Interface Configuration mode, enter the `interface gigabitethernet <ifnum>` command to change to this mode.

The parameters have the following meaning:

Parameters	Description	Values
ifnum	Specify the interface.	Slot no. and port no. of an interface separated by a slash e.g. 1/2 for slot 1, port 2

If you exit the Interface configuration mode PoE with the `exit` command, you return to the Global Configuration mode.

If you exit the WLAN Interface Configuration mode PoE with the `end` command, you return to the Privileged EXEC mode.

3.5.4.1 poe active

Description

With this command, you activate PoE for the interface in whose interface configuration mode you are currently working.

Requirement

You are in the Interface Configuration mode of a PoE interface.

The command prompt is as follows:

```
cli(config-if-Gi$-$)#
```

The placeholders $-$ stand for the numbering of the interface.

Syntax

Call the command without parameters:

```
poe active
```

Result

PoE is activated for the corresponding interface.

3.5.4.2 no poe active

Description

With this command, you deactivate PoE for the interface in whose interface configuration mode you are currently working.

Requirement

You are in the Interface Configuration mode of a PoE interface.

The command prompt is as follows:

```
cli(config-if-Gi$-$)#
```

The placeholders $-$ stand for the numbering of the interface.

Syntax

Call the command without parameters:

```
no poe active
```

Result

PoE is deactivated for the corresponding interface.

3.5.4.3 poe type

Description

This command specifies a character string that describes a connected device in greater detail.

Requirement

You are in the Interface Configuration mode of a PoE interface.

The command prompt is as follows:

```
cli(config-if-Gi$-$)#
```

The placeholders $-$ stand for the numbering of the interface.

Syntax

Call up the command with the following parameters:

```
poe type <string>
```

The parameters have the following meaning:

Parameters	Description	Range of values
`string`	Description of a connected device	max. 255 characters

Result

The description of the connected device has been specified.

3.5.4.4 no poe type

Description

With this command, you delete the description for a connected device.

Requirement

You are in the Interface Configuration mode of a PoE interface.

The command prompt is as follows:

```
cli(config-if-Gi$-$)#
```

The placeholders $-$ stand for the numbering of the interface.

Syntax

Call the command without parameters:

```
no poe type
```

Result

The description of the corresponding device is deleted.

3.5.4.5 poe prio

Description

With this command, you specify the priority of the power supply for an interface.

Requirement

You are in the Interface Configuration mode of a PoE interface.

The command prompt is as follows:

```
cli(config-if-Gi$-$)#
```

The placeholders $-$ stand for the numbering of the interface.

Syntax

Call up the command with the following parameters:

```
poe prio {low|high|critical}
```

The parameters have the following meaning:

Parameters	Description
`low`	low priority
`high`	medium priority
`critical`	high priority

Result

The priority of the corresponding interface has been specified.

3.5.4.6 no poe prio

Description

With this command, you set the priority of an interface to the default value "low".

Requirement

You are in the Interface Configuration mode of a PoE interface.

The command prompt is as follows:

```
cli(config-if-Gi$-$)#
```

The placeholders $-$ stand for the numbering of the interface.

Syntax

Call the command without parameters:

```
no poe prio
```

Result

The priority of the corresponding interface has been set to "low".

3.6 NFC (SCALANCE XM400 only)

3.6.1 show nfc active status

Description

This command shows whether or not the NFC function (Near Field Communication) is activated or deactivated.

Note

You will find further information on NFC in the operating instructions "SCALANCE XM400".

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show nfc active status
```

Result

The status of the NFC function is displayed.

3.6.2 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

3.6.2.1 nfc active

Description

With this command, you activate NFC.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameter assignment:

```
nfc active
```

Result

NFC is activated.

Further notes

You deactivate NFC with the `no nfc active` command.

You display the status, i.e. whether the NFC function is activated or deactivated with the command `show nfc active status`.

3.6.2.2 no nfc active

Description

With this command, you deactivate NFC.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no nfc active
```

Result

NFC is deactivated.

Further notes

You activate NFC with the `nfc active` command.

You display the status, i.e. whether the NFC function is activated or deactivated with the command `show nfc active status`.

Functions specific to SCALANCE

4

This part contains the sections that describe functions specific to SCALANCE.

4.1 C-PLUG

The C-PLUG or KEY-PLUG stores the configuration of a device and can therefore transfer the configuration of the old device to the new device when a device is replaced.

In addition to the configuration, the KEY-PLUG also contains a license that enables the use of certain functions.
This section describes commands relevant for working with the C-PLUG or KEY-PLUG.

4.1.1 show plug

Description

This command shows the current C-PLUG or KEY-PLUG information.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show plug
```

Result

The current information of the C-PLUG or KEY-PLUG is displayed.

4.1.2 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

4.1.2.1 plug

Description

With this command, you change to the Plug Configuration mode.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
plug
```

Result

You are now in the Plug Configuration mode.

The command prompt is as follows:

```
cli(config-plug)#
```

Further notes

You exit the Plug Configuration mode with the `end` or `exit` command.

4.1.3 Commands in the C-PLUG configuration mode

This section describes commands that you can call up in the Plug Configuration mode.

In the Global Configuration mode, enter the `plug` command to change to this mode.

- If you exit the Plug Configuration mode with the `exit` command, you return to the Global Configuration mode.
- If you exit the Plug Configuration mode with the `end` command, you return to the Privileged EXEC mode.

4.1.3.1 factoryclean

Description

With this command, you delete the device configuration stored on the C-PLUG or KEY-PLUG.

Requirement

- There is a device configuration on the C-PLUG or KEY-PLUG.

You are in the Plug Configuration mode.

The command prompt is as follows:

```
cli(config-plug)#
```

Syntax

Call the command without parameters:

```
factoryclean
```

Result

The device configuration on the C-PLUG or KEY-PLUG is deleted.

4.1.3.2 write

Description

With this command, you format the C-PLUG or KEY-PLUG and copy the current device configuration to it.

Requirement

- The C-PLUG or KEY-PLUG is formatted.

You are in the Plug Configuration mode.

The command prompt is as follows:

```
cli(config-plug)#
```

Syntax

Call the command without parameter assignment:

```
write
```

Result

The current device configuration has been copied to the formatted C-PLUG or KEY-PLUG.

4.2 WBM

On the device, you can limit the time available for access with Web Based Management. If no entry is made for a specific time, the WBM session is closed.

This section describes commands relevant for the configuration of this feature.

4.2.1 show web-session-timeout

Description

This command shows the timeout setting for the WBM.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show web-session-timeout
```

Result

The timeout setting for the WBM is displayed.

4.2.2 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

4.2.2.1 web-session-timeout

Description

With this command, you enable the automatic logoff and you configure the timeout setting for the WBM.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
web-session-timeout[seconds(60-3600)]
```

The parameter has the following meaning:

Parameter	Description	Range of values
`seconds`	Time in seconds until automatic logoff after the last entry	60 … 3600 Default: 900

Result

The time is configured and automatic logout is enabled.

Further notes

You disable automatic logoff with the `no web-session-timeout` command.

You display the current timeout setting with the `show web-session-timeout` command.

4.2.2.2 no web-session-timeout

Description

With this command, you disable the automatic logoff.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no web-session-timeout
```

Result

Automatic logoff is disabled.

Additional notes

You enable automatic logoff with the `web-session-timeout` command.

4.3 Panel button

This section describes the commands relevant for working with the Panel Button function.

4.3.1 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

4.3.1.1 set panel-button control-factory-defaults

Description

With this command, you enable or disable the following function of the "SELECT/SET" button:

- When display mode "1" "port status" is displayed, and the button is pressed for more than 12 seconds, there is a restart with the factory settings.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
set panel-button control-factory-defaults{enable|disable}
```

The parameters have the following meaning:

Parameter	Description
`enable`	Enables the function for restarting with factory settings Default: enabled
`disable`	Disables the function for restarting with factory settings

Result

The function of the "SELECT/SET" button for restarting with factory settings is enabled / disabled.

4.3.1.2 set panel-button control-faultmask

Description

With this command, you enable or disable the following function of the "SELECT/SET" button:

- If display mode "4" "fault mask" is displayed and the button is pressed for 5 - 12 seconds, the fault mask is set.

This function corresponds to calling the `power` and `link down` commands.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
set panel-button control-faultmask{enable|disable}
```

The parameters have the following meaning:

Parameter	Description
`enable`	enables the function for setting the fault mask Default: enabled
`disable`	disables the function for setting the fault mask

Result

The function of the "SELECT/SET" button for setting the fault mask is enabled / disabled.

4.4 Signaling contact

This section describes the commands relevant for working with the signaling contact.

4.4.1 show signaling contact

Description

This command shows the current configuration of the signaling contact.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show signaling-contact
```

Result

The current configuration of the signaling contact is displayed.

4.4.2 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

4.4.2.1 set signaling contact mode

Description

With this command, you specify the reaction of the signaling contact.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
set signaling contact mode {conventional | aligned}
```

The parameters have the following meaning:

Parameters	Description
`conventional`	An error/fault is displayed by the fault LED and the signaling contact is opened. When the error/fault state no longer exists, the fault LED goes off and the signaling contact is closed.
`aligned`	The way the signaling contact works does not depend on the error/fault that has occurred. The signaling contact can be opened or closed as required by user actions.

Result

The reaction of the signaling contact is specified.

Further notes

You display the setting with the `show signaling contact` command.

4.4.2.2 set signaling contact status

Description

With this command, you close or open the signaling contact.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
set signaling contact status {open|close}
```

The parameters have the following meaning:

Parameters	Description
`open`	Signaling contact is opened.
`close`	Signaling contact is closed.

Result

The signaling contact is opened or closed.

Further notes

You display the setting with the `show signaling contact` command.

System time

5

5.1 System time setting

This section describes commands relevant for the configuration of the system time.

5.1.1 show time

Description

This command shows the settings of the system clock.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show time
```

Result

The settings for the system clock are displayed.

5.1.2 show dst info

Description

This command shows all the entries for daylight saving time stored on the device.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show dst info
```

Result

The entries for daylight saving time are displayed.

5.1.3 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

5.1.3.1 time

Description

With this command, you configure the way in which the system time is obtained.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
time{manual | ntp | sntp | SINEC | ptp_tc_client}
```

The parameters have the following meaning:

Parameter	Description
manual	The system time is entered by the user.
ntp	The system time is obtained from an NTP server.
sntp	The system time is obtained from an SNTP server.
SINEC	The system time is obtained using the SIMATIC time protocol .
ptp_tc_client	The system time is obtained with the Precision Time Protocol (PTP) from a grandmaster clock.

Result

The method of obtaining the system time is configured.

Further notes

You display the settings for the system clock with the `show time` command.

5.1.3.2 time set

Description

With this command, you set the system clock.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
time set hh:mm:ss <day (1-31)> {january|february|march|april|may|
june|july|august|september|october|november|december}
<year (2000 - 2035)>
```

The parameters have the following meaning:

Parameter	Description	Range of values
hh:mm:ss	Time of day	Hour, minute, second each separated by ":" no link
day	Day of the month	1 ... 31
-	Month	january, february, march, april, may, june, july, august, september, october, november, december
year	Year	2000 ... 2035

Result

The system time is set.

Further notes

You display the settings for the system clock with the `show time` command.

5.1.3.3 time dst date

Description

With this command, you configure the start and end of daylight saving time.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
time dst date <name(16> <year (1900-2099)> begin <MMDDhh> end
<MMDDhh>
```

The parameters have the following meaning:

Parameter	Description	Range of values
`name`	Name of the entry	maximum 16 characters
`year`	Year	1900 ... 2099
`begin`	Keyword for the start of daylight saving time.	-
`MMDDhh`	Time for the start of daylight saving time.	Time in the format `MM` Month `DD` Day `hh` Hour
`end`	Keyword for the end of daylight saving time.	-
`MMDDhh`	Time for the end of daylight saving time.	Time in the format `MM` Month `DD` Day `hh` Hour

Result

The entry for the start and end of daylight saving time was created.

5.1.3.4 time dst recurring

Description

With this command, you configure the start and end of daylight saving time with a generic description.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
time dst recurring <name(16)> begin {<week(1-5)> | last} <weekday>
<month> <hour> end {<week(1-5)> | last} <weekday> <month> <hour>
```

The parameters have the following meaning:

Parameter	Description	Range of values
`name`	Name of the entry	maximum 16 characters
`begin`	Keyword for the start of daylight saving time.	-
`week`	Calendar week in a month	1 ... 5
`last`	Keyword for the last calendar week in a month	-
`weekday`	Weekday	monday, tuesday, wednesday, thursday, friday, saturday, sunday
`month`	Month	january, february, march, april, may, june, july, august, september, october, november, december
`hour`	Hour	0 ... 23
`end`	Keyword for the end of daylight saving time.	-

Result

The entry for the start and end of daylight saving time was created.

5.1.3.5 no time dst

Description

With this command you delete the entry for the start and end of daylight saving time with the specified name. If you do not specify a name as the parameter, all entries are deleted.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no time dst [<name(16>]
```

The parameter has the following meaning:

Parameter	Description	Range of values
`name`	Name of the entry	maximum 16 characters

Result

An entry or the entries for the start and end of daylight saving time was/were deleted.

5.2 NTP client

This section describes commands relevant for configuration of the NTP client.

5.2.1 show ntp info

Description

This command shows the current settings for the Network Time Protocol (NTP).

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show ntp info
```

Result

The current NTP settings are displayed.

5.2.2 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

5.2.2.1 ntp

Description

With this command, you change to the Network Time Protocol (NTP).

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
ntp
```

Result

You are now in the NTP configuration mode.

The command prompt is as follows:

```
cli(config-ntp)#
```

Further notes

You exit the NTP configuration mode with the `end` or `exit` command.

5.2.3 Commands in the NTP configuration mode

This section describes commands that you can call up in the NTP configuration mode.

In the Global configuration mode, enter the `ntp` command to change to this mode.

- If you exit the NTP configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the NTP configuration mode with the `end` command, you return to the Privileged EXEC mode.

5.2.3.1 ntp server

Description

With this command, you configure the connection to a server on the NTP client.

Requirement

You are in the NTP configuration mode.

The command prompt is as follows:

```
cli(config-ntp)#
```

Syntax

Call up the command with the following parameters:

```
ntp server{ipv4 <ip_addr> | fqdn-name <FQDN(100)>}
[port<123,1025-36564>][poll<seconds(64-1024)>]
```

The parameter has the following meaning:

Parameter	Description	Range of values / note
`ipv4`	Keyword for an IPv4 address	-
`ip_addr`	Value for the IPv4 address of the time server	Enter a valid IPv4 address
`fqdn-name`	Keyword for a domain name	-
`FQDN(100)`	Domain name (Fully Qualified Domain Name)	Maximum of 100 characters
`port`	UDP port of the time server	• 123 • 1025 … 36564 Default: 123
`poll`	Keyword for the time after which the time of day is requested again	-
`seconds`	Value for the time in seconds	64 … 1024

For information on addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The connection to a server is configured on the NTP client.

Further notes

You delete the connection to a server with the `no ntp server` command.

5.2.3.2 no ntp server

Description

With this command, you delete the connection to a server on the NTP client.

Requirement

You are in the NTP configuration mode.

The command prompt is as follows:

```
cli(config-ntp)#
```

Syntax

Call up the command with the following parameters:

```
no ntp server {ipv4 <ip_addr> | fqdn-name <FQDN(100)>}
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`ipv4`	Keyword for an IPv4 address	-
`ip_addr`	Value for the IPv4 address of the time server	Enter a valid IPv4 address
`fqdn-name`	Keyword for a domain name	-
`FQDN(100)`	Domain name (Fully Qualified Domain Name)	Maximum of 100 characters

Result

The connection to a server is deleted on the NTP client.

Further notes

You configure the connection to a server with the `ntp server` command.

5.2.3.3 ntp time diff

Description

With this command, you configure the time difference between the device and the NTP server.

Requirement

You are in the NTP configuration mode.

The command prompt is as follows:

```
cli(config-ntp)#
```

Syntax

Call up the command with the following parameters:

```
ntp time diff <(+/-hh:mm)>
```

The parameter has the following meaning:

Parameter	Description
`+`	Time zones to the west of the NTP server time zone
`-`	Time zones to the east of the NTP server time zone
`hh`	Number of hours difference
`mm`	Number of minutes difference

Enter the number of hours and number of minutes with two digits each.

Default: No time difference.

Result

The time difference between the device and the NTP server is configured.

5.3 SNTP client

This section describes commands relevant for configuration of the Simple Network Time Protocol (SNTP) client.

5.3.1 show sntp broadcast-mode status

Description

This command shows the current configuration of the brodcast mode of SNTP.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show sntp broadcast-mode status
```

Result

The current SNTP broadcast configuration is displayed.

5.3.2 show sntp unicast-mode status

Description

This command shows the current configuration of the unicast mode of SNTP.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show sntp unicast-mode status
```

Result

The current SNTP unicast configuration is displayed.

5.3.3 show sntp status

Description

This command shows the settings of SNTP.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show sntp status
```

Result

The settings are displayed.

5.3.4 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

5.3.4.1 sntp

Description

With this command, you change to the SNTP configuration mode.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
sntp
```

Result

You are now in the SNTP configuration mode.

The command prompt is as follows:

```
cli(config-sntp)#
```

Further notes

You exit the SNTP configuration modewith the `end` or `exit` command.

5.3.5 Commands in the SNTP configuration mode

This section describes commands that you can call up in the SNTP configuration mode.

In the Global configuration mode, enter the `sntp` command to change to this mode.

- If you exit the SNTP configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the SNTP configuration mode with the `end` command, you return to the Privileged EXEC mode.

5.3.5.1 sntp client addressing-mode

Description

With this command, you configure the addressing mode of the SNTP client as unicast, multicast, broadcast or anycast.

Requirement

- The SNTP client is activated.

You are in the SNTP Configuration mode.

The command prompt is as follows:

```
cli(config-sntp)#
```

Syntax

Call up the command with the following parameters:

```
sntp client addressing-mode{unicast|broadcast}
```

The parameters have the following meaning:

Parameter	Description
`unicast`	configures the SNTP client in unicast mode Default: unicast enabled
`broadcast`	configures the SNTP client in brodcast mode

Result

The addressing mode of the SNTP client is configured.

Further notes

You display this setting and other information with the `show sntp status` command.

You display the settings for the unicast mode with the `show sntp unicast-mode status` command.

You display the settings for the broadcast mode with the `show sntp broadcast-mode status` command.

5.3.5.2 sntp time diff

Description

With this command, you configure the time difference of the system time relative to the UTC time.

Requirement

- The SNTP server must have started up.

You are in the SNTP configuration mode.

The command prompt is as follows:

```
cli(config-sntp)#
```

Syntax

Call up the command with the following parameters:

```
sntp time diff <(+/-hh:mm)>
```

The parameter has the following meaning:

Parameter	Description
+	Time zones to the west of the SNTP server time zone
-	Time zones to the east of the SNTP server time zone
hh	Number of hours difference
mm	Number of minutes difference

Enter the time difference as follows:

- with sign
- without spaces
- Hours and minutes both two digits (with leading zero)

Default: no time difference

Result

The time zone of the system time of day is configured.

Further notes

You can display the settings of this function and other information with the `show sntp status`command.

5.3.5.3 set sntp unicast-poll-interval

Description

With this command, you configure the polling interval of the SNTP client in the unicast mode.

Requirement

- The addressing mode of the SNTP client is configured as "unicast".

You are in the SNTP Configuration mode.

The command prompt is as follows:

```
cli(config-sntp)#
```

Syntax

Call up the command with the following parameters:

```
set sntp unicast-poll-interval<value(16-16284)seconds>
```

The parameter has the following meaning:

Parameter	Description	Range of values
`value`	Specifies the length of the polling interval in seconds	16 ... 16284 Default: 64

Result

The polling interval of the SNTP client in unicast mode is configured.

Further notes

You display this setting and other information with the `show sntp unicast-mode status` command.

5.3.5.4 sntp unicast-server

Description

With this command, you configure an SNTP unicast server.

Requirement

- The addressing mode of the SNTP client is configured as "unicast".

You are in the SNTP configuration mode.

The command prompt is as follows:

```
cli(config-sntp)#
```

Syntax

Call up the command with the following parameters:

```
sntp unicast-server {ipv4 <ucast_addr> | fqdn-name <FQDN(100)>}
[port<1025-36564>][poll<seconds(16-16284)>]
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`ipv4`	Keyword for an IP address	-
`ucast_addr`	Value for an IPv4 unicast address	Enter a valid IPv4 unicast address.
`fqdn-name`	Keyword for a domain name	-
`FQDN(100)`	Domain name (Fully Qualified Domain Name)	Maximum of 100 characters
`port`	UDP port of the time server	1025 … 36564 Default: 123
`poll`	Keyword for the time after which the time of day is requested again	-
`seconds`	Value for the time in seconds	16 ... 16284

Result

The SNTP unicast server is configured.

Further notes

You can reset the setting to the default with the `no sntp unicast-server` command.

You display this setting and other information with the `show sntp unicast-mode status` command.

5.3.5.5 no sntp unicast-server

Description

With this command, you delete the attributes for an SNTP unicast server and reset the address.

Requirement

You are in the SNTP configuration mode.

The command prompt is as follows:

```
cli(config-sntp)#
```

Syntax

Call up the command with the following parameters:

```
no sntp unicast-server {ipv4 <ucast_addr> | fqdn-name <FQDN(100)>}
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`ipv4`	Keyword for an IP address	-
`ucast_addr`	Value for an IPv4 unicast address	Enter a valid IPv4 unicast address
`fqdn-name`	Keyword for a domain name	-
`FQDN(100)`	Domain name (Fully Qualified Domain Name)	Maximum of 100 characters

Result

The SNTP unicast server is reset to the default value.

Further notes

You configure the setting with the `sntp unicast-server ipv4` command.

You display this setting and other information with the `show sntp unicast-mode status` command.

5.4 PTP

This section describes commands relevant for configuration of the Precision Time Protocol according to IEEE 1588.

5.4.1 show ptp info

Description

This command shows the current settings for the Precision Time Protocol (PTP).

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show ptp info [ interfaces <interface-type> <ifnum> ]
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`interfaces`	Keyword for a an interface name.	-
`interface-type`	Type or speed of the interface.	`gigabitethernet` `extreme-ethernet`
`ifnum`	Slot no. and port no. of the interface.	Enter a valid interface name.

Result

The current settings for the Precision Time Protocol (PTP) are displayed.

5.4.2 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

5.4.2.1 ptp

Description

With this command, you enable the Precision Time Protocol for the device.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
ptp
```

Result

The Precision Time Protocol is enabled.

5.4.2.2 no ptp

Description

With this command, you disable the Precision Time Protocol for the device.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no ptp
```

Result

The Precision Time Protocol is disabled.

5.4.2.3 ptp time diff

Description

With this command, you set the time zone for the Precision Time Protocol.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
ptp time diff <duration>
```

The parameter has the following meaning:

Parameter	Description	Range of values / note
`duration`	The value for the time difference.	Hours and minutes specified in the format `+/-HH:MM`

Result

The time zone for the Precision Time Protocol is specified.

5.4.3 Commands in the PTP Transparent Clock configuration mode

This section describes commands that you can call up in the PTP Transparent Clock configuration mode.

In the Global configuration mode, enter the `ptp transparent-clock configuration` command to change to this mode.

- If you exit the PTP Transparent Clock configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the PTP Transparent Clock configuration mode with the `end` command, you return to the Privileged EXEC mode.

5.4.3.1 delay-mechanism

Description

With this command, you specify which correction mechanism the Precision Time Protocol uses.

Requirement

You are in the PTP Transparent Clock configuration mode.

The command prompt is as follows:

```
cli(config-ptp-tc)#
```

Syntax

Call up the command with the following parameters:

```
delay-mechanism { end-to-end | peer-to-peer }
```

The parameter has the following meaning:

Parameter	Description	Range of values / note
`end-to-end`	The device operates as an end-to-end transparent clock.	-
`peer-to-peer`	The device operates as a peer-to-peer transparent clock.	-

Result

The correction mechanism for the Precision Time Protocol is specified.

5.4.3.2 primary-domain

Description

With this command, you specify the primary domain.

Requirement

You are in the PTP Transparent Clock configuration mode.

The command prompt is as follows:

```
cli(config-ptp-tc)#
```

Syntax

Call up the command with the following parameters:

```
primary-domain <domain-id(0-255)>}
```

The parameter has the following meaning:

Parameter	Description	Range of values / note
domain-id	The identifier of the primary domain.	0 ... 255

Result

The primary domain is specified.

Network structures

6

This part contains the sections that describe the commands for configuring and managing various network structures.

The following technologies are available:

- The establishment of independent structures even across the boundaries of subnets using virtual networks (VLANs)
  This can result in the following advantages:
  - Administration:
    Devices can be grouped together to form a logical units regardless of their physical location
  - Performance:
    By prioritizing, time-critical data (process data, streams) can be given priority for transfer
  - Security:
    The transition between VLANs can only be controlled by an administrator
- Aggregation of interfaces or connections between devices to increase the data transmission rate and reliability (link aggregation, port aggregation)
- Detection and monitoring of parallel connections or loops in an Ethernet network by setting up a tree structure (loop detection)
- Improved reliability by adapting the tree structure if transmission is disrupted (Spanning Tree)
- Splitting up of the network into smaller units that are connected together via managed connection pairs (standby connection)

6.1 VLAN

This section describes commands for configuring and managing virtual networks (VLANs).

6.1.1 The "show" commands

This section describes commands with which you display various settings.

6.1.1.1 show mac-address-table

Description

This command shows the table with the static and dynamic unicast MAC addresses and multicast MAC addresses.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show mac-address-table [vlan<vlan-range>]
[address<aa:aa:aa:aa:aa:aa>]
     [interface <interface-type><interface-id>]
```

The parameters have the following meaning:

Parameters	Description	Values
`vlan`	Keyword for a VLAN or VLAN range	-
`vlan-range`	Number of the addressed VLAN or VLAN range	1 ... 4094
`address`	Keyword for a MAC address	-
`aa:aa:aa:aa:aa:aa`	MAC address	-
`interface`	Keyword for a an interface description	-
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you do not select any parameter from the parameter list, the entries are displayed for all available interfaces.

Result

The entries are displayed.

6.1.1.2 show mac-address-table dynamic multicast

Description

This command shows the table with the dynamic multicast MAC addresses assigned by the device.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show mac-address-table dynamic multicast[vlan<vlan-range>]
     [address<aa:bb:cc:dd:ee:ff>]
     [{interface<interface-type><interface-id>}]
```

The parameters have the following meaning:

Parameter	Description	Values
`vlan`	Keyword for a VLAN	-
`vlan-range`	Number of the addressed VLAN	1 ... 4094
`address`	Keyword for a MAC address	-
`aa:bb:cc:dd:ee:ff`	MAC address	-
`interface`	Keyword for a an interface description	-
`interface-type`	Type of interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you do not select any parameter from the parameter list, the entries are displayed for all available interfaces.

Result

The entries are displayed.

6.1.1.3 show mac-address-table dynamic unicast

Description

This command shows the table with the dynamic unicast MAC addresses assigned by the device.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show mac-address-table dynamic unicast[vlan<vlan-range>]
     [address<aa:bb:cc:dd:ee:ff>][{interface<interface-type>
     <interface-id>}]
```

The parameters have the following meaning:

Parameter	Description	Values
`vlan`	Keyword for a VLAN	-
`vlan-range`	Number of the addressed VLAN	1 ... 4094
`address`	Keyword for a MAC address	-
`aa:bb:cc:dd:ee:ff`	MAC address	-
`interface`	Keyword for a an interface description	-
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you do not select any parameter from the parameter list, the entries are displayed for all available interfaces.

Result

The entries are displayed.

6.1.1.4 show mac-address-table static multicast

Description

This command shows the table with the static multicast MAC addresses.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show mac-address-table static multicast[vlan<vlan-range>]
  [address<aa:bb:cc:dd:ee:ff>][{interface<interface-type><interface-
id>}]
```

The parameters have the following meaning:

Parameter	Description	Values
`vlan`	Keyword for a VLAN	-
`vlan-range`	Number of the addressed VLAN	1 ... 4094
`address`	Keyword for a MAC address	-
`aa:bb:cc:dd:ee:ff`	MAC address	-
`interface`	Keyword for a an interface description	-
`interface-type`	Type or speed of the interface	• gigabitethernet • extreme-ethernet
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you do not select any parameter from the parameter list, the entries are displayed for all available interfaces.

Result

The entries are displayed.

6.1.1.5 show mac-address-table static unicast

Description

This command shows the table with the static unicast MAC addresses.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show mac-address-table static unicast[vlan<vlan-range>]
  [address<aa:bb:cc:dd:ee:ff>][{interface<interface-type><interface-
id>}]
```

The parameters have the following meaning:

Parameter	Description	Values
`vlan`	Keyword for a VLAN	-
`vlan-range`	Number of the addressed VLAN	1 ... 4094
`address`	Keyword for a MAC address	-
`aa:bb:cc:dd:ee:ff`	MAC address	-
`interface`	Keyword for a an interface description	-
`interface-type`	Type or speed of the interface	• gigabitethernet • extreme-ethernet
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you do not select any parameter from the parameter list, the entries are displayed for all available interfaces.

Result

The entries are displayed.

6.1.1.6 show mac-address-table count

Description

With this command, you show the number of MAC addresses for all or a selected VLAN.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show mac-address-table count[vlan<vlan-id(1-4094)>]
```

The parameters have the following meaning:

Parameters	Description	Values
`vlan`	Keyword for a VLAN	-
`vlan-id`	Number of the addressed VLAN	1 ... 4094

If you do not select any parameter from the parameter list, the total number of entries is displayed for all VLANs.

Result

The number is displayed.

6.1.1.7 show subnet-vlan mapping

Description

This command shows the entries of a subnet VLAN table.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show subnet-vlan mapping
     [{interface<interface-type><interface-id>|switch<string(32)>}]
```

The parameters have the following meaning:

Parameter	Description	Values
`interface`	Shows that an interface description follows	-
`interface-type`	Type or speed of the interface	• `fastethernet` • `gigabitethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

If you do not select any parameter from the parameter list, all entries are displayed.

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The entries are displayed.

6.1.1.8 show vlan

Description

This command shows the specific information for all or a selected VLAN.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

`show vlan[brief|id<vlan-range>|summary]`

The parameters have the following meaning:

Parameters	Description	Values
`brief`	Shows brief information about all VLANs	-
`id`	Keyword for a VLAN or VLAN range	-
`vlan-range`	Number of the addressed VLAN or VLAN range	1 ... 4094
`summary`	Shows a summary of the VLANs	

If you do not select any parameter from the parameter list, the entries of all available interfaces are displayed.

Result

The information is displayed.

6.1.1.9 show vlan device info

Description

This command shows all the global information that is valid for all VLANs.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show vlan device info
```

Result

The information is displayed.

6.1.1.10 show vlan learning params

Description

This command shows the parameters for the automatic learning of addresses for selected or all VLANs (active and inactive VLANs).

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show vlan learning params[vlan<vlan-range>]
```

The parameters have the following meaning:

Parameters	Description	Values
`vlan`	Keyword for a VLAN or VLAN range	-
`vlan-id`	Number of the addressed VLAN or VLAN range	1 ... 4094

If you do not select any parameter from the parameter list, the entries of all available interfaces are displayed.

Result

The settings are displayed.

6.1.1.11 show vlan port config

Description

This command shows the VLAN-specific information for ports.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

`show vlan port config[{port<interface-type><interface-id>}]`

The parameters have the following meaning:

Parameter	Description	Values
`port`	Keyword for a port	-
`interface-type`	Type of interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you do not select any parameter from the parameter list, the entries of all available interfaces are displayed.

Result

The information is displayed.

6.1.1.12 show vlan protocols-group

Description

This command displays the table with the protocol group entries.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameter assignment:

```
show vlan protocols-group
```

Result

The table is displayed.

6.1.2 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

6.1.2.1 interface range

Description

With this command, you can put several interfaces or the interfaces of VLANs together and configure them together. The configurations are valid for all interfaces of the specified range.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
interface range
(
  {<interface-type> <0/a-b,0/c,...>}
  {vlan <vlan-id(1-4094)> - <vlan-id(2-4094)>}
)
```

The parameters have the following meaning:

Parameter	Description	Values or range of values
`interface`	Keyword for an interface	-
`0/a-b, 0/c,...`	Slot no. and port no. of the interface	Enter a valid interface name
`vlan`	Keyword for a VLAN	-
`vlan-id`	Number of the addressed VLAN	1 ... 4094
`vlan`	Keyword for a VLAN	-
`vlan-id`	Number of the addressed VLAN	2 ... 4094

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you want to address several VLANs with this command, you must insert a blank before and after the hyphen, for example `interface range vlan 5 - 10`.

Result

The interfaces or interfaces of VLANs were put together to form an interface range. The following configuration commands apply to this range.

Further notes

With the `no interface range` command, you remove VLANs from this range or break it up.

6.1.2.2 no interface range

Description

With this command, you remove the interfaces or interfaces of VLANs from the interface range or break it up if you first remove all previously added interfaces.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no interface range
(
```

```
  {vlan <vlan-id(1-4094)> - <vlan-id(2-4094)>}
)
```

The parameters have the following meaning:

Parameter	Description	Values or range of values
`interface`	Keyword for a an interface description	-
`0/a-b, 0/c,...`	Slot no. and port no. of the interface	Enter a valid interface name
`vlan`	Keyword for a VLAN connection	-
`vlan-id`	Number of the addressed VLAN	1 ... 4094
`vlan`	Keyword for a VLAN connection	-
`vlan-id`	Number of the addressed VLAN	2 ... 4094

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you address several VLANs, you must insert a blank before and after the hyphen, for example `no interface range vlan 5 - 10`.

Result

The VLANs are removed.

Further notes

With the `interface range` command, you can put several interfaces or VLANs together to be able to configure them together.

6.1.2.3 map protocol

Description

With this command, you assign a protocol to a protocol group.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
map protocol
   {ip | novell | netbios | appletalk | other <aa:aa>}
   enet-v2 protocols-group <Group id integer(1-100)>
```

The parameters have the following meaning:

Parameter	Description	Range of values
`ip`	Internet Protocol v4	`HEX 08:00`
`novell`	Novell Netware protocol	`HEX 81:38`
`netbios`	Netbios via TCP/IP	`HEX f0:f0`
`appletalk`	Appletalk	`HEX 80:9b`
`other`	Other protocol.	enter the hexadecimal protocol value. • other: `aa:aa` • IPV6: `86:DD` • LLDP: `88:CC` • PTP IEEE1588: `88:F7` • EAP (802.1X): `88:8E`
`enet-v2`	Frame structure is Ethernet II	-
`Group id integer`	Number of the group	decimal 0 ... 100

Result

The protocol group is created.

Further notes

You delete the protocol group with the `no map protocol` command.

You can display the status of this function and other information with the `show vlan protocols-group` command.

6.1.2.4 no map protocol

Description

With this command, you delete a protocol from all protocol groups.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no map protocol
   {ip | novell | netbios | appletalk | other <aa:aa>}
   enet-v2
```

The parameters have the following meaning:

Parameter	Description	Range of values
ip	Internet Protocol v4	HEX 08:00
novell	Novell Netware protocol	HEX 81:38
netbios	Netbios via TCP/IP	HEX f0:f0
appletalk	Appletalk	HEX 80:9b
other	Other protocol.	enter the hexadecimal protocol value. • other: aa:aa • IPV6: 86:DD • LLDP: 88:CC • PTP IEEE1588: 88:F7 • EAP (802.1X): 88:8E
enet-v2	Frame structure is Ethernet II	-

Result

The protocol is removed from all protocol groups.

Further notes

You create the protocol group with the `map protocol` command.

You can display the status of this function and other information with the `show vlan protocols-group` command.

6.1.2.5 protocol-vlan

Description

With this command, you enable the protocol-based classification on all interfaces.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
protocol-vlan
```

Result

The classification is enabled.

Further notes

You disable the setting with the `protocol-vlan` command.

You can display the status of this function and other information with the `show vlan device info`command.

6.1.2.6 no protocol-vlan

Description

With this command, you disable the protocol-based classification on all interfaces.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no protocol-vlan
```

Result

The classification is disabled.

Further notes

You enable the setting with the `protocol-vlan` command.

You can display the status of this function and other information with the `show vlan device info`command.

6.1.2.7 subnet-vlan

Description

With this command, you enable the subnet-based VLAN classification on all interfaces.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
subnet-vlan
```

Result

The classification is enabled.

Further notes

You disable the setting with the `no subnet-vlan` command.

You can display the status of this function and other information with the `show vlan device info` command.

6.1.2.8 no subnet-vlan

Description

With this command, you disable the subnet-based VLAN classification on all interfaces.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no subnet-vlan
```

Result

The classification is disabled.

Further notes

You enable the setting with the `subnet-vlan` command.

You can display the status of this function and other information with the `show vlan device info` command.

6.1.2.9 vlan

Description

With this command, you create a VLAN on the device and change to the VLAN configuration mode.

In the provider backbone bridge mode, this command is used to create user, service and backbone VLANs.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
vlan <vlan-id(1-4094)>
```

The parameter has the following meaning:

Parameters	Description	Range of values
`vlan-id`	Number of the addressed VLAN	1 ... 4094

Do not enter any leading zeros with the number of the VLAN.

Result

The VLAN is created.

You are now in the VLAN configuration mode.

The command prompt is as follows:

```
cli(config-vlan-$$$)#
```

Further notes

You delete the VLAN with the `no vlan` command.

You can display information about the VLAN with the `show vlan` command.

6.1.2.10 no vlan

Description

With this command, you delete a VLAN on the device.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameter:

```
no vlan <vlan-id(2-4094)>
```

Parameters	Description	Range of values
`vlan-id`	Number of the addressed VLAN	2 ... 4094

The VLAN with number 1 cannot be deleted.

Result

The VLAN is deleted

Further notes

With the `vlan` command, you create a VLAN on the device.

You can display information about the VLAN with the `show vlan` command.

6.1.3 Commands in the interface configuration mode

This section describes commands that you can call up in the interface configuration mode. Depending on the Interface selected, various command sets are available.

In the Global configuration mode, enter the `interface` command to change to this mode.

Commands relating to other topics that can be called in the interface configuration mode can be found in the relevant sections.

- If you exit the Interface configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the Interface configuration mode with the `end` command, you return to the Privileged EXEC mode.

6.1.3.1 map subnet

Description

With this command, you configure the subnet assignment to a VLAN.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
 map subnet <ip-subnet-address> vlan <vlan-id(1-4094)> <mask> [arp
{suppress | allow}]
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`ip-subnet-address`	IP subnet address	Enter a valid subnet address
`mask`	Subnet mask	aaa.bbb.ccc.ddd
`vlan`	Keyword for a VLAN	-
`vlan-id`	Number of the addressed VLAN	1 ... 4094
`arp`	Keyword ARP protocol	-
`suppress`	Suppress the ARP protocol	-
`allow`	Allow the ARP protocol	-

If you do not select any parameters from the parameter list, the default value is used.

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The subnet with subnet mask and subnet address is assigned to a VLAN.

Further notes

You cancel the setting with the `no map subnet` command.

You can display the status of this function and other information with the `show subnet-vlan mapping` command.

6.1.3.2 no map subnet

Description

With this command, you remove a subnet from a VLAN.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
no map subnet <ip-subnet-address>
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`ip-subnet-address`	IP subnet address	Enter a valid subnet address

If you do not select any parameters from the parameter list, the default value is used.

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The subnet with subnet mask and subnet address is assigned to a VLAN.

Further notes

You cancel the setting with the `no map subnet` command.

You can display the status of this function and other information with the `show subnet-vlan mapping` command.

6.1.3.3 switchport acceptable-frame-type

Description

With this command, you configure which types of frames are accepted.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
switchport acceptable-frame-type{all|tagged}
```

The parameters have the following meaning:

Parameter	Description
`all`	All frames are accepted. Default: `all`
`tagged`	Untagged frames are discarded.

Result

The setting is enabled.

Further notes

You can reset the setting to the default with the `no switchport acceptable-frame-type` command.

You can display the status of this function and other information with the `show vlan port config` command.

6.1.3.4 no switchport acceptable-frame-type

Description

With this command, you reset the setting for the types of frames accepted by the interface to the default value.

The default value is `all`.

The interface accepts tagged and untagged frames.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no switchport acceptable-frame-type
```

Result

The setting is reset to the default value.

Further notes

You configure the setting with the `switchport acceptable-frame-type` command.

You can display the status of this function and other information with the `show vlan port config`command.

6.1.3.5 switchport access vlan

Description

With this command, you assign a VLAN to the interface and configure the port VLAN identifier (PVID) for it.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
switchport access vlan <vlan-id(1-4094)>
```

The parameter has the following meaning:

Parameters	Description	Range of values
`vlan-id`	Number of the addressed VLAN	1 ... 4094

Result

The Interface is added to the VLAN as an "untagged port" and the corresponding VLAN ID is set.

Further notes

You can reset the setting to the default with the `no switchport access vlan` command.

You display the setting and other information with the `show vlan port config` command.

6.1.3.6 no switchport access vlan

Description

With this command, you reset the setting for the port VLAN identifier (PVID) for an interface to the default value.

The default value is 1.

Requirement

You are in the interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no switchport access vlan
```

Result

The setting is reset to the default value.

Further notes

You configure the setting with the `switchport access vlan` command.

You can display the status of this function and other information with the `show vlan port config`command.

6.1.3.7 switchport map protocols-group

Description

With this command, you assign the protocol group and a VLAN to an interface.

Requirement

- The protocol group is configured.

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
switchport map protocols-group
              <group id(0-2147483647)>vlan<vlan-id(1-4094)>
```

The parameters have the following meaning:

Parameter	Description	Range of values
group id	Number of the group	0 ... 2147483647
vlan	Shows that the number of a VLAN follows	-
vlan-id	Number of the addressed VLAN	1 ... 4094

Result

The group is assigned to the port and the VLAN.

Further notes

You delete the setting with the `no switchport map protocols-group` command.

You can display the status of this function and other information with the `show vlan protocols-group` command.

6.1.3.8 no switchport map protocols-group

Description

With this command, you delete the assignment of a configured protocol group to a specific VLAN.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
no switchport map protocols-group <group id(0-2147483647)>
```

The parameter has the following meaning:

Parameter	Description	Range of values
`group id`	Shows that the number of the group follows	0 ... 2147483647

Result

The assignment is deleted.

Further notes

You assign a protocol group and a VLAN to an interface with the `switchport map protocols-group` command.

You can display the status of this function and other information with the `show vlan protocols-group` command.

6.1.3.9 switchport mode

Description

With this command, you specify the operating mode for the switch port.

Requirement

- The interface is configured as a switch port.

You are in the Interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
switchport mode { trunk | hybrid }
```

The parameters have the following meaning:

Parameter	Description
`trunk`	Configures the port as a trunk port that only forwards tagged frames. The port can then only be configured as the trunk port if the port is not entered in any VLAN that exchanges untagged frames. For the trunk port to forward tagged frames, all VLAN IDs to which the trunk port forwards frames must be stored. If a new VLAN is created, the VLAN ID is automatically entered at the trunk port. With a trunk port, the VLAN assignment is dynamic. Static configurations can only be created if, in addition to the trunk port property, the port is also entered statically as a member in the VLANs involved. An example of a static configuration is the assignment of the multicast groups in certain VLANs. If you execute the "`acceptable frame-type all`" command at the trunk port, the port also receives untagged frames.
`hybrid`	Configures the port as a hybrid port that accepts tagged and untagged frames.

Result

The operating mode is configured.

Further notes

You reset the operating mode to the default with the `no switchport mode` command.

You display this setting and other information with the `show vlan port config` command.

You configure the interface as a switch port with the `switchport` command.

6.1.3.10 no switchport mode

Description

With this command, you reset the operating mode for the switch port to the default.

The default value is Hybrid.

Requirement

- The interface is configured as a switch port.

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no switchport mode
```

Result

The setting is reset to the default value.

Further notes

You configure the operating mode with the `switchport mode` command.

You display this setting and other information with the `show vlan port config` command.

You configure the interface as a switch port with the `switchport` command.

6.1.3.11 switchport priority default

Description

With this command, you configure the default priority for the interface.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
switchport priority default <0-7>
```

The parameter has the following meaning:

Parameter	Description	Range of values
-	Value for the default priority	0 ... 7 Default: 0

Result

The setting is configured.

Further notes

You reset the default priority to the default value with the `no switchport priority default` command.

You display this setting and other information with the `show vlan port config` command.

6.1.3.12 no switchport priority default

Description

With this command, you reset the default priority for the interface to the default value.

The default value is 0.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no switchport priority default
```

Result

The setting is reset to the default value.

Further notes

You configure the default priority with the `switchport priority default` command.

You display this setting and other information with the `show vlan port config` command.

6.1.3.13 switchport pvid

Description

With this command, you assign an interface to a VLAN and configure the port VLAN identifier (PVID) for it. If a received frame has no VLAN tag, it has a tag added with the VLAN-ID specified here and is sent according to the switch rules for the port.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
switchport pvid <vlan-id(1-4094)>
```

The parameter has the following meaning:

Parameters	Description	Range of values
`vlan-id`	Number of the addressed VLAN	1 ... 4094

Result

The PVID is configured

Further notes

You can reset the setting to the default with the `no switchport pvid` command.

You display the setting and other information with the `show vlan port config` command.

6.1.3.14 no switchport pvid

Description

With this command, you reset the setting for the port VLAN identifier (PVID) for an interface to the default value.

The default value is 1.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no switchport pvid
```

Result

The setting is reset to the default value.

Further notes

You configure the setting with the `switchport pvid` command.

You configure the VLAN ID with the `switchport access vlan` command.

You can display the status of this function and other information with the `show vlan port config`command.

6.1.4 Commands in the VLAN configuration mode

This section describes commands that you can call up in the VLAN configuration mode.

In the Global configuration mode, enter the `vlan $$$` command to change to this mode. When doing this, you need to replace the `$$$` placeholders with the relevant VLAN ID.

Commands relating to other topics that can be called in the VLAN configuration mode can be found in the relevant sections.

- If you exit the VLAN configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the VLAN configuration mode with the `end` command, you return to the Privileged EXEC mode.

6.1.4.1 ports

Description

With this command, you generate a list that specifies the behavior of the interfaces and replaces the existing VLAN configuration.

- Member Port (tagged port)
  The interface is added permanently to the list of incoming and outgoing connections. Tagged and untagged frames are transferred.
- Untagged Port
  The interface transfers untagged frames. If the VLAN ID (PVID) is set, incoming untagged frames are given a tag with the VLAN ID specified there. If the received frames already contain a VLAN ID, frames are only accepted if their VLAN ID matches the set PVID. With outgoing frames, the tag with the VLAN ID is removed.
- Forbidden ports
  This interface is not used for communication in a VLAN

The "tagged port" and "untagged port" you specify with this command are used for outgoing data traffic.

Requirement

You are in the VLAN configuration mode.

The command prompt is as follows:

```
cli(config-vlan-$$$)#
```

Syntax

Call up the command with the following parameters:

```
ports
   (
    [<interface-type><0/a-b,0/c,...>]
    [<interface-type><0/a-b,0/c,...>]
    [port-channel<a,b,c-d>]
   )
   [
    untagged<interface-type> <0/a-b,0/c,...>
    (
     [<interface-type><0/a-b,0/c,...>]
     [port-channel <a,b,c-d>]
     [all]
    )
   ]
   [
    forbidden<interface-type><0/a-b,0/c,...>
    [<interface-type><0/a-b,0/c,...>]
    [portchannel<a,b,c-d>]
   ]
   [name<vlan-name>]
```

The parameters have the following meaning:

Parameter	Description	Values
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`/a-b,0/c,...`	Port no. of the interface	Enter a valid interface name
`port-channel`	Keyword for a port channel	-
`/a-b,0/c,...`	Port no. of the interface	Enter a valid interface name
`untagged`	Keyword for interfaces or ports that transfer data packets without VLAN marking	-
`all`	Specifies that all interfaces or ports are set to "untagged"	-
`forbidden`	Keyword for forbidden interfaces or ports	-
`name`	Keyword for the name assignment	-
`vlan-name`	Name of the VLAN	max. 32 characters

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The existing VLAN configuration is replaced. To add individual interfaces, you need to recreate the full list.

Further notes

You display details of the function with the `show vlan` command.

You reset the settings with the `no ports` command.

6.1.4.2 no ports

Description

With this command, you remove ports from a VLAN.

Requirement

You are in the VLAN configuration mode.

The command prompt is as follows:

```
cli(config-vlan-$$$)#
```

Syntax

Call up the command with the following parameters:

```
no ports
   (
    [<interface-type><0/a-b,0/c,...>]
    [<interface-type><0/a-b,0/c,...>]
    [port-channel<a,b,c-d>]
    [all]
   )
   [
    untagged<interface-type> <0/a-b,0/c,...>
    (
     [<interface-type><0/a-b,0/c,...>]
     [port-channel <a,b,c-d>]
     [all]
    )
   ]
   [
    (
     forbidden<interface-type><0/a-b,0/c,...>
     [<interface-type><0/a-b,0/c,...>]
     [portchannel<a,b,c-d>]
     [all]
    )
   ]
   [name<vlan-name>]
```

The parameters have the following meaning:

Parameter	Description	Values
`interface-type`	Type of interface	• `gigabitethernet` • `extreme-ethernet`
`/a-b,0/c,...`	Port no. of the interface	Enter a valid interface name
`port-channel`	Keyword for a port channel	-
`/a-b,0/c,...`	Port no. of the interface	Enter a valid interface name
`untagged`	Keyword for interfaces or ports that transfer data packets without VLAN marking	-
`all`	Specifies that all interfaces or ports are set to "untagged"	-
`forbidden`	Keyword for forbidden interfaces or ports	-
`name`	Keyword for the name assignment	-
`vlan-name`	Name of the VLAN	max. 32 characters

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The ports are removed from the VLAN configuration.

Further notes

It is possible to remove individual ports from a VLAN configuration without needing to rewrite the entire configuration (in contrast to creating ports because it is not possible to add individual ports later).

You display details of the function with the `show vlan` command.

You reset the setting with the `no ports` command.

6.1.4.3 name

Description

With this command, you assign a name to the VLAN.

Requirement

You are in the VLAN Configuration mode.

The command prompt is as follows:

```
cli(config-vlan-$$$)#
```

Syntax

Call up the command with the following parameters:

```
name <vlan-name>
```

The parameter has the following meaning:

Parameters	Description	Range of values
`vlan-name`	Name that will be assigned to the VLAN	max. 32 characters

Result

The VLAN is assigned a name.

Further notes

You delete name assignment for a VLAN with the `no name` command.

6.1.4.4 no name

Description

With this command, you delete the name assignment for a VLAN.

Requirement

You are in the VLAN configuration mode.

The command prompt is as follows:

```
cli(config-vlan-$$$)#
```

Syntax

Call the command without parameters:

```
no name
```

Result

The name of the VLAN is deleted.

Further notes

You assign the VLAN a name with the command `name`.

6.1.4.5 tia interface

Description

With this command, you enable / disable the TIA interface property. The interface can only be used for PNIO.

Requirement

- The interface is activated

You are in the VLAN configuration mode of the VLAN interfaces with the ID $$$.

The command prompt is as follows:

```
cli (config-if-vlan-$$$) #
```

Syntax

Call the command without parameters:
`tia-interface`

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The TIA interface is enabled exclusively for the specified VLAN. The function was disabled on the other interfaces.

Further notes

Note that only one VLAN interface can become the TIA interface.

6.1.4.6 transparent-vlan

Description

With this command, you change a VLAN to the transparent mode.
Ports that were assigned to this VLAN as members or untagged members now become transparent ports.

This means the following:

- The port VLAN ID of the transparent ports is set to the ID of this VLAN.
- Untagged frames that are received at these ports are forwarded to all other transparent ports once again without tag as long as they are not forwarded to a standard VLAN by a protocol or subnet rule.

- Flags tagged with VLAN ID 0 and that are received at these ports are forwarded to all other transparent ports once again tagged with VLAN ID 0 as long as they are not forwarded to a standard VLAN by a protocol or subnet rule.
- Frames tagged with the VLAN ID of the transparent VLAN and that are received at these ports are forwarded to all transparent ports once again tagged with the VLAN ID of the transparent VLAN.
- Other frames are forwarded according to the normal VLAN rules and a transparent port behaves like an untagged member in this VLAN.

Requirement

You are in the VLAN configuration mode.

The command prompt is as follows:

```
cli(config-vlan-$$$)#
```

Syntax

Call the command without parameters:

```
transparent-vlan
```

Result

The VLAN is changed to transparent mode.

Further notes

- All ports that were not members or untagged members in the relevant VLAN are automatically set to the Forbidden status after the command executes.
- As long as a VLAN is configured as a transparent VLAN, the ports belonging to this VLAN cannot be modified.
- Note that only one VLAN can become a transparent VLAN.

You disable the setting with the `no transparent-vlan` command.

6.1.4.7 no transparent-vlan

Description

With this command, you return a VLAN from the transparent mode to the mode conforming with the standard.

Requirement

You are in the VLAN configuration mode.

The command prompt is as follows:

```
cli(config-vlan-$$$)#
```

Syntax

Call the command without parameters:

```
no transparent-vlan
```

Result

If the VLAN was configured as a transparent VLAN, this function is deactivated.

This means the following:

- All transparent ports become untagged members in this VLAN
- The port VLAN ID of the previous transparent ports remains set to the ID of this VLAN.
- All other ports remain marked as forbidden in this VLAN.

Further notes

You enable the setting with the `transparent-vlan` command.

6.2 Link aggregation

This section describes commands that configure or manage the bundling of interfaces or connections between devices.

6.2.1 show etherchannel

Description

This command shows the settings of the Etherchannel.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show etherchannel [[channel-group-number]
     {detail|load-balance|port|port-channel|summary|protocol}]
```

The parameters have the following meaning:

Parameter	Description
`channel-group-number`	Number of the channel-group
`detail`	Detailed display of the settings
`load-balance`	Shows which load balancing method is enabled
`port`	Information on the Etherchannel port
`port-channel`	Information on the port-channel
`summary`	Brief overview of the settings of a channel-group
`protocol`	Specification of the protocol set for a channel-group

If you do not select any parameters from the parameter list, the settings of all channels will be displayed in detail.

Result

The Etherchannel settings are displayed.

6.2.2 show interfaces etherchannel

Description

This command shows the interface-specific information for a port channel.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

`show interfaces[<interface-type><interface-id>]etherchannel`

The parameters have the following meaning:

Parameters	Description	Values
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you do not select an interface, information for all interfaces is displayed.

Result

The interface-specific information for a port channel is displayed.

6.2.3 show lacp

Description

This command shows the information about the settings and information about the ports involved in the link aggregation. The number of sent and received packets is also displayed.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

`show lacp [<port-channel(1-8)>]{counters|neighbor[detail]}`

The parameters have the following meaning:

Parameter	Description	Range of values
`port-channel`	Number of the channel-group	1 ... 8
`counters`	Shows the values of the counters	-
`neighbor`	Displays information on neighbor ports	-
`detail`	Displays detailed information on neighbor ports	-

If you do not select a port channel, information for all available interfaces is displayed.

Result

The information is displayed.

6.2.4 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

6.2.4.1 port-channel load-balance

Description

With this command, you configure the load balancing policy for the interconnected ports of the previously defined port channels.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
port-channel load-balance
  {mac-src-dst | ip-mac-src-dst}
  [<port-channel-index(1-8)>]
```

The parameters have the following meaning:

Parameter	Description	Range of values
`mac-src-dst`	Load balancing is based on the MAC addresses of the sources and destinations.	- Default: enabled
`ip-mac-src-dst`	Load balancing is based on the IP and MAC addresses of the sources and destinations.	-
`port-channel-index`	Number of the port channel	1 ... 8

If you do not enter a value for `port-channel-index`, the setting is used for all port channels.

Result

The load balancing policy is set.

Further notes

You can reset the setting for the load balancing policy to the default with the `no port-channel load-balance` command.

You can display the status of this function and other settings with the `show etherchannel` command.

6.2.4.2 no port-channel load-balance

Description

With this command, you reset the load balancing policy for the interconnected ports of the previously defined port channels to the default.

The default value is `src-dest-mac`.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
port-channel load-balance [<port-channel-index(1-8)>]
```

The parameter has the following meaning:

Parameters	Description	Range of values
`port-channel-index`	Number of the port channel	1 ... 8

If you do not enter a value for `port-channel-index`, the setting is used for all port channels.

Result

The load balancing policy is reset to the default value.

Further notes

You can change the setting for the load balancing policy with the `port-channel load-balance` command.

You can display the status of this function and other settings with the `show etherchannel` command.

6.2.5 Commands in the interface configuration mode

This section describes commands that you can call up in the interface configuration mode. Depending on the Interface selected, various command sets are available.

In the Global configuration mode, enter the `interface` command to change to this mode.

Commands relating to other topics that can be called in the interface configuration mode can be found in the relevant sections.

- If you exit the Interface configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the Interface configuration mode with the `end` command, you return to the Privileged EXEC mode.

6.2.5.1 channel-group

Description

With this command, you add an interface to an Etherchannel.

Requirement

With the `interface po <channel-group-id(1-8)>` command, you have already generated a logical interface for an Etherchannel.

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
channel-group <channel-group-number(1-8)>mode{on|active|passive}
```

The parameters have the following meaning:

Parameter	Description	Range of values
`channel-group-number`	Number of the channel-group	1 ... 8
`on`	Adds the interface without LACP to a channel group. This corresponds to manual bundling.	-
`active`	The negotiation of a connection via LACP is started unconditionally	-
`passive`	The negotiation of a connection via LACP is started when an LACP packet arrives from the connection partner	-

Result

The Etherchannel is configured.

6.2.5.2 no channel-group

Description

With this command, you remove the interface from an Etherchannel.

Requirement

You are in the interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no channel-group
```

Result

The interface is deleted from the Etherchannel.

6.3 Spanning Tree

The Spanning Tree Protocol is used to monitor a LAN for redundant connections. These are blocked and reactivated when necessary if there are changes to the network topology.

This section describes the commands of the Spanning Tree Protocol (STP), the Rapid Spanning Tree Protocol (RSTP) and the Multiple Spanning Tree Protocol (MSTP).

Note

Avoiding bad configurations

When using the commands in this section, you should take particular care because a bad configuration of this function can have serious negative affects on the network.

6.3.1 The "show" commands

6.3.1.1 show spanning-tree

Description

This command shows the settings of the spanning tree function.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show spanning-tree [{summary|blockedports|pathcost method}]
```

The parameters have the following meaning:

Parameters	Description
`summary`	Displays a summary
`blockedports`	Shows the blocked ports
`pathcost method`	shows whether 16-bit (short) or 32 bit (long) values are used in the calculation

Result

The settings for the spanning tree function are displayed.

Further notes

You can show further settings for special aspects of the Spanning Tree Protocol with the following commands:

- `show spanning-tree active`
- `show spanning-tree bridge`
- `show spanning-tree detail`
- `show spanning-tree interface`
- `show spanning-tree root`
- `show spanning-tree mst`

6.3.1.2 show spanning-tree mst

Description

This command shows various settings of the spanning tree configuration specific to a Common Internal Spanning Tree (CIST) instance or a selected instance of the Multiple Spanning Tree Protocol.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with one of the following parameter assignments:

```
show spanning-tree mst[<instance-id(1-64)>][detail]
```

The parameters have the following meaning:

Parameters	Description	Range of values
`instance-id`	Number of the instance or range of instances whose settings are displayed	1 ... 64
`detail`	Shows detailed information about the selected interface	-

Result

The settings are displayed.

Further notes

You display the general settings for the Spanning Tree Protocol with the `show spanning-tree` command.

6.3.1.3 show spanning-tree active

Description

This command shows the settings for the active ports of the spanning tree function.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show spanning-tree active [detail]
```

The parameter has the following meaning:

Parameters	Description
`detail`	Shows settings in detail

Result

The settings for the active ports of the spanning tree function are displayed.

6.3.1.4 show spanning-tree bridge

Description

This command shows the settings of the spanning tree function of the bridge.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show spanning-tree bridge
  [{address|forward-time|hello-time|id|max-age|protocol|priority|
detail}]
```

The parameters have the following meaning:

Parameters	Description
`address`	Shows the MAC address of the bridge
`forward-time`	Shows the time that the bridge is in the listening mode when changing from the blocking mode to the learning mode
`hello-time`	Shows the time after which the bridge sends configuration BPDUs
`id`	Shows the ID of the bridge
`max-age`	Shows the maximum age of the data packet after which it is deleted
`protocol`	Shows the protocol used
`priority`	Shows the priority of the bridge
`detail`	Shows detailed information about the spanning tree settings of the interface

Result

The settings for the spanning tree function of the bridge are displayed.

6.3.1.5 show spanning-tree detail

Description

This command shows the detailed settings of the spanning tree function.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show spanning-tree detail
```

Result

The detailed settings for the spanning tree function are displayed.

6.3.1.6 show spanning-tree interface

Description

This command shows the settings of the ports for the spanning tree function.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show spanning-tree interface <interface-type><interface-id>
   [{cost|priority|portfast|rootcost|restricted-role|
     restricted-tcn|state|stats|detail}]
```

The parameters have the following meaning:

Parameter	Description	Values
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name
`cost`	Shows the port costs used to calculate the lowest-cost path.	-
`priority`	Shows the priority of the port.	-
`portfast`	Shows whether `spanning-tree portfast` is enabled.	-
`rootcost`	Shows the costs of the path to the root bridge.	-
`restricted-role`	Shows whether `spanning-tree restricted-role` is enabled.	-
`restricted-tcn`	Shows whether `spanning-tree restricted-tcn` is enabled.	-
`state`	Shows the status of the interface.	-
`stats`	Shows the counters of the various BPDU transmissions.	-
`detail`	Shows detailed information about the spanning tree settings of the interface.	-

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The settings of the ports for the spanning tree function are displayed.

6.3.1.7 show spanning-tree interface layer2-gateway-port

Description

This command shows the settings for the layer2 gateway port (L2GP). For example the pseudoroot priority, pseudo root MAC address and the status of L2GP are displayed

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show spanning-tree interface
[<interface-type><interface-id>]
layer2-gateway-port
```

The parameters have the following meaning:

Parameters	Description	Values
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet` • `port-channel`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The settings are displayed.

6.3.1.8 show spanning-tree root

Description

This command shows the settings of the root bridge for the spanning tree function.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show spanning-tree root
   [{address|cost|forward-time|id|max-age|port|priority|detail}]
```

The parameters have the following meaning:

Parameter	Description
`address`	Shows the MAC address of the root bridge
`cost`	Shows the costs of the connection to the root bridge.
`forward-time`	Shows the time that the bridge is in the listening mode when changing from the blocking mode to the learning mode
`id`	Shows the ID of the root bridge
`max-age`	Shows the maximum age of the data packet after which it is deleted
`port`	Shows the interface via which the spanning tree is set up
`priority`	Shows the priority of the bridge
`detail`	Shows detailed information about the root bridge

Result

The settings of the root bridge for the spanning tree function are displayed.

6.3.1.9 show spanning-tree mst configuration

Description

This command shows various settings for an instance of the Multiple Spanning Tree Protocol.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show spanning-tree mst configuration
```

Result

The settings are displayed.

Further notes

You display the general settings for the Spanning Tree Protocol with the `show spanning-tree` command.

6.3.1.10 show spanning-tree mst interface

Description

This command shows port-specific settings of a Multiple Spanning Tree configuration.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with one of the following parameter assignments:

```
show spanning-tree mst
   [<instance-id(1-64)>] interface<interface-type><interface-id>
   [{stats|hello-time|detail}]
```

The parameters have the following meaning:

Parameters	Description	Range of values
`instance-id`	Number of the instance or range of instances whose settings are displayed	1 ... 64
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name
`stats`	Shows the number of incoming and outgoing packets for each path of the interface	-
`hello-time`	Shows the intervals at which the root switch sends its "Hello" message to the other switches	-
`detail`	Shows detailed information about the selected interface	-

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The settings are displayed.

Further notes

You display the general settings for the Spanning Tree Protocol with the `show spanning-tree` command.

6.3.2 clear spanning-tree detected protocols

Description

With this command, you restart the protocol transmission process on a specific or on all interfaces and force renegotiation of the connection settings with the neighboring devices.

Requirement

You are in the Privileged EXEC mode.

The command prompt is as follows:

```
cli#
```

Syntax

Call up the command with the following parameters:

```
clear spanning-tree detected protocols
   [{interface<interface-type><interface-id>}]
```

The parameters have the following meaning:

Parameters	Description	Values
`interface`	Keyword for a an interface description	-
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you do not select any parameters from the parameter list, the process is restarted for all interfaces.

Result

The connection settings for spanning tree are renegotiated.

6.3.3 clear spanning-tree counters

Description

With this command, you reset all the statistical counters of the spanning tree function at the device and port level.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
clear spanning-tree counters
```

Result

The counters are reset.

6.3.4 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

6.3.4.1 spanning-tree

Description

The Spanning Tree Protocol is used to monitor a LAN for redundant connections. These are blocked and reactivated when necessary if there are changes to the network topology.

With this command, you enable the spanning tree function.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
spanning-tree
```

Result

The spanning tree function is enabled.

Further notes

As default the function is "enabled".

You disable the spanning tree function with the `no spanning tree` command.

You can display the status of this function and other information with the `show spanning tree detail`command.

You can display information about active ports with the `show spanning tree active` command.

6.3.4.2 no spanning-tree

Description

With this command, you disable the spanning tree function.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no spanning-tree
```

Result

The spanning tree function is disabled.

Further notes

You enable the spanning tree function with the `spanning tree` command.

You can display the status of this function and other information with the `show spanning tree detail`command.

You can display information about active ports with the `show spanning tree active` command.

6.3.4.3 spanning-tree compatibility

Description

With this command, you configure the compatibility version of the protocol that will be used by the spanning tree function.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
spanning-tree compatibility {stp|rst|mst}
```

The parameters have the following meaning:

Parameter	Description
`stp`	The version is compatible with the Spanning Tree protocol
`rst`	The version is compatible with the Rapic Spanning Tree protocol Default: enabled
`mst`	The version is compatible with the Multiple Spanning Tree protocol

Result

The compatibility version of the protocol is selected.

Further notes

You can reset the setting to the default `mst` with the `no spanning-tree compatibility` command.

You can display the status of this function and other information with the `show spanning tree detail` command.

You can display information about active ports with the `show spanning tree active` command.

6.3.4.4 no spanning-tree compatibility

Description

With this command, you reset the compatibility version of the protocol of the spanning tree function to the default value.

The default value is MST.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no spanning-tree compatibility
```

Result

The compatibility version is reset to the default value.

Further notes

You configure the setting with the `spanning-tree compatibility` command.

6.3.4.5 spanning-tree priority

Description

With this command, you configure the priority of the device. Which device becomes the root bridge is decided based on the priority. The bridge with the highest priority becomes the root bridge. The lower the value, the higher the priority.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
spanning-tree[mst <instance-id(1-64)>] priority <value(0-61440)>
```

The parameters have the following meaning:

Parameter	Description	Range of values
`mst`	Keyword for a Multiple Spanning Tree instance	-
`instance-id`	Number of the instance	1 ... 64
`priority`	Keyword for the priority	-
`value`	Value for the priority	0 ... 61440 Default: 32768

You can only change the value for the priority in the steps of 4096.

Result

The priority of the device is configured.

Further notes

You can reset the setting to the default with the `no spanning-tree mst priority` command.

You display this setting and other information with the commands that start with `show spanning tree ...`.

6.3.4.6 no spanning-tree priority

Description

With this command, you reset the priority of the device back to the default value.

The default value is 32768.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no spanning-tree[mst <instance-id(1-64)>]priority
```

The parameters have the following meaning:

Parameters	Description	Range of values
`mst`	Keyword for a Multiple Spanning Tree instance	-
`instance-id`	Number of the instance	1 ... 64

Result

The priority of the device is reset to the default value.

Further notes

You configure the setting with the `spanning-tree mst priority` command.

You display this setting and other information with the commands that start with `show spanning tree ...`.

6.3.4.7 spanning-tree mst configuration

Description

With this command, you change to the MSTP configuration mode.

Requirement

You are in the Global configuration mode.

- MSTP is enabled
- Base bridge mode: 802.1Q VLAN Bridge
- Compatibility mode: MSTP

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
spanning-tree mst configuration
```

Result

You are now in the MSTP configuration mode.

The command prompt is as follows:

```
cli(config-mst)#
```

Further notes

You exit the MSTP configuration mode with the `end` or `exit` command.

6.3.4.8 spanning-tree mst max-hops

Description

With this command, you configure the maximum number of nodes (hops) that a path can run through in an MST.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
spanning-tree mst max-hops <value(6-40)>
```

The parameter has the following meaning:

Parameter	Description	Range of values
`value`	Maximum number of hops that a path can run through in an MST	6 ... 40 Default: 20

Result

The setting for the maximum number of hops is configured.

Further notes

You can reset the setting for the maximum number of nodes to the default with the `no spanning-tree mst max-hops` command.

You display this setting and other information with the `show spanning tree mst configuration` command.

6.3.4.9 no spanning-tree mst max-hops

Description

With this command, you reset the maximum number of hops that a path in an MST can run through to the default value.

The default value is 20.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no spanning-tree mst max-hops
```

Result

The setting for the maximum number of nodes is reset to the default value.

Further notes

You can configure the setting for the maximum number of nodes with the `spanning-tree mst max-hops` command.

You display this setting and other information with the `show spanning tree mst configuration` command.

6.3.4.10 spanning-tree mst instance-id root

Description

With this command you specify whether the device is a root bridge (primary) or a substitute root bridge (secondary).

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
spanning-tree mst{instance-id<instance-id(1-64)>}root{primary|
secondary}
```

The parameters have the following meaning:

Parameter	Description	Range of values
`instance-id`	Keyword for the instance	-
`instance-id`	Number of the instance	1 ... 64
`primary`	The priority of the device is set to a low value so that the device can become the root bridge (primary) of the Spanning Tree instance. The lower the value, the higher the priority.	The priority is set to the value 24576.
`secondary`	The priority of the device is set to a low value so that the device becomes the substitute root bridge (secondary) of the Spanning Tree instance. If the root bridge (primary) fails, the substitute root bridge (secondary) takes over the task of the root bridge without delay.	The priority is set to the value 28672.

Result

The function of the device is specified.

Further notes

You disable the root bridge with the `no spanning-tree mst instance-id root` command.

You display this setting and other information with the commands that start with `show spanning tree ...`.

6.3.4.11 no spanning-tree mst instance-id root

Description

With this command, you disable the root bridge function on the device.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
spanning-tree mst{instance-id<instance-id(1-64)>}root
```

The parameters have the following meaning:

Parameter	Description	Range of values
`instance-id`	Keyword for the instance	-
`instance-id`	Number of the instance	1 ... 64

Result

The function is disabled.

Further notes

You enable the root bridge function with the `spanning-tree mst instance-id root` command.

You display this setting and other information with the commands that start with `show spanning tree ...`.

6.3.4.12 Time settings for the Spanning Tree protocol

spanning-tree

Description

With this command, you configure the various time settings of the spanning tree function:

- With the `forward-time` option, you configure the time after which a port changes its spanning tree status from "Blocking" to "Forwarding".
- With the `hello-time` option, you configure the time after which the bridge sends its configuration BPDUs.
- With the `max-age` option, you configure the time after which the information of the BPDUs becomes invalid.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
spanning-tree{forward-time<seconds(4-30)>|hello-time<seconds(1-2)>|
                    max-age<seconds(6-40)>}
```

The parameters have the following meaning:

Parameter	Description	Range of values
`forward-time`	Keyword for the time after which a port changes its spanning tree status from "Blocking" to "Forwarding"	-
`seconds`	Time after which the changeover takes place	4 ... 30 Default: 15
`hello-time`	Keyword for the time after which the bridge sends its configuration BPDUs	-
`seconds`	Time after which they are sent	1 ... 2 Default: 2
`max-age`	Keyword for the time after which the information of the BPDUs becomes invalid	-
`seconds`	Maximum age of the BPDUs in seconds	6 ... 40 Default: 20

Note

Dependencies when setting the timing

If you specify the time settings for spanning tree, you need to keep to the following two rules:

2 * (`forward-time` - 1) >= `max-age`

and

`max-age` >= 2 * (`hello-time` + 1)

Result

The selected setting for the time is configured.

Further notes

You can reset the time to the default with the `no spanning-tree` command (time settings).

You display these settings and other information with the commands that start with `show spanning tree ...`.

no spanning-tree

Description

With this command, you reset the various time settings of the spanning tree function to the default value.

The default values are as follows:

Parameters	Default value
`forward-time`	15 seconds
`hello-time`	2 seconds
`max-age`	20 seconds

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no spanning-tree{forward-time|hello-time|max-age}
```

The parameters have the following meaning:

Parameters	Description
`forward-time`	Time after which a port changes its spanning tree status from "Blocking" to "Forwarding"
`hello-time`	Time after which the bridge sends its configuration BPDUs
`max-age`	Time after which the information of the BPDUs becomes invalid

Result

The selected setting for the time is reset to the default value.

Further notes

You configure the time with the `spanning-tree` command (time settings).

You display these settings and other information with the commands that start with `show spanning tree ...`.

6.3.5 Commands in the interface configuration mode

This section describes commands that you can call up in the interface configuration mode. Depending on the Interface selected, various command sets are available.

In the Global configuration mode, enter the `interface` command to change to this mode.

Commands relating to other topics that can be called in the interface configuration mode can be found in the relevant sections.

- If you exit the Interface configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the Interface configuration mode with the `end` command, you return to the Privileged EXEC mode.

6.3.5.1 spanning-tree

Description

With this command, you configure the various properties of the spanning tree function:

- With the `cost` option, you configure the port costs used to calculate the lowest-cost path.
- With the `disable` option, you disable the interface for the spanning tree function.
- With the `link-type` option, you configure the connection status of the following network segment. The following settings are possible:
  - `point-to-point` – the interface communicates with precisely one network component
  - `shared` - the interface is connected to more than one network component
- With the `portfast` option, you enable the PortFast function on the interface. The interface is connected to an end device and can therefore ignore the waiting time before changing to Forwarding mode.
- With the `port-priority` option, you configure the priority of the interface for negotiating a spanning tree configuration.

Requirement

You are in the Interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
spanning-tree {cost <0-200000000>|disable|
               link-type{point-to-point|shared}|portfast|
               port-priority<0-240>}
```

The parameters have the following meaning:

Parameter	Description	Range of values
`cost`	Keyword Describes the costs of the port for calculating the lowest cost path.	0 ... 200000000 Default: if dynamic calculation of the path costs is not enabled: • 200000 for physical interfaces • 199999 for port channels
`disable`	disables the interface for spanning tree	- Default: The spanning tree function is enabled on the interface
`link-type`	Connection status of the following network segment	• `point-to-point` • `shared` Default: • `point-to-point` The connection is configured as `full-duplex` • `shared` in all other cases
`portfast`	Enables the PortFast function	- Default: disabled
`port-priority`	Priority of the interface	0 ... 240 in steps of 16 Default: 128

Note

Configure multiple properties

Each time the command is called, you can configure precisely one property.

If you want to configure more than one property, call up the command more than once.

Result

The selected setting is configured.

Further notes

You can reset the setting to the default with the `no spanning-tree` (properties) command.

You display these settings and other information with the commands that start with `show spanning tree ...`.

6.3.5.2 no spanning-tree

Description

With this command, you reset the various properties of the spanning tree function to the default value:

The default values are as follows:

Parameter	Default value
`cost`	if dynamic calculation of the path costs is not enabled: • 200000 for physical interfaces • 199999 for port channels
`disable`	The spanning tree function is enabled on the interface
`link-type`	• `point-to-point` The connection is configured as `full-duplex` • `shared` in all other cases
`portfast`	disabled
`port-priority`	128

Requirement

You are in the Interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
no spanning-tree {cost|disable|link-type|portfast|port-priority}
```

The parameters have the following meaning:

Parameter	Description
`cost`	Keyword for the costs of the port for calculating the lowest-cost path.
`disable`	Enables the interface for spanning tree.
`link-type`	Connection status of the following network segment
`portfast`	Disables the PortFast function.
`port-priority`	Keyword for the priority of the interface

Note

Configure multiple properties

Each time the command is called, you can configure precisely one property.

If you want to configure more than one property, call up the command more than once.

Result

The selected setting is reset to the default value.

Further notes

You configure the setting with the `spanning-tree` command (properties).

You display these settings and other information with the commands that start with `show spanning tree ...`.

6.3.5.3 spanning-tree mst

Description

With this command, you configure the various properties of the multiple spanning tree function:

- With the `cost` option, you configure the port costs used to calculate the lowest-cost path.
- With the `port-priority` option, you configure the priority of the interface for negotiating a multiple spanning tree configuration.
- With the `disable` option, you disable the interface for the multiple spanning tree function.

Requirement

You are in the Interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
spanning-tree mst<instance-id(1-64)>
      {cost(0-200000000)|port-priority (0-240)|disable}
```

The parameters have the following meaning:

Parameter	Description	Range of values
`instance-id`	Number of the addressed instance	1 ... 64
`cost`	Costs of the port for calculating the lowest cost path.	0 ... 200000000 Default: • 200000 for physical interfaces • 199999 for port channels
`port-priority`	Priority of the interface	0 ... 240 in steps of 16 Default: 128
`disable`	disables the interface for multiple spanning tree	- Default: The multiple spanning tree function is enabled on the interface

Note
Configure multiple properties

Each time the command is called, you can configure precisely one property.

If you want to configure more than one property, call up the command more than once.

Result

The selected setting is configured.

Further notes

You can reset the setting to the default with the `no spanning-tree mst` (properties) command.

You display these settings and other information with the commands that start with `show spanning tree ...`.

6.3.5.4 no spanning-tree mst

Description

With this command, you reset the various properties of the multiple spanning tree function to the default value.

The default values are as follows:

Parameter	Default value
`cost`	• 200000 for physical interfaces • 199999 for port channels
`port-priority`	128
`disable`	The multiple spanning tree function is enabled on the interface

Requirement

You are in the Interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
no spanning-tree mst<instance-id(1-64)>{cost|port-priority|disable}
```

The parameters have the following meaning:

Parameter	Description	Range of values
`instance-id`	Number of the addressed instance	1 ... 64
`cost`	Keyword for the costs of the port for calculating the lowest-cost path.	-
`port-priority`	Keyword for the priority of the interface	-
`disable`	Enables the interface for multiple spanning tree.	-

Note
Configure multiple properties

Each time the command is called, you can configure precisely one property.

If you want to configure more than one property, call up the command more than once.

Result

The selected setting is reset to the default value.

Further notes

You configure the setting with the `spanning-tree mst` command (properties).

You display these settings and other information with the commands that start with `show spanning tree ...`.

6.3.5.5 spanning-tree auto-edge

Description

With this command, you enable automatic discovery of a bridge connected to the interface.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
spanning-tree auto-edge
```

Result

The automatic discovery of a bridge on the interface is enabled.

Further notes

The automatic discovery of a bridge on the interface is enabled with the `no spanning-tree auto-edge` command.

6.3.5.6 no spanning-tree auto-edge

Description

With this command, you disable automatic discovery of a bridge connected to the interface.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no spanning-tree auto-edge
```

Result

The automatic discovery of a bridge on the interface is disabled.

Further notes

The automatic discovery of a bridge on the interface is disabled with the `spanning-tree auto-edge` command.

6.3.5.7 spanning-tree bpdu-transmit

Description

With this command, you enable or disable the BPDU transmit status at the port.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
spanning-tree bpdu-transmit{enabled|disabled}
```

The parameters have the following meaning:

Parameter	Description
`enabled`	BPDU packets are transmitted at the port Default: enabled
`disabled`	BPDU packets are not transmitted at the port

Result

The BPDU transmit status has switched over.

Further notes

You can display the status of this function and other information with the `show spanning tree interface` command with the `detail` option.

6.3.5.8 spanning-tree bpdu-receive

Description

With this command, you enable / disable the BPDU receive status at the port.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
spanning-tree bpdu-receive{enabled|disabled}
```

The parameters have the following meaning:

Parameter	Description
`enabled`	BPDU packets are received at the port Default: enabled
`disabled`	BPDU packets are ignored at the port

Result

The BPDU receive status is enabled / disabled.

Further notes

You can display the status of this function and other information with the `show spanning tree interface` command with the `detail` option.

6.3.5.9 spanning-tree bpdufilter

Description

With this command, you configure the BPDU transmission status for a port.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
spanning-tree bpdufilter{disable|enable}
```

The parameters have the following meaning:

Parameter	Description
`disable`	The transfer of BPDU packets is disabled for the port Default: disabled
`enable`	The transfer of BPDU packets is enabled for the port

Result

The BPDU transmit status is configured.

6.3.5.10 spanning-tree layer2-gateway-port

Description

With this command, you configure a port as a layer 2 gateway port.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
spanning-tree layer2-gateway-port
```

Result

The port is configured as a layer 2 gateway port.

Further notes

You delete the configuration of a port as a layer 2 gateway port with the command`no spanning-tree layer2-gateway-port`.

You can display other information with the `show spanning tree interface` command with the `detail` option.

6.3.5.11 no spanning-tree layer2-gateway-port

Description

With this command, you delete the configuration of the port as a layer 2 gateway port.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no spanning-tree layer2-gateway-port
```

Result

The configuration of the port as a layer 2 gateway port is deleted.

Further notes

You configure a port as a layer 2 gateway port with the command `spanning-tree layer2-gateway-port`.

You can display other information with the `show spanning tree interface` command with the `detail` option.

6.3.5.12 spanning-tree loop-guard

Description

This function prevents alternative ports or root ports becoming designated ports if there is a disruption of a one-way link.

With this command, you enable the function.

Requirement

- Spanning tree is enabled.

You are in the interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
spanning-tree loop-guard
```

Result

The function is enabled.

Further notes

You disable the setting with the `no spanning-tree loop-guard` command.

You can display the status of this function and other information with the following commands:

- `show spanning-tree detail`
- `show spanning-tree active detail`
- `show spanning-tree interface`

6.3.5.13 no spanning-tree loop-guard

Description

This function prevents alternative ports or root ports becoming designated ports if there is a disruption of a one-way link.

With this command, you disable the function.

Requirement

You are in the interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no spanning-tree loop-guard
```

Result

The function is disabled.

Further notes

You enable the setting with the `spanning-tree loop-guard` command.

You can display the status of this function and other information with the following commands:

- `show spanning-tree detail`
- `show spanning-tree active detail`
- `show spanning-tree interface`

6.3.5.14 spanning-tree restricted-role

Description

With this command, you prevent the port adopting the role of root port.

Requirement

You are in the Interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
spanning-tree restricted-role
```

As default the function is "disabled".

Result

The port is prevented from adopting the role of root port.

Further notes

You cancel the lock with the `no spanning-tree restricted-role` command.

You can display the status of this function and other information with the `show spanning tree detail` command.

6.3.5.15 no spanning-tree restricted-role

Description

With this command, you release the port for the role as root port.

Requirement

You are in the interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no spanning-tree restricted-role
```

Result

The port is released for the role of root port.

Further notes

You prevent the port adopting the role of the root port with the `spanning-tree restricted-role` command.

6.3.5.16 spanning-tree restricted-tcn

Description

With this command, you restrict the port for the Topology Change Notification (TCN) function. The port cannot initiate any modifications to the network topology.

Requirement

You are in the interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
spanning-tree restricted-tcn
```

Result

The port is prevented from using the TCN function.

Further notes

You cancel the lock with the `no spanning-tree restricted-tcn` command.

You can display the status of this function and other information with the `show spanning tree detail`command.

6.3.5.17 no spanning-tree restricted-tcn

Description

With this command, you release the port for the TCN function.

Requirement

You are in the interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no spanning-tree restricted-tcn
```

Result

The port is released for the TCN function.

Further notes

You restrict the port for the TCN function with the `spanning-tree restricted-tcn` command.

6.3.5.18 spanning-tree mst hello-time

Description

With this command, you configure the Hello time after which the bridge sends its configuration BPDUs.

A change to this value applies to all MST instances active on this interface.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
spanning-tree mst hello-time <seconds(1-2)>
```

The parameter has the following meaning:

Parameter	Description	Range of values
`seconds`	Time after which the bridge sends its configuration BPDUs	1 ... 2 Default: 2

Result

The setting for the hello time is configured.

Further notes

You can reset the setting for the hello time to the default with the `no spanning-tree mst hello-time` command.

You display this setting and other information with the commands that start with `show spanning tree ...`.

6.3.5.19 no spanning-tree mst hello-time

Description

With this command, you reset the hello time after which the bridge sends its configuration BPDUs to the default value.

The default value is 2 seconds.

Requirement

You are in the interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no spanning-tree mst hello-time
```

Result

The setting for the hello time is reset to the default value.

Further notes

You can configure the setting for the hello time with the `spanning-tree mst hello-time` command.

You display this setting and other information with the commands that start with `show spanning tree ...`.

6.3.5.20 spanning-tree mst PseudoRootId

Description

With this command, you configure a pseudoroot MAC address and the priority for a spanning tree configuration. The command is used in conjunction with the layer 2 gateway port.

Requirement

You are in the Interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
spanning-tree[mst<instance-id>]pseudoRootId
      priority<value(0-61440)>mac-address<ucast_mac>
```

The parameters have the following meaning:

Parameter	Description	Range of values
`mst`	Keyword for a spanning tree instance	-
`instance-id`	Number of the instance	1 ... 64
`priority`	Keyword for the priority	-
`value`	Value for the priority	0 ... 61440 Default: Priority of the device
`mac-address`	Keyword for the pseudoroot unicast MAC address	-
`ucast_mac`	MAC address of the interface	aa:aa:aa:aa:aa:aa Default: MAC address of the device

You can only change the value for the priority in the steps of 4096.

Result

The pseudoroot MAC address and the priority are configured.

Further notes

You can reset the settings to the default values with the `no spanning-tree mst pseudoRootId`command.

You display this setting and other information with the commands that start with `show spanning tree ....`

6.3.5.21 no spanning-tree mst PseudoRootId

Description

With this command, you reset a pseudoroot MAC address and the priority of the spanning tree configuration to the default values.

The default values are as follows:

- The priority is configured to the priority of the device.
- The MAC address is configured to the MAC address of the device.

Requirement

You are in the interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
no spanning-tree[mst<instance-id(1-64)>]pseudoRootId
```

The parameters have the following meaning:

Parameters	Description	Range of values
`mst`	Keyword for a spanning tree instance	-
`instance-id`	Number of the instance	1 ... 64

Result

The pseudoroot MAC address and the priority are rest to the defaults.

Further notes

You configure the settings with the `spanning-tree mst pseudoRootId` command.

You display this setting and other information with the commands that start with `show spanning tree ....`

6.3.6 Commands in the MSTP configuration mode

This section describes commands that you can call up in the MSTP configuration mode.

In the Global configuration mode, enter the `spanning-tree mst configuration` command to change to this mode.

- If you exit the MSTP configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the MSTP configuration mode with the `end` command, you return to the Privileged EXEC mode.

6.3.6.1 instance

Description

With this command, you assign a range of VLANs to an MST instance.

Requirement

You are in the MSTP configuration mode.

The command prompt is as follows:

```
cli(config-mst)#
```

Syntax

Call up the command with the following parameters:

```
instance <instance-id(1-64)> vlan <vlan-range>
```

The parameters have the following meaning:

Parameter	Description	Range of values
`instance-id`	Number of the instance	1 ... 64 Default: The VLANs 1 – 4094 are assigned to instance "0"
`vlan-range`	Range of VLANs assigned to an instance	enter the range limts with a hyphen or blank

Result

The range of VLANs is assigned to the MST instance.

Further notes

You cancel the assignment of the VLAN to an MST instance with the `no instance` command.

You delete the MST instance with the `no instance` command.

You display this setting and other information with the `show spanning-tree mst configuration` command.

6.3.6.2 no instance

Description

With this command, you cancel the assignment of a VLAN to an MST instance or delete the MST instance.

Requirement

You are in the MSTP configuration mode.

The command prompt is as follows:

```
cli(config-mst)#
```

Syntax

Call up the command with the following parameters:

```
no instance <instance-id (1-64)> [vlan <vlan-range>]
```

The parameters have the following meaning:

Parameter	Description	Range of values
`instance-id`	Number of the MST instance	1 ... 64
`vlan-range`	Range of VLANs that will be deleted from the instance	enter the range limts with a hyphen or blank

If you specify a VLAN or a VLAN range, the assignment to an MST instance is canceled.

If you do not specify a VLAN, the MST instance is deleted.

Result

The assignment of a VLAN to an MST instance is canceled or the MST instance is deleted.

Further notes

You delete a VLAN of an MST instance with the `instance` command.

You display this setting and other information with the `show spanning-tree mst configuration` command.

6.3.6.3 name

Description

With this command, you delete the name for the MST region.

Requirement

You are in the MSTP configuration mode.

The command prompt is as follows:

```
cli(config-mst)#
```

Syntax

Call up the command with the following parameters:

```
name <region-name>
```

The parameter has the following meaning:

Parameter	Description	Range of values
`region-name`	Name of the MST region	-max. 32 characters

The default value of the name is the MAC address of the device.

Result

The name is configured.

Further notes

You delete the name of the MST region with the `no name`command.

You display this setting and other information with the `show spanning tree mst configuration` command.

6.3.6.4 no name

Description

With this command, you reset the name fot the MST region to the default value.

The default value is:

- The MAC address of the device is configured as name.

Requirement

You are in the MSTP Configuration mode.

The command prompt is as follows:

```
cli(config-mst)#
```

Syntax

Call the command without parameters:

```
no name
```

Result

The name is reset to the default value.

Further notes

You configure the name of the MST region with the `name` command.

You display this setting and other information with the `show spanning tree mst configuration` command.

6.3.6.5 revision

Description

With this command, you assign a revision number to the MST region.

Requirement

You are in the MSTP Configuration mode.

The command prompt is as follows:

```
cli(config-mst)#
```

Syntax

Call up the command with the following parameters:

```
revision <revision-no(0-65535)>
```

The parameters have the following meaning:

Parameter	Description	Range of values
`revision-no`	value of the revision number	0 ... 65535 Default: 0

Result

The MST region is assigned a revision number.

Further notes

You delete the revision number with the `no revision` command.

You display this setting and other information with the `show spanning tree mst configuration` command.

6.3.6.6 no revision

Description

With this command, you reset the revision number of the MST region to the default value.

The default value is 0.

Requirement

You are in the MSTP configuration mode.

The command prompt is as follows:

```
cli(config-mst)#
```

Syntax

Call the command without parameters:

```
no revision
```

Result

The revision number of the MST region is reset to the default value.

Further notes

You assign a revision number to the MST region with the `revision` command.

You display this setting and other information with the `show spanning tree mst configuration` command.

6.4 Passive Listening

6.4.1 show passive-listening

Description

This command shows whether or not passive listening is enabled.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show passive-listening
```

Result

`disabled` is displayed if passive listening is disabled. If passive listening is enabled, `enabled` is displayed.

6.4.2 passive-listening

Description

This command enables passive listening.

Requirement

Note

No simultaneous operation with MSTP

Passive listening can only be enabled when MSTP is disabled.

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
passive-listening
```

Result

The passive listening function is enabled.

Further notes

You disable passive listening with the `no passive-listening` command.

You display the status of passive listening with the `show passive-listening` command.

6.4.3 no passive-listening

Description

This command disables passive listening.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no passive-listening
```

Result

The passive listening function is disabled.

Further notes

You enable passive listening with the `passive-listening` command.

You display the status of passive listening with the `show passive-listening` command.

Network protocols

7

This part contains the sections that describe the commands for working with the various network protocols.

7.1 IPv4 protocol

This section describes commands of the Internet Protocol (IP) version 4.

7.1.1 show ip route

Description

This command shows the routes currently being used.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

`show ip route[{<ip-address>[<mask>]|connected|ospf|static|summary}]`

The parameters have the following meaning:

Parameter	Description	Range of values
`ip-address`	Shows the information for a specific IP address.	enter a valid IP address
`mask`	Defines an address range using the subnet mask.	/8, /16 or /24
`connected`	Shows the direct connections.	-
`ospf`	Shows the OSPF routes.	-
`static`	Shows the static routes.	-
`summary`	Shows a summary.	-

Result

The routing table is displayed.

7.1.2 show ip static route

Description

This command shows the routes that were generated statically.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show ip static route
```

Result

The static routes are displayed.

7.1.3 show ip gateway

Description

This command shows the default gateway configured for the device.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show ip gateway
```

Result

The default gateway is displayed.

7.1.4 show ip telnet

Description

This command shows the admin status and the port number of the telnet server.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show ip telnet
```

Result

The admin status and the port number of the Telnet server are displayed.

7.1.5 show dcp server

Description

This command shows whether or not the DCP function is enabled on the device.

If the DCP function is enabled, the read and write permissions are displayed.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show dcp server
```

Result

The overview of the status of the DCP function and access rights is displayed.

7.1.6 show dcp forwarding

Description

This command shows an overview of the DCP forwarding behavior on one or all interfaces.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

`show dcp forwarding [port<interface-type><interface-id>]`

The parameters have the following meaning:

Parameters	Description	Range of values
`port`	Keyword for a an interface description	-
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The overview of the DCP forwarding behavior is displayed.

7.1.7 show ip dns

Description

This command shows information about the DNS client, for example the status of the DNS client and parameters for querying the DNS server.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show ip dns
```

Result

Information on the DNS client is displayed.

7.1.8 show ip dns cache

Description

This command shows the content of the DNS cache. The DNS cache buffers replies of the DNS server for a brief time. This allows other queries for the same name to be replied to directly without sending another query to the DNS server.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show ip dns cache
```

Result

The content of the DNS cache is displayed.

7.1.9 show ip dns name-server

Description

This command shows information about the DNS servers configured on the device. The table contains the index, the address type (e.g. IPv4) and the IP address.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show ip dns name-server
```

Result

The table with the information about the DNS servers is displayed.

7.1.10 show ip dns statistics

Description

This command shows DNS statistics. It provides information about the type and number of queries to the DNS server.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show ip dns statistics
```

Result

Information about the communication with the DNS server is displayed.

7.1.11 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

7.1.11.1 ip route

Description

With this command, you configure a static entry in the IP routing table.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
ip route <prefix> <mask> <next-hop> [<distance(1-255)>]
```

The parameter has the following meaning:

Parameter	Description	Range of values
`prefix`	specifies the IP address or the address range	enter a valid IP address
`mask`	specifies the subnet mask used for `prefix`. Use decimal notation.	enter a valid subnet mask
`next-hop`	specifies the IP address to which the selected addresses will be forwarded.	enter a valid IP address
`distance`	The value for the administrative distance.	1 ... 255

Result

The entry is configured.

Further notes

You delete an entry from the IP routing table with the `no ip route` command.

You display the IP routing table with the `show ip route` command.

See also

Addresses and interface names (Page 32)

7.1.11.2 no ip route

Description

With this command, you delete a static entry from the IP routing table.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no ip route <prefix> <mask> <next-hop> [<distance(1-255)>]
```

The parameter has the following meaning:

Parameter	Description	Range of values
`prefix`	specifies the IP address or the address range	enter a valid IP address
`mask`	specifies the subnet mask used for `prefix`. Use decimal notation.	enter a valid subnet mask
`next-hop`	specifies the IP address to which the selected addresses were forwarded.	enter a valid IP address
`distance`	The value for the administrative distance.	1 ... 255

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The entry is deleted.

Further notes

You configure an entry from the IP routing table with the `ip route` command.

You display the IP routing table with the `show ip route` command.

See also

Addresses and interface names (Page 32)

7.1.11.3 ip routing

Description

With this command, you enable the routing function.

Note

This command is available only with layer 3. DHCP must not be enabled on any IP interface.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
ip routing
```

Result

The routing function is enabled.

Further notes

You disable the function with the `no ip routing` command.

You display the setting with the `show ip route` command.

7.1.11.4 no ip routing

Description

With this command, you disable the routing function.

Note

This command is available only with layer 3.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no ip routing
```

Result

The routing function is disabled.

Further notes

You enable the function with the `ip routing` command.

You display the setting with the `show ip route` command.

7.1.11.5 ip echo-reply

Description

To check the availability of a network node, packets of the Internet Control Message Protocol (ICMP) can be sent to it. These packets of type 8 request the recipient to send a packet back to the sender (echo reply).

With this command, you enable the ICMP echo reply messages.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
ip echo-reply
```

Result

ICMP echo reply messages are enabled.

Further notes

You disable the setting with the `no ip echo-reply` command.

You can display the setting of this function and other information with the `show ip information`command.

7.1.11.6 no ip echo-reply

Description

With this command, you disable the ICMP echo reply messages.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no ip echo-reply
```

Result

ICMP echo reply messages are disabled.

Further notes

You change the setting with the `ip echo-reply` command.

You can display the setting of this function and other information with the `show ip information`command.

7.1.11.7 telnet-server

Description

With this command, you enable the Telnet server.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
telnet-server
```

As default the function is "enabled".

Result

The Telnet server is enabled.

Further notes

You disable the Telnet server with the `no telnet-server` command.

7.1.11.8 no telnet-server

Description

With this command, you disable the Telnet server.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no telnet-server
```

Result

The Telnet server is enabled or disabled.

Further notes

You enable the Telnet server with the `telnet-server` command.

7.1.11.9 dcp server

Description

With this command, you configure the read and write permissions for the DCP server and enable it.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
dcp server {read-only|read-write}
```

The parameters have the following meaning:

Parameter	Description
`read-only`	only reading is permitted on the DCP server
`read-write`	reading and writing is permitted on the DPC server Default: `read-write`

Result

The read and write permissions for the DPC server are configured.

The DCP server is enabled.

Further notes

You disable the DCP server with the `no dcp server` command.

7.1.11.10 no dcp server

Description

With this command, you disable the DCP server.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no dcp server
```

Result

The DCP server is disabled.

Further notes

You enable and configure the DCP server with the `dcp server` command.

7.1.11.11 ip domain lookup

Description

This command enables the DNS client of the device. To be able to use the function, a DNS server must be reachable.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
ip domain lookup
```

Result

The DNS client of the device is enabled and when necessary sends queries to the DNS server.

7.1.11.12 no ip domain lookup

Description

This command disables the DNS client of the device.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no ip domain lookup
```

Result

The DNS client of the device is disabled.

7.1.11.13 ip name-server

Description

This command specifies an IP address of a DNS server. If there is more than one server, you can specify the order in which the servers are queried. To allow this, the optional parameter `index` is available. The server with the lowest index is queried first.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
ip name-server ipv4 <ip-address> [index <id1-3>]
```

The parameters have the following meaning:

Parameter	Description	Range of values
`ipv4`	Keyword for IPv4	-
`ip-address`	IP address of the DNS server	Format 0.0.0.0
`index`	Keyword for the index	-
`id`	Index of the DNS server	1 ... 3

Result

The IP address and, if specified, the index for a DNS server has been set.

7.1.11.14 no ip name server

Description

This command deletes the entry with the specified index for a DNS server. If you do not specify an index, all entries are deleted.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no ip name-server [index <id1-3>]
```

The parameters have the following meaning:

Parameter	Description	Range of values
`index`	Keyword for the index	-
`id`	Index of the DNS server	1 ... 3

Result

The specified entries for the DNS servers were deleted.

7.1.12 Commands in the interface configuration mode

This section describes commands that you can call up in the interface configuration mode. Depending on the Interface selected, various command sets are available.

In the Global configuration mode, enter the `interface` command to change to this mode.

Commands relating to other topics that can be called in the interface configuration mode can be found in the relevant sections.

- If you exit the Interface configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the Interface configuration mode with the `end` command, you return to the Privileged EXEC mode.

7.1.12.1 ip address

Description

With this command, you assign an IP address to a VLAN interface.

Requirement

You are in the Interface configuration mode of VLAN or a router port and DHCP was disabled with the "no ip address" command.

The command prompt is as follows:

```
cli(config-if-vlan$)#
```

or with a router port:

```
cli(config-RPort-if-Int$-$)
```

Syntax

Call up the command with the following parameters:

```
ip address <ip-address> {<subnet-mask>|/<prefix-length(0-32)>}
[secondary]
```

The parameters have the following meaning:

Parameter	Description	Values
`ip-address`	IP address for the VLAN interface	enter a valid IP address
`subnet-mask`	Subnet mask of the corresponding subnet	enter a valid subnet mask
`prefix-length`	Decimal representation of the mask as a number of "1" bits	0 ... 32
`secondary`	Further subnet for this interface	-

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The IP address is assigned to the VLAN interface.

Note

Effectiveness of the command

The command is effective immediately.

If you configure the interface via which you access the device, the connection will be lost!

Further notes

You delete the settings with the `no ip address` command.

You display this setting and other information with the `show ip interface` command.

7.1.12.2 no ip address

Description

With this command, you delete the assignment of an IP address to a VLAN interface and disable DHCP.

Requirement

You are in the Interface configuration mode of VLAN.

The command prompt is as follows:

```
cli(config-if-vlan-$$$)#
```

Syntax

Call up the command without parameters or with the following parameter assignment:

```
no ip address [<ip-address> | dhcp]
```

The parameter has the following meaning:

Parameter	Description	Values
`ip-address`	Address of the interface that will be deleted	specify a valid IP address
`dhcp`	Specify this parameter if you want to disable the DHCP function explicitly.	-

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

If DHCP was enabled on this interface, DHCP is now disabled. Any existing dynamically learned IP address will be automatically converted to a static IP address.

If static IP addresses were configured and if no explicit IP address was transferred as a parameter, all static IP addresses will be deleted from this interface.

If a static IP address was specified explicitly, this address is deleted from this interface.

Note
Effectiveness of the command

The command is effective immediately.

If you configure the interface via which you access the device, you can lose the connection!

Further notes

You configure the setting with the `ip address` command.

You display this setting and other information with the `show ip interface` command.

7.1.12.3 dcp forwarding

Description

With this command, you configure the forwarding behavior of the interface for DCP frames.

Note
PNIO configuration

Since DCP is a PROFINET protocol, the configuration created here is only effective with the VLAN associated with the TIA interface.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
dcp forwarding {block|forward}
```

The parameters have the following meaning:

Parameter	Description
`block`	DCP frames are discarded
`forward`	DCP frames are forwarded Default: `forward`

Result

The forwarding behavior of the interface for DCP frames is configured.

7.2 DHCP client

This section describes commands of the Dynamic Host Configuration Protocol (DHCP).

7.2.1 show ip dhcp client stats

Description

With this command, you display the statistical counters of the DHCP client.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show ip dhcp client stats
```

Result

The counters are displayed.

7.2.2 show ip dhcp client

Description

With this command, you display the configuration settings of the DHCP client.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show ip dhcp client
```

Result

The configuration settings are displayed.

7.2.3 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

7.2.3.1 ip dhcp config-file-request

Description

If the DHCP config file request option is set, the device requests the TFTP address and the name of a configuration file from the DHCP server. If the device is restarted following the completed download, the configuration settings are read from this file.

With this command, you enable the DHCP config file request option.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
ip dhcp config-file-request
```

Result

The DHCP config file request option is enabled.

Further notes

You disable the DHCP config file request option with the `no ip dhcp config-file-request` command.

7.2.3.2 no ip dhcp config-file-request

Description

With this command, you disable the DHCP config file request option.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no ip dhcp config-file-request
```

Result

The DHCP config file request option is disabled.

Further notes

You enable the DHCP config file request option with the `ip dhcp config-file-request` command.

7.2.3.3 ip dhcp client mode

Description

With this command, you configure the type of identifier with which the DHCP client logs on with its DHCP server.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
ip dhcp client mode {mac|client-id<client-id>|sysname|pnio-name-of-station}
```

The parameters have the following meaning:

Parameters	Description	Range of values
`mac`	The client registers with its MAC address	-
`client-id`	The client registers with the assigned ID	-
`client-id`	Name of the assigned ID	max. 32 characters
`sysname`	The client registers with the assigned system name	-
`pnio-name-of-station`	the client registers with the PNIO name. The name is assigned with the PST tool.	-

Result

The registration mode of the DHCP client is configured.

7.3 DHCP Relay

This section describes commands for the DHCP Relay Agent.

7.3.1 show dhcp server

Description

With this command, you display the IP addresses of the DHCP servers to which the device forwards the frames.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode or in the Global Configuration mode.

The command prompt is as follows:

`cli>` or `cli#` or `cli(config)#`

Syntax

Call the command without parameters:

```
show dhcp server
```

Result

The IP addresses of the DHCP servers are displayed.

Further notes

With the "`ip dhcp server`" command, you specify the IP addresses.

7.3.2 show ip dhcp relay information

Description

This command displays the DHCP relay agent settings for all or for a selected VLAN.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode or in the Global Configuration mode.

The command prompt is as follows:

`cli>` or `cli#` or `cli(config)#`

Syntax

Call up the command with the following parameters:

```
show ip dhcp relay information [vlan <vlan-id>]
```

The parameter has the following meaning:

Parameters	Description	Range of values
vlan	Keyword for a VLAN connection	--
vlan-id	Number of the addressed VLAN	1 ... 4094

If you do not select any parameter from the parameter list, the entries are displayed for all available interfaces.

Result

The configuration settings are displayed.

7.3.3 Commands in the Global Configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

7.3.3.1 ip dhcp server

Description

With this command, you specify the IP addresses of the DHCP servers to which the DHCP relay agent forwards the frames. You can specify up to four IP addresses for the DHCP relay agent.

Requirement

- The DHCP Relay Agent is activated.

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
ip dhcp server<ip address>
```

The parameter has the following meaning:

Parameters	Description	Range of values
`ip adress`	IP address of the DHCP server	enter a valid IP address

Result

The IP address is specified.

Further notes

You remove the IP address with the `no ip dhcp server` command.

You enable the DHCP Relay Agent with the `service dhcp-relay` command.

You display the IP addresses with the `show dhcp server` command.

You display the settings with the `show ip dhcp relay information` command.

7.3.3.2 no ip dhcp server

Description

With this command, you delete the IP address of the DHCP server.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no ip dhcp server <ip address>
```

The parameter has the following meaning:

Parameters	Description	Range of values
`ip adress`	IP address of the DHCP server	Enter the IP address to be deleted.

Result

The IP address is removed.

Further notes

You enable the DHCP Relay Agent with the `service dhcp-relay` command.

You create the IP address with the `ip dhcp server` command.

You display the IP addresses with the `show dhcp server` command.

7.3.3.3 ip dhcp relay circuit-id option

Description

The Circuit ID is a sub option of the "DHCP Relay Information" option. The Circuit ID contains information about the origin of the DHCP packet.

With this command, you specify the information contained in the Circuit ID.

The Circuit ID is encoded in the DHCP packet if the "DHCP relay information" option is enabled.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
ip dhcp relay circuit-id option [router-index] [vlanid] [recv-port]
```

The parameters have the following meaning:

Parameters	Description	Range of values
`router-index`	The router index is added to the Circuit ID.	Default setting
`vlan-id`	The VLAN ID is added to the Circuit ID.	-
`recv-prot`	The Circuit ID is added to the receiving port.	-

Result

The content of the Circuit ID is specified.

Further notes

You enable the DHCP Relay Information option with the `ip dhcp relay information option` command.

You display the information with the `show ip dhcp relay information` command.

7.3.3.4 ip dhcp relay information option

Description

With this command, you enable the "IP DHCP Relay Information" option. If the option is enabled, prior to forwarding to the DHCP server, information about the origin of the DHCP query is encoded in the packet. If the DHCP server sends a response, the information is removed again before forwarding to the DHCP client.

This information is only encoded in the data packet if the DHCP relay agent is enabled.

Requirement

You are in the Global Configuration mode or in the Interface Configuration mode of VLAN.

The command prompt is as follows:

`cli(config)#` or `cli(config-if-$$)#`

Syntax

Call the command without parameter assignment:

```
ip dhcp relay information option
```

Result

The option is enabled.

Further notes

You disable the option with the `no ip dhcp relay information option` command.

You enable the DHCP Relay Agent with the `no service dhcp-relay` command.

You configure the content of the information with the `ip dhcp relay circuit-id option` command.

You can display the status of this option and other information with the `show ip dhcp relay information` command.

7.3.3.5 no ip dhcp relay information option

Description

With this command, you disable the "IP DHCP Relay Information" option.

Requirement

You are in the Global Configuration mode or in the Interface Configuration mode of VLAN.

The command prompt is as follows:

`cli(config)#` or `cli(config-if-$$)#`

Syntax

Call the command without parameter assignment:

`no ip dhcp relay information option`

Result

The option is disabled.

Further notes

You enable the option with the `no ip dhcp relay information option` command.

You can display the status of this option and other information with the `show ip dhcp relay information` command.

7.3.3.6 service dhcp-relay

Description

With this command, you enable the DHCP relay agent on the device. The DHCP relay agent forwards the DHCP query to DHCP servers located in a different subnet.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

`cli(config)#`

Syntax

Call the command without parameter assignment:

```
service dhcp-relay
```

Result

The DHCP Relay Agent is activated.

Further notes

You disable the DHCP Relay Agent with the `no service dhcp-relay` command.

You create the IP addresses of the DHCP server with the `ip dhcp server` command.

You can display the status of this function and other information with the `show ip dhcp relay information`command.

7.3.3.7 no service dhcp-relay

Description

This command disables the DHCP relay agent.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no service dhcp-relay
```

Result

The DHCP Relay Agent is disabled.

Further notes

You enable the DHCP Relay Agent with the `service dhcp-relay` command.

You can display the status of this function and other information with the `show ip dhcp relay information`command.

7.3.4 Commands in the Interface Configuration mode

This section describes commands that you can call up in the interface configuration mode. Depending on the Interface selected, various command sets are available.

In the Global configuration mode, enter the `interface` command to change to this mode.

Commands relating to other topics that can be called in the interface configuration mode can be found in the relevant sections.

- If you exit the Interface configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the Interface configuration mode with the `end` command, you return to the Privileged EXEC mode.

7.3.4.1 ip dhcp relay circuit-id

Description

With this command, you assign a Circuit ID to the interface.

Requirement

- The interface is a router port.

You are in the Interface Configuration mode of VLAN

The command prompt is as follows:

```
cli(config-if-$$)#
```

Syntax

Call up the command with the following parameters:

```
ip dhcp relay circuit-id <circuit-id>
```

The parameter has the following meaning:

Parameters	Description	Range of values
`Circuit ID`	Circuit ID	1 ... 188

Result

The Circuit ID is assigned.

Further notes

You remove the Circuit ID with the `no ip dhcp relay circuit-id` command.

You configure the interface as a router port with the `no switchport` command.

You display the IP addresses with the `show dhcp server` command.

You display the settings with the `show ip dhcp relay information` command.

7.3.4.2 no ip dhcp relay circuit-id

Description

With this command, you remove the Circuit ID.

Requirement

- The interface is a router port.

You are in the Interface Configuration mode of VLAN

The command prompt is as follows:

```
cli(config-if-$$)#
```

Syntax

Call the command without parameter assignment:

```
no ip dhcp relay circuit id
```

Result

The Circuit ID is removed.

Further notes

You configure the Circuit ID with the `ip dhcp relay circuit-id` command.

You configure the interface as a router port with the `no switchport` command.

You display the IP addresses with the `show dhcp server` command.

You display the settings with the `show ip dhcp relay information` command.

7.3.4.3 ip dhcp relay remote-id

Description

With this command, you specify the device ID.

Requirement

- The interface is a router port.

You are in the Interface Configuration mode of VLAN

The command prompt is as follows:

```
cli(config-if-$$)#
```

Syntax

Call up the command with the following parameters:

```
ip dhcp relay remote-id <remote-id name>
```

The parameter has the following meaning:

Parameters	Description	Range of values
`remote-id name`	Device ID	max. 32 characters Default: XYZ

Result

The device ID is specified.

Further notes

You remove the device ID with the `no ip dhcp relay remote-id` command.

You configure the interface as a router port with the `no switchport` command.

You display the IP addresses with the `show dhcp server` command.

You display the settings with the `show ip dhcp relay information` command.

7.4 SNMP

This section describes commands of the Simple Network Management Protocol (SNMP).

7.4.1 The "show" commands

This section describes commands with which you display various settings.

7.4.1.1 show snmp

Description

This command shows the status information of SNMP.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show snmp
```

Result

The status information is displayed.

7.4.1.2 show snmp community

Description

This command shows the details of the configured of SNMP communities.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show snmp community
```

Result

The details of the configured SNMP communities are displayed.

7.4.1.3 show snmp engineID

Description

This command shows the SNMP identification number of the device.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show snmp engineID
```

Result

The SNMP identification number of the device is displayed.

7.4.1.4 show snmp filter

Description

This command shows the configured SNMP filters.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show snmp filter
```

Result

The configured SNMP filters are displayed.

7.4.1.5 show snmp group

Description

This command shows the configured SNMP groups.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show snmp group
```

Result

The configured SNMP groups are displayed.

7.4.1.6 show snmp group access

Description

This command shows the rights of the configured SNMP groups.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show snmp group access
```

Result

The rights of the configured SNMP groups are displayed.

7.4.1.7 show snmp inform statistics

Description

This command shows the statistics of the inform messages.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show snmp inform statistics
```

Result

The statistics of the inform messages are displayed.

7.4.1.8 show snmp notif

Description

With this command, you display the configured SNMP notification types.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show snmp notif
```

Result

The configured SNMP notification types are displayed.

7.4.1.9 show snmp targetaddr

Description

This command shows the configured SNMP target addresses.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show snmp targetaddr
```

Result

The configured SNMP target addresses are displayed.

7.4.1.10 show snmp targetparam

Description

This command shows the configured SNMP target parameters.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show snmp targetparam
```

Result

The configured SNMP target parameters are displayed.

7.4.1.11 show snmp tcp

Description

This command shows the configuration for SNMP via TCP.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show snmp tcp
```

Result

The configuration for SNMP via TCP is displayed.

7.4.1.12 show snmp user

Description

This command shows the settings for the SNMP user.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show snmp user
```

Result

The settings for the SNMP user are displayed.

7.4.1.13 show snmp viewtree

Description

This command shows the settings for the SNMP tree views.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show snmp viewtree
```

Result

The settings for the SNMP tree views are displayed.

7.4.2 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

7.4.2.1 snmpagent

Description

With this command, you enable the SNMP agent function.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
snmpagent
```

Result

The SNMP agent function is enabled.

Further notes

You disable the SNMP agent function with the`no snmpagent` command.

7.4.2.2 no snmpagent

Description

With this command, you disable the SNMP agent function.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no snmpagent
```

Result

The SNMP agent function is disabled.

Further notes

You enable the SNMP agent function with the `snmpagent` command.

7.4.2.3 snmp agent version

Description

With this command, you configure whether all SNMP queries or only SNMP V3 queries are processed.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
snmp agent version{v3only|all}
```

The parameters have the following meaning:

Parameter	Description
`v3only`	only SNMP V3 queries are processed
`all`	all SNMP queries are processed Default: `all`

Result

The setting is configured.

7.4.2.4 snmp access

Description

With this command, you configure the access to an SNMP group.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
snmp access <GroupName>{v1|v2c|v3{auth|noauth|priv}}
 [read <ReadView|none>][write <WriteView|none>][notify <NotifyView|
none>]
 [{volatile|nonvolatile}]
```

The parameters have the following meaning:

Parameter	Description	Range of values
`GroupName`	Name of the group to which access is configured	max. 32 characters
-	Selects the version of the protocol used	• `v1` • `v2c` • `v3`
-	Selects the authentication method:	• `auth` enables MD5 or SHA as authentication method • `noauth` no authentication • `priv` enables authentication and encryption
`read`	the data can be read Keyword	• `ReadView` • `none`
`write`	the data can be read and written Keyword	• `WriteView` • `none`
`notify`	Changes can be set as a tag Keyword	• `NotifyView` • `none`
-	specifies whether the settings remain following a restart	• `volatile` (volatile): The settings are lost after a restart • `nonvolatile` (non-volatile): The settings are retained after a restart

The keywords need to be specified.

If optional parameters are not specified when configuring a group, the following defaults apply:

Parameter	Default value
`read`	`none`
`write`	`none`

Parameter	Default value
`notify`	`none`
Storage type	`nonvolatile`

Result

The settings are configured.

Further notes

You delete the access to an SNMP group with the `no snmp access` command.

You display the configured SNMP groups with the `show snmp group` command.

You display the access configurations for SNMP groups with the `show snmp group access` command.

You display the configured SNMP tree views with the `show snmp viewtree` command.

7.4.2.5 no snmp access

Description

With this command, you delete the access to an SNMP group.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
snmp access <GroupName>{v1|v2c|v3{auth|noauth|priv}}
```

The parameters have the following meaning:

Parameters	Description	Values
`GroupName`	Name of the group to which access is deleted	max. 32 characters
-	Selects the version of the protocol used	• `v1` • `v2c` • `v3`
-	Selects the authentication method:	• `auth` • `noauth` • `priv`

Result

The access to an SNMP group is deleted.

Further notes

You configure the setting with the `snmp access` command.

You display the configured SNMP groups with the `show snmp group` command.

You display the access configurations for SNMP groups with the `show snmp group access` command.

You display the configured SNMP tree views with the `show snmp viewtree` command.

7.4.2.6 snmp community index

Description

With this command, you configure the details of an SNMP community.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
snmp community index <CommunityIndex> name <CommunityName>
   security <SecurityName> [context <Name>][{volatile|nonvolatile}]
```

The parameters have the following meaning:

Parameter	Description	Range of values
`CommunityIndex`	Index of the community	max. 32 characters
`name`	Keyword for the name of the community	-
`CommunityName`	Name of the community	max. 32 characters
`security`	Keyword for the security name	-
`SecurityName`	Security name	max. 32 characters
`context`	Keyword for the context name	-
`Name`	Context name	max. 32 characters
–	specifies whether the settings remain following a restart	• `volatile` (volatile): The settings are lost after a restart • `nonvolatile` (non-volatile): The settings are retained after a restart

If optional parameters are not specified when configuring a community, the following defaults apply:

Parameter	Default values
Storage type	`nonvolatile`

Result

The settings are configured.

Further notes

You delete the details of an SNMP community with the `no snmp community index` command.

You show the details of an SNMP community with the `show snmp community` command.

You show the status information of the SNMP communication with the `show snmp` command.

7.4.2.7 no snmp community index

Description

With this command, you delete the details of an SNMP community.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no snmp community index <CommunityIndex>
```

The parameters have the following meaning:

Parameter	Description	Range of values
`CommunityIndex`	Name of the community	max. 32 characters

Result

The details of an SNMP community are deleted.

Further notes

You configure the details of an SNMP community with the `snmp community index` command.

You show the details of an SNMP community with the `show snmp community` command.

You show the status information of the SNMP communication with the `show snmp` command.

7.4.2.8 snmp group

Description

With this command, you configure the details of an SNMP group.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
snmp group <GroupName> user <UserName>security-model{v1|v2c|v3}
   [{volatile|nonvolatile}]
```

The parameters have the following meaning:

Parameter	Description	Range of values
`GroupName`	Name of the group	max. 32 characters
`user`	Keyword for the user name	-
`UserName`	Name of the user	max. 32 characters

Parameter	Description	Range of values
`security-model`	specifies which security settings will be used	• `v1` • `v2c` • `v3`
-	specifies whether the settings remain following a restart	• `volatile` (volatile): The settings are lost after a restart • `nonvolatile` (non-volatile): The settings are retained after a restart

If optional parameters are not specified when configuring a group, the following defaults apply:

Parameter	Default value
Storage type	`nonvolatile`

Result

The details of the group are configured.

Further notes

You delete the details of an SNMP group with the `no snmp group` command.

You display the created SNMP groups with the `show snmp group` command.

You display the created SNMP user with the `show snmp user` command.

7.4.2.9 no snmp group

Description

With this command, you delete the details of an SNMP group.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no snmp group <GroupName> user <UserName>security-model{v1|v2c|v3}
```

The parameters have the following meaning:

Parameter	Description	Range of values
GroupName	Name of the group	max. 32 characters
user	Keyword for the user name	-
UserName	Name of the user	max. 32 characters
security-model	Specifies which security settings are used for sending	• v1 • v2c • v3

Result

The details of the group are deleted.

Further notes

You change the details of an SNMP group with the `snmp group` command.

You display the created SNMP groups with the `show snmp group` command.

You display the created SNMP user with the `show snmp user` command.

7.4.2.10 snmp notify

Description

With this command, you configure the details of the SNMP notifications.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
snmp notify <NotifyName> tag <TagName> type {Trap|Inform}
   [{volatile|nonvolatile}]]
```

The parameters have the following meaning:

Parameter	Description	Range of values
NotifyName	Name of the SNMP notification	max. 32 characters
tag	Keyword for a target key	-
TagName	Name of the target key	max. 32 characters

Parameter	Description	Range of values
`Type`	Type of the SNMP notification	• `Trap` generates a trap • `Inform` generates a log entry or sends an entry to the log server
-	specifies whether the settings remain following a restart:	• `volatile` (volatile): The settings are lost after a restart • `nonvolatile` (non-volatile): The settings are retained after a restart

Result

The details of the SNMP notifications are configured.

Further notes

You delete the details of an SNMP group with the `no snmp notify` command.

You display the configured SNMP notifications with the `show snmp notif` command.

You display the configured SNMP target addresses with the `show snmp targetaddr` command.

7.4.2.11 no snmp notify

Description

With this command, you delete the details of the SNMP notifications.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no snmp notify <NotifyName>
```

The parameters have the following meaning:

Parameters	Description	Range of values
`NotifyName`	Name of the notification	max. 32 characters

Result

The details of the SNMP notifications are deleted.

Further notes

You change the details of an SNMP group with the `snmp notify` command.

You display the configured SNMP notifications with the `show snmp notif` command.

You display the configured SNMP target addresses with the `show snmp targetaddr` command.

7.4.2.12 snmp targetaddr

Description

With this command, you configure the SNMP target addresses.

Requirement

- The SNMP target parameters are configured.

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
snmp targetaddr <TargetAddressName> param <ParamName>{ipv4 <ip
address> | fqdn-name <FQDN(100)>}
   [timeout <Seconds(1-1500)][retries <RetryCount(1-3)]
   [taglist <TagIdentifier|none>][{volatile|nonvolatile}]
   [port <integer(1-65535)>]
```

The parameters have the following meaning:

Parameter	Description	Range of values
`TargetAddressName`	Name of the target address	max. 32 characters
`param`	Keyword for the parameter name	-
`ParamName`	Name of the parameter	max. 32 characters
`ipv4`	Keyword for an IP address	-
`ip address`	Value for an IPv4 unicast address	Enter a valid IPv4 unicast address.
`fqdn-name`	Keyword for a domain name	-
`FQDN(100)`	Domain name (Fully Qualified Domain Name)	Maximum of 100 characters

Parameter	Description	Range of values
`timeout`	Keyword for the time the SNMP agent waits for a response before it repeats the inform request message	-
`Seconds`	Time in seconds	1 ... 1500
`retries`	Keyword for the maximum number of attempts to obtain a response to an inform request message	-
`RetryCount`	Number of attempts	1 ... 3
`taglist`	Keyword for	• `TagIdentifier` • `none`
`volatile` `nonvolatile`	Specifies whether the settings remain following a restart:	• `volatile`: The default settings are used after a restart. • `nonvolatile`: The saved settings are used after a restart.
`port`	Keyword for the port number at which the SNMP manager receives traps and inform messages	-
`integer`	Port number	1 ... 65535

For information on addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If optional parameters are not specified when configuring, the following defaults apply:

Parameter	Default value
`taglist`	snmp
Type of storage	`volatile`
`port`	162

Result

The SNMP target address is configured.

Further notes

You delete the SNMP target address with the `no snmp targetaddr` command.

You display the SNMP target address with the `show snmp targetaddr` command.

You configure the SNMP target parameters with the `snmp targetparams` command.

You display the SNMP target parameters with the `show snmp targetparam` command.

7.4.2.13 no snmp targetaddr

Description

With this command, you delete the SNMP target address.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
snmp targetaddr<TargetAddressName>
```

The parameters have the following meaning:

Parameters	Description	Range of values
`TargetAddressName`	SNMP target address	max. 32 characters

Result

The SNMP target address is deleted.

Further notes

You change the SNMP target address with the `snmp targetaddr` command.

You display the SNMP target address with the `show snmp targetaddr` command.

7.4.2.14 snmp targetparams

Description

With this command, you configure the SNMP target parameters.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
snmp targetparams <ParamName>
   user <UserName>
   security-model {v1|v2c|v3{auth|noauth|priv}}
   message-processing {v1|v2c|v3}[{volatile|nonvolatile}]
```

The parameters have the following meaning:

Parameter	Description	Range of values
`ParamName`	Name of the SNMP parameter	max. 32 characters
`user`	Keyword for the user name	-
`UserName`	Value for the user name	max. 32 characters
`security-model`	Specifies whether the security settings are used according to SNMP version 1, 2c or 3 Keyword	• `v1` • `v2c` • `v3`
	Authentication and encryption setting for v3	• `auth` • `noauth` • `priv`
`message-processing`	Specifies whether the processing of the messages is according to SNMP version 1, 2c or 3 Keyword	• `v1` • `v2c` • `v3`
	specifies whether the settings remain following a restart:	• `volatile` (volatile): The settings are lost after a restart • `nonvolatile` (non-volatile): The settings are retained after a restart

Keywords need to be specified.

If optional parameters are not specified when configuring, the following defaults apply:

Parameter	Default values
Storage type	`nonvolatile`

Result

The SNMP target parameters are configured.

Further notes

You delete the SNMP target parameters with the `no snmp targetparams` command.

You display settings of this function with the `show snmp targetparam` command.

You configure the user profile with the `snmp user` command.

You configure a filter with the `snmp filterprofile` command.

You display the list of users with the `show snmp user` command.

7.4.2.15 no snmp targetparams

Description

With this command, you delete the SNMP target parameters.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no snmp targetparams <ParamName>
```

The parameter has the following meaning:

Parameters	Description	Range of values
`ParamName`	Name of the SNMP parameter	max. 32 characters

Result

The SNMP target parameters are deleted.

Further notes

You change the SNMP target parameters with the `snmp targetparams` command.

You display settings of this function with the `show targetparam` command.

7.4.2.16 snmp v1-v2 readonly

Description

With this command, you block write access for SNMP V1 and V2 PDUs.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
snmp v1-v2 readonly
```

Result

Write access for SNMP V1 and V2 PDUs is blocked.

Further notes

You release write access for SNMP V1 and V2 PDUs with the `no snmp v1-v2 readonly` command.

7.4.2.17 no snmp v1-v2 readonly

Description

With this command, you release write access for SNMP V1 and V2 PDUs.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no snmp v1-v2 readonly
```

Result

Write access for SNMP V1 and V2 PDUs is released.

Further notes

You block write access for SNMP V1 and V2 PDUs with the `snmp v1-v2 readonly` command.

7.4.2.18 snmp user

Description

With this command, you configure the details of an SNMP user.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
snmp user <UserName>[auth{md5|sha} <passwd>[priv DES<passwd>]]
   [{volatile|nonvolatile}]
```

The parameters have the following meaning:

Parameter	Description	Range of values
`UserName`	Name of the user	max. 32 characters
`auth`	specifies that authentication takes place and which algorithm is used	• `md5` (Message Digest 5) • `sha` (Secure Hash Algorithm)
`passwd`	Password for authentication	max. 32 characters
`priv DES`	specifies that there is encryption	-
`passwd`	Value for the password of the encryption	max. 32 characters
–	specifies whether the settings remain following a restart:	• `volatile` (volatile): The default settings are used after a restart • `nonvolatile` (non-volatile): The saved settings are used after a restart

If optional parameters are not specified when configuring an SNMP user, the following defaults apply:

Parameter	Default value
Authentication	None
Encryption	None
Storage type	`nonvolatile`

Result

The details of the SNMP user are configured.

Further notes

You delete the settings with the `no snmp user` command.

You display the configured users with the `show snmp user` command.

7.4.2.19 no snmp user

Description

With this command, you delete the details of an SNMP user.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no snmp user <UserName>
```

The parameter has the following meaning:

Parameters	Description	Range of values
`UserName`	Name of the user	max. 32 characters

Result

The details of the SNMP user are deleted.

Further notes

You change the settings with the `snmp user` command.

You display the configured users with the `show snmp user` command.

7.4.2.20 snmp view

Description

With this command, you configure an SNMP view.

Requirement

- An SNMP group has been created
- The access to the group is configured with `snmp access`

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
snmp view <ViewName><OIDTree>[mask<OIDMask>]{included|excluded}
   [{volatile|nonvolatile}]
```

The parameters have the following meaning:

Parameter	Description	Range of values
`ViewName`	Name of the SNMP view	max. 32 characters
`OIDTree`	Object ID	Path information of the MIB tree
`mask`	Keyword for the OID mask	-
`OIDMask`	Mask that filters access to the elements of the MIB tree	A series of "`0`" and "`1`" separated by dots in keeping with the path information of the MIB tree
-	Specifies whether the filtered elements are used or excluded	• `included` • `excluded`
-	specifies whether the settings remain following a restart:	• `volatile` (volatile): The settings are lost after a restart • `nonvolatile` (non-volatile): The settings are retained after a restart

If optional parameters are not specified when configuring, the following defaults apply:

Parameter	Default value
`OIDMask`	None
View type	`included`
Storage type	`nonvolatile`

Result

The SNMP view is configured.

Further notes

You delete the view with the `no snmp view` command.

You display the configured view trees with the `show snmp viewtree` command.

You display the SNMP group access rights with the `show snmp group access` command.

You configure the SNMP group access rights with the `snmp access` command.

7.4.2.21 no snmp view

Description

With this command, you delete an SNMP view.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no snmp view <ViewName><OIDTree>
```

The parameters have the following meaning:

Parameters	Description	Range of values
`ViewName`	Name of the view	max. 32 characters
`OIDTree`	Object ID	Path information of the MIB tree

Result

The SNMP view is deleted.

Further notes

You configure a view with the `snmp view` command.

7.5 SMTP client

This section describes commands of the Simple Mail Transfer Protocol (SMTP).

7.5.1 show events smtp-server

Description

This command shows the configured e-mail servers.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show events smtp-server
```

Result

The configured e-mail servers are displayed.

7.5.2 show events sender email

Description

This command shows the configured e-mail sender address.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show events sender email
```

Result

The configured e-mail sender address is displayed.

7.5.3 show events smtp-port

Description

This command shows the configured SNMP port.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show events smtp port
```

Result

The configured SMTP port is displayed.

7.5.4 Commands in the Events configuration mode

This section describes commands that you can call up in the EVENTS configuration mode.

In the Global configuration mode, enter the `events` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

- If you exit the EVENTS configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the EVENTS configuration mode with the `end` command, you return to the Privileged EXEC mode.

7.5.4.1 smtp-server

Description

With this command, you configure an entry for an SMTP server.

Requirement

You are in the EVENTS configuration mode.

The command prompt is as follows:

```
cli(config-events)#
```

Syntax

Call up the command with the following parameters:

```
smtp-server {ipv4 <ucast_addr> | fqdn-name <FQDN(100)>} <receiver
mail-address>
```

The parameters have the following meaning:

Parameter	Description	Range of values
`ipv4`	Keyword for an IP address	-
`ucast_addr`	Value for an IPv4 unicast address	Enter a valid IPv4 unicast address.
`fqdn-name`	Keyword for a domain name	-
`FQDN(100)`	Domain name (Fully Qualified Domain Name)	Maximum of 100 characters
`receiver mail-address`	Name of the recipient	max. 100 characters

For information on addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

An entry for the SMTP server is configured.

Further notes

You delete an SMTP server entry with the `no smtp-server` command.

7.5.4.2 no smtp-server

Description

With this command, you delete an SMTP server entry.

Requirement

You are in the EVENTS configuration mode.

The command prompt is as follows:

```
cli(config-events)#
```

Syntax

Call up the command with the following parameters:

```
no smtp-server {ipv4 <ucast_addr> | fqdn-name <FQDN(100)>}
```

The parameters have the following meaning:

Parameter	Description	Range of values
`ipv4`	Keyword for an IP address	-
`ucast_addr`	Value for an IPv4 unicast address	Enter a valid IPv4 unicast address.
`fqdn-name`	Keyword for a domain name	-
`FQDN(100)`	Domain name (Fully Qualified Domain Name)	Maximum of 100 characters

For information on addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The SMTP server entry is deleted.

Further notes

You configure an SMTP server entry with the `smtp-server` command.

7.5.4.3 sender mail-address

Description

With this command, you configure the e-mail name of the sender.

Requirement

You are in the EVENTS Configuration mode.

The command prompt is as follows:

```
cli(config-events)#
```

Syntax

Call up the command with the following parameters:

```
sender mail-address <mail-address>
```

The parameter has the following meaning:

Parameters	Description	Range of values
`mail-address`	E-mail name of the sender	max. 100 characters

Result

The e-mail name of the sender is configured.

Further notes

You reset the e-mail name of the sender with the `no sender mail-address`.

You display the setting with the `show events sender email` command.

7.5.4.4 no sender mail-address

Description

With this command, you reset the e-mail name of the sender.

Requirement

You are in the EVENTS configuration mode.

The command prompt is as follows:

```
cli(config-events)#
```

Syntax

Call the command without parameters:

```
no sender mail-address
```

Result

The e-mail name of the sender is reset.

Further notes

You configure the e-mail name of the sender with the `sender mail-address`.

You display the setting with the `show events sender email` command.

7.5.4.5 send test mail

Description

With this command, you send an e-mail according to the currently configured SMTP settings.

Requirement

You are in the EVENTS configuration mode.

The command prompt is as follows:

```
cli(config-events)#
```

Syntax

Call the command without parameters:

```
send test mail
```

Result

An e-mail according to the currently configured SMTP settings is sent.

Further notes

You can display the current SMTP settings with the `show events emailserver` command.

7.5.4.6 smtp-port

Description

With this command, you configure an SMTP port.

Requirement

You are in the EVENTS Configuration mode.

The command prompt is as follows:

```
cli(config-events)#
```

Syntax

Call up the command with the following parameters:

```
smtp-port <smtp-port(1-65535)>
```

The parameter has the following meaning:

Parameter	Description	Range of values
`smtp-port`	Value for the SMTP port	1 ... 65535 Default: 25

Result

An SMTP port is configured.

Further notes

You can reset the setting to the default with the `no smtp-port` command.

7.5.4.7 no smtp-port

Description

With this command, you reset the SMTP port to the default.

The default value is 25.

Requirement

You are in the EVENTS configuration mode.

The command prompt is as follows:

```
cli(config-events)#
```

Syntax

Call the command without parameters:

```
no smtp-port
```

Result

The SMTP port is reset to the default value.

Further notes

You configure the setting with the `smtp-port` command.

You display the setting with the `show smtp-port` command.

7.6 HTTP server

This section describes commands of the Hypertext Transfer Protocol (HTTP).

7.6.1 show ip http server status

Description

This command shows the status of the HTTP server.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show ip http server status
```

Result

The status of the HTTP server is displayed.

7.6.2 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

7.6.2.1 ip http

Description

With this command, you enable HTTP on the device.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
ip http
```

As default the function is "enabled".

Result

HTTP is enabled on the device.

Further notes

You can display the setting of this function and other information with the `show ip http server status`command.

You deactivate HTTP on the device with the `no ip http` command.

7.6.2.2 no ip http

Description

With this command, you disable HTTP on the device.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no ip http
```

As default the function is "enabled".

Result

HTTP is disabled on the device.

Further notes

You can display the setting of this function and other information with the `show ip http server status`command.

You enable HTTP with the `ip http` command.

7.7 HTTPS server

This section describes commands of the Hypertext Transfer Protocol Secure (HTTPS).

7.7.1 show ip http secure server status

Description

This command shows the status of the HTTP secure server.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show ip http secure server status
```

Result

The status, cipher suite and version of the HTTP secure server is displayed.

7.7.2 show ssl server-cert

Description

This command shows the SSL server certificate.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show ssl server-cert
```

Result

The SSL server certificate is displayed.

7.8 ARP

This section describes commands of the Address Resolution Protocol (ARP).

7.8.1 show ip arp

Description

With this command, you display the IP ARP table.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show ip arp [{Vlan<vlan-id(1-4094)>|<interface-type><interface-id>|
             <ip-address>|<mac-address>|summary|information}]
```

The parameters have the following meaning:

Parameters	Description	Range of values
`Vlan`	Keyword for a VLAN connection	-
`vlan-id`	Number of the addressed VLAN	1 ... 4094
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name
`ip-address`	Shows the IP addresses of the entries in the ARP table	-
`mac-address`	Shows the MAC addresses of the entries in the ARP table	-
`summary`	Shows a summary of the entries in the ARP table	-
`information`	Displays information on the ARP configuration	-

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you do not select any parameter from the parameter list, the IP ARP table is displayed.

Result

The IP ARP table is displayed.

7.8.2 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

7.8.2.1 arp

Description

With this command, you generate a static entry in the ARP cache.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
arp <ip address> <hardware address> {Vlan <vlan-id(1-4094)> |
<interface-type> <interface-id> | Cpu0}
```

The parameters have the following meaning:

Parameters	Description	Range of values
`ip address`	Value for the IP address to be linked to a device (physical address)	IP address or IP alias
`hardware address`	Physical address that will be linked with the IP address	MAC address of the device
`Vlan`	Keyword for a VLAN connection	-
`vlan-id`	Number of the VLAN	1 ... 4094
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`

Parameters	Description	Range of values
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name
`Cpu0`	The interface is configured as "Out-of-band management interface"	-

For information on addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The entry is generated in the ARP cache.

Further notes

You delete a static entry from the ARP cache with the `no arp` command.

You can display the status of this function and other information with the `show ip arp`command.

You configure the router port with the `no switchport` command.

7.8.2.2 no arp

Description

With this command, you delete an entry from the ARP cache.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no arp <ip address>
```

The parameter has the following meaning:

Parameters	Description	Range of values
`ip address`	Value of the IP address whose entry will be deleted	IP address or IP alias

For information on addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The entry is deleted.

Further notes

You generate a static entry in the ARP cache with the `arp` command.

You can display the status of this function and other information with the `show ip arp`command.

You configure the router port with the `no switchport` command.

7.8.2.3 arp timeout

Description

With this command, you configure the timeout setting of the ARP cache.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
arp timeout <seconds(30-86400)>
```

The parameter has the following meaning:

Parameter	Description	Range of values
`seconds`	Value for the timeout in seconds	30 ... 86400 Default: 300

Result

The setting for the timeout setting of the ARP cache is configured.

Further notes

You can reset the timeout setting to the default with the `no arp timeout` command.

You can display the status of this function and other information with the `show ip arp` command.

7.8.2.4 no arp timeout

Description

With this command, you reset the timeout setting of the ARP cache back to the default value.

The default value for the timeout setting is 300 seconds.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no arp timeout
```

Result

The timeout setting for the ARP cache is reset to the default value.

Further notes

You change the timeout setting with the `arp timeout` command.

You can display the status of this function and other information with the `show ip arp`command.

7.9 SSH server

This section describes commands of the Secure Shell (SSH) Server.

7.9.1 show ip ssh

Description

This command shows the settings of the SSH server.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show ip ssh
```

Result

The settings for the SSH server are displayed.

7.9.2 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

7.9.2.1 ssh-server

Description

With this command, you enable the SSH protocol on the device.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
ssh-server
```

As default the function is "enabled".

Result

The SSH protocol is enabled on the device.

Further notes

You disable the SSH protocol with the `no ssh-server` command.

7.9.2.2 no ssh-server

Description

With this command, you disable the SSH protocol on the device.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no ssh-server
```

Result

The SSH protocol is disabled on the device.

Further notes

You enable the SSH protocol with the `ssh-server` command.

Layer 2 management protocols

8

In this part, you will find sections relating to the topics GARP, GMRP, GVRP, IGMP snooping and IGMP querying.

8.1 GARP

This section describes commands of the following protocols:

- GARP - Generic Attribute Registration Protocol
- GMRP - GARP Multicast Registration Protocol
- GVRP - GARP VLAN Registration Protocol

8.1.1 show forward-all

Description

With this command, you display the entries of the GMRP forward all table.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show forward-all
```

Result

The entries of the GMRP forward all table are displayed.

8.1.2 show forward-unregistered

Description

With this command, you display the entries of the GMRP forward unregistered all table.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show forward-unregistered
```

Result

The entries of the GMRP forward unregistered table are displayed.

8.1.3 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

8.1.3.1 gmrp

Description

With this command, you enable the GMRP function for all interfaces on the device.

Requirement

You are in the Global Configuration mode

or

You are in the Interface Configuration mode

The command prompt is as follows:

```
cli(config)#
```

```
cli (config-if-$$$) #
```

Syntax

Call the command without parameters:

```
gmrp
```

Result

In the Global Configuration mode: The GMRP function is enabled on the device.

In the Interface Configuration mode: The GMRP function is enabled for this interface.

Further notes

You need to enable GMRP globally for this device before you enable GMRP for individual interfaces.

If you want to enable or disable the function for a specific interface on the device, use the `no gmrp` command in the Interface Configuration mode.

You can display the status of this function and other information with the `show vlan device info` command.

8.1.3.2 no gmrp

Description

With this command, you disable the GMRP function for all interfaces on the device.

Requirement

You are in the Global Configuration mode

or

You are in the Interface Configuration mode

The command prompt is as follows:

```
cli(config)#
cli (config-if-$$$) #
```

Syntax

Call the command without parameters:

```
no gmrp
```

Result

In the Global Configuration mode: The GMRP function is disabled on the device.

In the Interface Configuration mode: The GMRP function is disabled for this interface.

Further notes

If you want to enable the function for a specific interface on the device, use the `gmrp` command.

You can display the status of this function and other information with the `show vlan device info` command.

8.1.3.3 gvrp

Description

With this command, you enable or disable the GVRP function for all or for individual interfaces on the device.

Requirement

You are in the Global Configuration mode

or

You are in the Interface Configuration mode

The command prompt is as follows:

```
cli(config)#
cli (config-if-$$$) #
```

Syntax

Call the command without parameters:

```
gvrp
```

Result

In the Global Configuration mode: The GVRP function is enabled on the device.

In the Interface Configuration mode: The GVRP function is enabled for this interface.

Further notes

If you have enabled the GARP module, you start GVRP explicitly with this command.

If you want to disable the function for a specific interface on the device, use the `no gvrp` command.

You can display the status of this function and other information with the `show vlan device info` command.

8.1.3.4 no gvrp

Description

With this command, you enable or disable the GVRP function for all or for individual interfaces on the device.

Requirement

You are in the Global Configuration mode

or

You are in the Interface Configuration mode

The command prompt is as follows:

```
cli(config)#
cli (config-if-$$$) #
```

Syntax

Call the command without parameters:

```
no gvrp
```

Result

In the Global Configuration mode: The GVRP function is disabled on the device.

In the Interface Configuration mode: The GVRP function is disabled for this interface.

Further notes

If you want to enable the function for a specific interface on the device, use the `gvrp` command.

You can display the status of this function and other information with the `show vlan device info` command.

8.2 IGMP snooping

This section describes the snooping functionality of the Internet Group Management Protocol.

8.2.1 show ip igmp snooping

Description

This command shows information about IGMP snooping for all or a selected VLAN.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode or in the Global Configuration mode.

The command prompt is as follows:

`cli>` or `cli#` or `cli(config)#`

Syntax

Call up the command with the following parameters:

```
show ip igmp snooping [Vlan<vlan id]
```

The parameters have the following meaning:

Parameters	Description	Range of values
`Vlan`	Keyword for a VLAN connection	-
`vlan id`	Number of the addressed VLAN	1 ... 4094

Result

The information is displayed.

8.2.2 show ip igmp snooping forwarding-database

Description

This command shows the Multicast forwarding entries for all or a selected VLAN.

Requirement

- IGMP snooping is enabled on the device

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show ip igmp snooping forwarding-database [Vlan<vlan id>]
```

The parameters have the following meaning:

Parameters	Description	Range of values
`Vlan`	Keyword for a VLAN connection	-
`vlan id`	Number of the addressed VLAN	1 ... 4094

Result

The multicast forwarding entries are displayed.

8.2.3 show ip igmp snooping statistics

Description

This command shows the statistical information about IGMP snooping for all or a selected VLAN.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show ip igmp snooping statistics [Vlan<vlan id>]
```

The parameters have the following meaning:

Parameters	Description	Range of values
`Vlan`	Keyword for a VLAN connection	-
`vlan id`	Number of the addressed VLAN	1 ... 4094

Result

The information is displayed.

8.2.4 show ip igmp snooping switch-ip

Description

This command shows the IP address of the source for IGMP snooping.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show ip igmp snooping switch-ip
```

Result

The IP address is displayed.

8.2.5 Commands in the global configuration mode

8.2.5.1 ip igmp snooping version

Description

This command specifies which version of IGMP the device will use. When shipped, the device uses IGMPv3.

Note

There is no separate show command to display the version of IGMP used by the device. This information is shown when you enter the `show ip igmp snooping` command in the User EXEC mode or in the Privileged EXEC mode.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
ip igmp snooping version {v1 | v2 | v3}
```

The parameters have the following meaning:

Parameter	Description
`v1`	IGMPv1
`v2`	IGMPv2
`v2`	IGMPv3

Result

The version of IGMP used by the device is specified.

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

8.2.5.2 ip igmp vlan-snooping

Description

With this command, you enable IGMP snooping for all VLANs.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
ip igmp vlan-snooping
```

Result

IGMP snooping is enabled for all VLANs.

Further notes

You disable IGMP snooping with the `no ip igmp vlan-snooping` command.

8.2.5.3 no ip igmp vlan-snooping

Description

With this command, you disable IGMP snooping for all VLANs.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no ip igmp vlan-snooping
```

Result

IGMP snooping is disabled for all VLANs.

Further notes

You enable IGMP snooping with the `ip igmp vlan-snooping` command.

8.2.5.4 ip igmp snooping clear counters

Description

With this command, you delete the counters for all or a selected VLAN.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
ip igmp snooping clear counters [Vlan<vlan id>]
```

The parameters have the following meaning:

Parameters	Description	Range of values
`vlan`	Shows that the number of a VLAN follows	-
`vlan id`	Number of the addressed VLAN	1 ... 4094

If you do not select a VLAN, the counters of all VLANs will be deleted.

Result

The counters are deleted.

8.2.5.5 ip igmp snooping switch-ip

Description

With this command, you configure the IP address of the source for IGMP snooping.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
ip igmp snooping switch-ip<switch-ipaddr>
```

The parameter has the following meaning:

Parameters	Description	Range of values
`switch-ipaddr`	Address of the source	Enter a valid IP address

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The IP address is configured.

8.2.5.6 ip igmp snooping port-purge-interval

Description

The time after which a port is deleted from the list if no IGMP router control packets are received is known as the purge time.

With this command, you configure this purge time for a port for a VLAN in seconds.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
ip igmp snooping port-purge-interval <(130-1225)seconds>
```

The parameters have the following meaning:

Parameter	Description	Range of values
-	Value for the purge time in seconds	130 ... 1225 Default: 260

Result

The purge time is configured.

Further notes

You can reset the setting to the default with the `no ip igmp snooping port-purge-interval` command.

You can display the status of this function and other information with the `show ip igmp snooping globals` command.

8.2.5.7 no ip igmp snooping port-purge-interval

Description

With this command, you reset the setting for the purge time to the default value.

The default value is 260 seconds.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no ip igmp snooping port-purge-interval
```

Result

The purge time is reset to the default value.

Further notes

You configure the setting with the `ip igmp snooping port-purge-interval` command.

You can display the status of this function and other information with the `show ip igmp snooping globals`command.

8.3 IGMP querier

This section describes the commands for the query functionality of the Internet Group Management Protocol (IGMP).

8.3.1 Commands in the Global Configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

8.3.1.1 ip igmp snooping querier

Description

With this command, you configure the IGMP snooping switch as querier.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
ip igmp snooping querier
```

As default the function is "disabled".

Result

The IGMP snooping switch is configured as querier.

Further notes

You delete the setting with the `no ip igmp snooping querier` command.

You can display the status of this function and other information with the `show ip igmp snooping` command.

8.3.1.2 no ip igmp snooping querier

Description

With this command, you delete the configuration of an IGMP snooping switch as querier.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no ip igmp snooping querier
```

Result

The configuration of the IGMP snooping switch as querier is deleted.

Further notes

You configure the setting with the `ip igmp snooping querier` command.

You can display the status of this function and other information with the `show ip igmp snooping`command.

8.4 Ring redundancy and standby connection

The ring redundancy function allows several devices to be interconnected in a ring structure. Since such a topology is not supported in normal network operation, such rings are logically disconnected using the Media Redundancy Protocol (MRP) or the High Speed Redundancy Protocol (HRP). If one component fails, all other elements of the ring can still be reached.

The device that logically disconnects the ring is known as the Redundancy Manager (RM).

The simple structure of the individual MRP rings allows shorter reaction times if disruptions occur.

Complex network topologies cannot be set up with this function.

This means that two rings can be connected redundantly in each case via two links (master, slave). This function is known as the standby connection.

One link is active on an interface of the master device and the second is inactive on an interface of the slave device.

Note

Position of master and slave device

The master and slave device of a standby connection (link pair between different structures of the ring redundancy) must be located in the same ring.

This section describes commands of the ring redundancy function.

Note

Avoiding bad configurations

When using the commands in this section, you should take particular care because a bad configuration of this function can have serious negative affects on the network.

8.4.1 clear hrp counters

Description

With this command, you reset the HRP counters.

Requirement

You are in the Privileged EXEC mode.

The command prompt is as follows:

```
cli#
```

Syntax

Call the command without parameters:

```
clear hrp counters
```

Result

The counters are reset.

8.4.2 clear standby counter

Description

With this command, you reset the counters of the standby function.

Requirement

You are in the Privileged EXEC mode.

The command prompt is as follows:

```
cli#
```

Syntax

Call the command without parameters:

```
clear standby counter
```

Result

The counter is reset.

8.4.3 show hrp counters

Description

This command shows the counters of the ring redundancy function.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show hrp counters
```

Result

The counters are displayed.

8.4.4 show ring-redundancy

Description

With this command, you show the current configuration of the ring redundancy function.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show ring-redundancy
```

Result

The current Ring redundancy configuration is displayed.

8.4.5 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

8.4.5.1 ring-redundancy configuration

Description

With this command, you change to the Redundancy Configuration mode.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
ring-redundancy configuration
```

Result

You are now in the Redundancy Configuration mode.

The command prompt is as follows:

```
cli(config-red)#
```

Further notes

You exit the Redundancy Configuration mode with the `end` or `exit` command.

8.4.5.2 ring-redundancy mode

Description

With this command, you enable the ring redundancy function on a device.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
ring-redundancy mode {ard | mrpauto | mrpclient | hrpclient |
hrpmanager}
```

The parameters have the following meaning:

Parameter	Description
`hrpclient`	Enables ring redundancy with the HRP protocol as client
`hrpmanager`	Enables ring redundancy with the HRP protocol in ring redundancy manager mode
`mrpclient`	Enables ring redundancy with the MRP protocol as client
`mrpauto`	Enables the automatic MRP redundancy mode
`ard`	Enables the automatic redundancy mode (Automatic Redundancy Detection)

Result

The ring redundancy function is enabled and the redundancy mode is selected.

Further notes

You disable the ring redundancy function with the `no ring-redundancy` command.

8.4.5.3 no ring-redundancy

Description

With this command, you disable the ring redundancy function on a device.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no ring-redundancy
```

Result

The ring redundancy function is disabled.

Further notes

You enable the ring redundancy function with the `ring-redundancy mode { ard | mrpauto | mrpclient | hrpclient | hrpmanager }`. command

8.4.5.4 ring-redundancy standby

Description

With this command, you enable the standby function.

Requirement

- HRPis activated

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
ring-redundancy standby
```

Result

The standby function is enabled / disabled.

Further notes

You disable the setting with the `no ring-redundancy standby` command.

You can display the status of this function and other information with the `show ring-redundancy`command.

8.4.5.5 no ring-redundancy standby

Description

With this command, you disable the standby function.

Requirement

- HRPis activated

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no ring-redundancy standby
```

Result

The standby function is disabled.

Further notes

You enable the setting with the `ring-redundancy standby` command.

You can display the status of this function and other information with the `show ring-redundancy`command.

8.4.6 Commands in the redundancy configuration mode

This section describes commands that you can call up in the Redundancy Configuration mode.

In the Global Configuration mode, enter the `ring-redundancy configuration` command to change to this mode.

- If you exit the Redundancy Configuration mode with the `exit` command, you return to the Global Configuration mode.
- If you exit the Redundancy Configuration mode with the `end` command, you return to the Privileged EXEC mode.

8.4.6.1 ring ports

Description

With this command, you configure the ports of the ring redundancy manager / client on the device.

- **Redundancy manager**
  - In the normal status, the network structure is operated via the first port
    The second port is only used for monitoring by the redundancy manager
  - If there is a disruption, the two parts of ring structure operate via both ports
- **Redundancy client**
  - The client forwards all frames.

Requirement

You are in the Redundancy Configuration mode.

The command prompt is as follows:

```
cli(config-red)#
```

Syntax

Call up the command with the following parameters:

```
ring ports <iftype1><ifnum1><iftype2><ifnum2>
```

The parameters have the following meaning:

Parameter	Description
`iftype1`	Specifies the interface type for the first ring port
`ifnum1`	Specifies the number of the interface for the first ring port
`iftype2`	Specifies the interface type for the second ring port
`ifnum2`	Specifies the number of the interface for the second ring port

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Note
Differing port addresses

The first and second port must be configured on different interfaces

Result

The ports of the ring redundancy are configured.

8.4.6.2 standby connection-name

Description

With this command, you assign a name to the standby connection on the device.

Requirement

You are in the Redundancy Configuration mode.

The command prompt is as follows:

```
cli(config-red)#
```

Syntax

Call up the command with the following parameters:

```
standby connection-name <string(32)>
```

The parameter has the following meaning:

Parameter	Description	Note
<string(32)>	Name of the connection	max. 32 characters

Result

The standby connection is assigned a name.

8.4.6.3 no standby connection-name

Description

With this command, you delete the name of a standby connection.

Requirement

You are in the Redundancy Configuration mode.

The command prompt is as follows:

```
cli(config-red)#
```

Syntax

Call the command without parameters:

```
no standby connection-name
```

Result

The name of the standby connection is deleted.

8.4.6.4 standby force-master

Description

With this command, you enable the standby force-master function.

Requirement

- HRPis activated

You are in the Ring Redundancy Configuration mode.

The command prompt is as follows:

```
cli(config-red)#
```

Syntax

Call the command without parameters:

```
standby force-master
```

Result

The standby force-master function is enabled.

Further notes

You disable the setting with the `no standby force-master` command.

You can display the status of this function and other information with the `show ring-redundancy`command.

8.4.6.5 no standby force-master

Description

With this command, you disable the standby force-master function.

Requirement

- HRPis activated

You are in the Ring Redundancy Configuration mode.

The command prompt is as follows:

```
cli(config-red)#
```

Syntax

Call the command without parameters:

```
no standby force-master
```

Result

The standby force-master function is disabled.

Further notes

You enable the setting with the `standby force-master` command.

You can display the status of this function and other information with the `show ring-redundancy`command.

8.4.6.6 standby port

Description

With this command, you configure and enable the port for a standby connection on a device.

Requirement

You are in the Redundancy Configuration mode.

The command prompt is as follows:

```
cli(config-red)#
```

Syntax

Call up the command with the following parameters:

```
standby port {<iftype> <ifnum>}
```

The parameters have the following meaning:

Parameter	Description	Range of values
`<iftype>`	Type of interface	• `gigabitethernet` • `extreme-ethernet`
`<ifnum>`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The ports for a standby connection are configured and enabled.

Further notes

You disable the setting with the `no standby port {<iftype> <ifnum>}` command.

You display the status of this function and other information `show ring-redundancy`.

8.4.6.7 no standby port

Description

With this command, disable the port for a standby connection on a device.

Requirement

You are in the Redundancy Configuration mode.

The command prompt is as follows:

```
cli(config-red)#
```

Syntax

Call up the command with the following parameters:

```
no standby port {<iftype> <ifnum>}
```

The parameters have the following meaning:

Parameter	Description	Range of values
`<iftype>`	Type of interface	• `gigabitethernet` • `extreme-ethernet`
`<ifnum>`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The ports for a standby connection are disabled.

Further notes

You enable the setting with the `standby port {<iftype> <ifnum>}` command.

You display the status of this function and other information `show ring-redundancy`.

8.4.6.8 standby wait-for-partner

Description

With this command, you enable the "Wait for standby partner" function on the device. A standby connection is enabled only after the standby master and the standby slave as well as their standby partners have established a connection. This ensures that the redundant connection is really available before communication via a standby connection is enabled. As default, this function is enabled.

Requirement

You are in the Redundancy configuration mode.

The command prompt is as follows:

```
cli(config-red)#
```

Syntax

Call the command without parameters:

```
standby wait-for-partner
```

Result

The "Wait for standby partner" function is enabled.

8.4.6.9 no standby wait-for-partner

Description

With this command, you disable the "Wait for standby partner" function on the device. A standby connection is enabled even if the standby master has not yet established a connection to the standby slave.

Requirement

You are in the Redundancy configuration mode.

The command prompt is as follows:

```
cli(config-red)#
```

Syntax

Call the command without parameters:

```
no standby wait-for-partner
```

Result

The "Wait for standby partner" function is disabled.

8.5 Unicast

The commands in this section configure the procedures for handling Unicast frames.

The commands allow the following:

- Filtering of Unicast frames
- Blocking of ports
- Automatic learning of Unicast
- Blocking unknown Unicast frames.

With the "show" commands, you can display the configuration data.

8.5.1 show unicast-block config

Description

This command shows the unicast blocking settings for ports.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show unicast-block config [port<interface-type><interface-id)>]
```

The parameters have the following meaning:

Parameters	Description	Range of values
`port`	Keyword for a port description	-
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The unicast blocking settings for ports are displayed.

8.5.2 show mac-address-table dynamic unicast

Description

This command shows the MAC addresses of the dynamic unicast configurations.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show mac-address-table dynamic unicast [vlan <vlan-range>] [address
<aa:bb:cc:dd:ee:ff>] [{interface <interface-type> <interface-id>}]
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`vlan`	Keyword for a VLAN	-
`vlan-range`	Keyword for several VLANs	1 ... 4094
`address`	Keyword for a MAC address	-
-	MAC address	aa:bb:cc:dd:ee:ff
`interface`	Keyword for a an interface description	-
`interface-type`	Type of interface	gigabitethernet extreme-ethernet
`interface-id`	Slot no. and port no. of the interface	# digit /digit# Slot: 0 ... 6 or 12 Port: 1 ... 4

If you do not select any parameters from the parameter list, the default value is used.

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The table is displayed.

8.5.3 show mac-address-table static unicast

Description

This command shows the MAC addresses of the static unicast configurations.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show mac-address-table static unicast [vlan <vlan-range>] [address
<aa:bb:cc:dd:ee:ff>] [{interface <interface-type> <interface-id>}]
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`vlan`	Keyword for a VLAN	-
`vlan-range`	Keyword for several VLANs	1 ... 4094
`address`	Keyword for a MAC address	-
-	MAC address	aa:bb:cc:dd:ee:ff
`interface`	Keyword for a an interface description	-
`interface-type`	Type of interface	gigabitethernet extreme-ethernet
`interface-id`	Slot no. and port no. of the interface	# digit /digit# Slot: 0 ... 6 or 12 Port: 1 ... 4

If you do not select any parameters from the parameter list, the default value is used.

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The table is displayed.

8.5.4 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

8.5.4.1 no mac-address-table static unicast

Description

With this command, you disable static unicast.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no mac-address-table static unicast <aa:aa:aa:aa:aa:aa> vlan <vlan-id(1-4094)>
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`vlan`	Keyword for a VLAN	-
`vlan-range`	Range of values of the VLAN	1 ... 4094
`address`	Keyword for a MAC address	-
-	MAC address	aa:aa:aa:aa:aa:aa
`interface`	Keyword for a an interface description	-
`interface-type`	Type or speed of the interface	gigabitethernet extreme-ethernet
`interface-id`	Slot no. and port no. of the interface	# digit /digit# Slot: 0 ... 6 or 12 Port: 1 ... 4

If you do not select any parameters from the parameter list, the default value is used.

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The static unicast function is disabled.

Further notes

You activate the setting with the `no mac-address-table static unicast` command.

8.6 Multicast

The commands in this section configure the procedures for handling Multicast frames.

The commands allow the following:

- Configuration of groups
- IGMP
- GMRP
- Blocking unknown Multicast frames.

With the "show" commands, you can display the configuration data.

8.6.1 show multicast-block config

Description

This command shows the multicast blocking settings for ports.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show multicast-block config[port<interface-type><interface-id)>]
```

The parameters have the following meaning:

Parameter	Description	Range of values
`port`	Keyword for a port description	-
`interface-type`	Type of interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If no parameters are specified, the settings for all ports are displayed.

Result

The multicast blocking settings for ports are displayed.

8.6.2 show mac-address-table dynamic multicast

Description

This command shows the MAC addresses of the dynamic multicast configurations.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show mac-address-table dynamic multicast [vlan <vlan-range>]
[address <aa:bb:cc:dd:ee:ff>] [{interface <interface-type>
<interface-id>}]
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`vlan`	Keyword for a VLAN	-
`vlan-range`	Keyword for several VLANs	1 ... 4094
`address`	Keyword for a MAC address	-
-	MAC address	`aa:bb:cc:dd:ee:ff`
`interface`	Keyword for a an interface description	-
`interface-type`	Type of interface	gigabitethernet extreme-ethernet
`interface-id`	Slot no. and port no. of the interface	# digit /digit# Slot: 0 ... 6 or 12 Port: 1 ... 4

If you do not select any parameters from the parameter list, the default value is used.

For information on names of addresses and interfaces, refer to the section "Auto-Hotspot".

Result

The table is displayed.

8.6.3 show mac-address-table static multicast

Description

This command shows the MAC addresses of the static multicast configurations.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show mac-address-table static multicast [vlan <vlan-range>] [address
<aa:bb:cc:dd:ee:ff>] [{interface <interface-type> <interface-id>}]
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`vlan`	Keyword for a VLAN	-
`vlan-range`	Range of values of the VLAN	1 ... 4094
`address`	Keyword for a MAC address	-
-	MAC address	`aa:bb:cc:dd:ee:ff`
`interface`	Keyword for a an interface description	-
`interface-type`	Type of interface	gigabitethernet extreme-ethernet
`interface-id`	Slot no. and port no. of the interface	# digit /digit# Slot: 0 ... 6 or 12 Port: 1 ... 4

If you do not select any parameters from the parameter list, the default value is used.

For information on names of addresses and interfaces, refer to the section "Auto-Hotspot".

Result

The table is displayed.

See also

Addresses and interface names (Page 32)

8.6.4 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

8.6.4.1 mac-address-table block static multicast

Description

With this command, you configure static multicast addresses that will be blocked.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
mac-address-table block static multicast <aa:bb:cc:dd:ee:ff>  vlan
<vlan-id(1-4094)>
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`vlan`	Keyword for a VLAN	-
`vlan-id`	Number of the VLAN	1 ... 4094
`address`	Keyword for a MAC address	-
-	MAC address	`aa:bb:cc:dd:ee:ff`

If you do not select any parameters from the parameter list, the default value is used.

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The settings for static multicast blocking are configured.

Further notes

You enable / disable the setting with the `no mac-address-table static multicast <mac address> <vlan-id(1-4094)>` command.

8.6.4.2 mac-address-table static multicast

Description

With this command, you configure a static multicast address.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
mac-address-table static  multicast <aa:bb:cc:dd:ee:ff> vlan <vlan-id(1-4094)>
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`vlan`	Keyword for a VLAN	1 ... 4094
`address`	Keyword for a MAC address	-
-	MAC address	aa:bb:cc:dd:ee:ff

If you do not select any parameters from the parameter list, the default value is used.

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The settings for static multicast are configured.

Further notes

You disable the setting with the `no mac-address static multicast <mac-address><vlan-id(1-4094)>` command.

8.6.4.3 no mac-address-table static multicast

Description

With this command, you delete a static multicast address.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no mac-address-table static multicast <aa:bb:cc:dd:ee:ff> vlan <vlan-
id(1-4094)>
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`vlan`	Keyword for a VLAN	1 ... 4094
`address`	Keyword for a MAC address	-
-	MAC address	aa:bb:cc:dd:ee:ff

If you do not select any parameters from the parameter list, the default value is used.

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The static multicast function is disabled.

Layer 3 functions

9

This part contains the sections that describe the following:

- OSPF v2
- RIPv2
- VRRP

The layer 3 functions describe the routing properties of the device. These are not normally included in the basic device and if necessary must be enabled or released extra.

9.1 show ip route

Description

This command shows the routing table.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show ip route [{<ip-address> [<mask>] | connected | ospf | rip |
static | summary }]
```

The parameters have the following meaning:

Parameter	Description	Values
`ip-address`	The target address of the route.	Specify a valid IP address.
`mask`	The subnet mask of this route.	Enter a valid subnet mask.
`connected`	Shows the network routes with a direct connection.	-
`ospf`	Shows the OSPF entries in the routing table.	-
`rip`	Shows the RIP entries in the routing table.	-
`static`	Shows the static routes in the table.	-

Result

The routing table is displayed.

9.2 OSPFv2

This section describes the commands relevant for working with routing with OSPF.

9.2.1 show ip ospf

Description

This command shows information about routing with OSPF.

Note

This command is available only with layer 3.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show ip ospf
```

Result

The configuration is displayed.

9.2.2 show ip ospf route

Description

This command shows the routes that were generated with OSPF.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show ip ospf route
```

Result

The routes are displayed.

9.2.3 show ip ospf - database summary

Description

This command shows a summary of the database.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show ip ospf
    [area-id]
database
       [{
         database-summary|selforiginate|adv-router <ip-address>
       }]
```

The parameters have the following meaning:

Parameters	Description	Range of values
`area-id`	Area ID	specify an ID. x.x.x.x x = 0 ... 255 0.0.0.0 = backbone area
`database-summary`	Number of LSA types per area and the total number of areas	-
`self-originate`	Number of LSAs generated by the local router.	-
`adv-router`	Keyword for the router-specific LSA	
`ip-address`	shows the router-specific LSA for a specific IP address	specify a valid IP address. If no IP address is entered, the specific LSAs of the local router are displayed.

Result

The summary of the database is displayed.

9.2.4 show ip ospf ... database ...

Description

This command shows information about a specific or all LSA types.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show ip ospf
   [area-id]
database
        {
         asbr-summary|external|network|
         nssa-external|router|summary
        }
   [link-state-id]
   [{
      adv-router <ip-address>|self-originate
   }]
```

The parameters have the following meaning:

Parameters	Description	Range of values
`area-id`	Area ID	specify an ID. x.x.x.x x = 0 ... 255 0.0.0.0 = backbone area.
`asbr-summary`	only shows information of the LSA type ASPR (Autonomous System Border Router). (Type 4)	-
`external`	only shows information of the LSA type "External" (Type 5)	-
`network`	only shows information of the LSA type "Network" (Type 2)	-

Parameters	Description	Range of values
`nssa-external`	only shows information of the LSA type "NSSA (Not so stuppy area) External" (Type 7)	-
`router`	only shows information of the LSA type "Router" (Type 1)	-
`summary`	only shows information of the LSA type "Summary" (Type 3)	-
`link-state-id`	ID of the LSA . Link State ID depends on the LSA type.	Link State ID consists of 4 numbers each between 0 and 255
`adv-router`	Keyword for the router-specific LSA	-
`ip-address`	shows the router-specific LSA for a specific IP address	specify a valid IP address. If no IP address is entered, the specific LSAs of the local router are displayed.
`self-originate`	Number of LSAs generated by the local router	-

Result

The information is displayed.

9.2.5 show ip ospf border-routers

Description

This command shows the routes to the area border routers and to the AS boundary routers.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show ip ospf border-routers
```

Result

The routes are displayed.

9.2.6 show ip ospf interface

Description

This command shows the information on the OSPF interface.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show ip ospf interface
[{
  vlan<vlan-id(1-4094)>|<interface-type><interface-id>
}]
```

The parameters have the following meaning:

Parameters	Description	Values
`Vlan`	Keyword for a VLAN connection	-
`vlan-id`	Number of the addressed VLAN	1 ... 4094
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you do not select any parameter from the parameter list, the information is displayed for all available interfaces.

Result

The information of the OSPF interface is displayed.

9.2.7 show ip ospf neighbor

Description

This command shows information about the detected neighboring routers.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show ip ospf neighbor
[{
   vlan <vlan-id(1-4094)>|<interface-type><interface-id>
}]
[Neighbor ID]
[detail]
```

The parameters have the following meaning:

Parameters	Description	Values
`Vlan`	Keyword for a VLAN connection	-
`vlan-id`	Number of the addressed VLAN	1 ... 4094
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name
`Neighbor ID`	Router ID of the neighbor	The ID consists of 4 numbers each between 0 and 255 and can match the IP address of the router.
`detail`	OSPF information on the neighbor	

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The information is displayed.

9.2.8 show ip ospf request-list

Description

This command shows the request list. This request list contains the information required for the LSAs.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show ip ospf request-list
  [<neighbor-id>]
  [{
    vlan <vlan-id (1-4094)> |
    <interface-type> <interface-id>
  }]
```

The parameters have the following meaning:

Parameter	Description	Values
`neighbor-id`	Router ID of the neighbor	Enter the router ID. The router ID consists of 4 numbers each between 0 and 255.
`Vlan`	Keyword for a VLAN connection	-
`vlan-id`	Number of the addressed VLAN	1 ... 4094
`interface-type`	Type of interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you do not select any parameter from the parameter list, the request list is displayed for all neighbors.

Result

The request list displayed.

9.2.9 show ip ospf retransmission-list

Description

This command shows which queries are still open in the form of a list.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show ip ospf retransmission-list
  [<neighbor-id>]
  [{
    vlan <vlan-id (1-4094)>|<interface-type> <interface-id>
  }]
```

The parameters have the following meaning:

Parameters	Description	Values
`neighbor-id`	Router ID of the neighbor	enter the router ID. The router ID consists of 4 numbers each between 0 and 255.
`Vlan`	Keyword for a VLAN connection	-
`vlan-id`	Number of the addressed VLAN	1 ... 4094
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name
`Vlan`	Keyword for a VLAN connection	-

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you do not select any parameter from the parameter list, the list is displayed for all neighbors.

Result

The list is displayed.

9.2.10 show ip ospf virtual-links

Description

This command shows an overview of the virtual connections.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameter assignment:

```
show ip ospf virtual-links
```

Result

The overview is displayed.

9.2.11 show ip ospf area-range

Description

This command shows the grouped address ranges.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show ip ospf {area-range|summary-address }
```

The parameters have the following meaning:

Parameters	Description	Values
`area-range`	Grouped area range. The address range is created with the "area-range" command.	-
`summary-address`	Grouped address range for OSPF. The address range is created with the "summary-address" command.	-

Result

The grouped address ranges are displayed.

9.2.12 Commands in the Global Configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

9.2.12.1 router ospf

Description

With this command, you enable routing with OSPF and change to the Router Configuration mode.

Note

This command is available only with layer 3.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameter assignment:

```
router ospf
```

Result

Routing with OSPF is enabled.

You are now in the Router Configuration mode.

The command prompt is as follows:

```
cli (config-router)#
```

Further notes

You disable routing with OSPF with the `no router ospf` command.

9.2.12.2 no router ospf

Description

With this command, you disable routing with OSPF.

Note

This command is available only with layer 3.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameter assignment:

```
no router ospf
```

Result

Routing with OSPF is disabled.

Further notes

You enable routing with OSPF with the `router ospf` command.

9.2.13 Commands in the Router Configuration mode

This section describes commands that you can call up in the Router Configuration mode.

In the Global Configuration mode, enter the `router ospf` command to change to this mode.

Commands relating to other topics that can be called in the Global Configuration mode can be found in the relevant sections.

- If you exit the Router Configuration mode with the `exit` command, you return to the Global Configuration mode.
- If you exit the Router Configuration mode with the `end` command, you return to the Privileged EXEC mode.

Requirement

The commands are available if the following requirements are met:

- The device supports the routing function.
- The routing function is enabled
- The interface is a router port

9.2.13.1 ASBR Router

Description

With his command, you specify that the router is an Autonomous System Boundary Router (ASBR).

Note

This command is available only with layer 3.

Requirement

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call the command without parameters:

```
ASBR Router
```

Result

The autonomous system boundary router is enabled.

Further notes

You disable the autonomous system boundary router with the `no ASBR Router` command.

You can display the status of this function and other information with the `show ip ospf` command.

9.2.13.2 no ASBR Router

Description

With this command, you disable the autonomous system boundary router.

Note

This command is available only with layer 3.

Requirement

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call the command without parameters:

```
no ASBR Router
```

Result

The autonomous system boundary router is disabled.

Further notes

You enable the autonomous system boundary router with the `ASBR Router` command.

You can display the status of this function and other information with the `show ip ospf` command.

9.2.13.3 area range

Description

With this command, you assign an area ID an address range. The address range is used to group the routes within OSPF.

Note

This command is available only with layer 3.

Requirement

- The router is an area border router

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call up the command with the following parameters:

```
area <AreaId> range
<Network>
<Mask>
[{
  advertise | notadvertise
}]
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`AreaId`	Area ID	specify an ID. x.x.x.x x = 0 ... 255 0.0.0.0 = backbone area
`Network`	IP address of the address range	specify the IP address
`Mask`	Subnet mask of the address range	specify the subnet mask.
`advertise`	The address range is advertised to the outside. A summary LSA of Type 3 is generated.	-
`notadvertise`	The address range is not advertised to the outside.	-

Result

The address range is configured.

Further notes

You delete the address range with the `no area range` command.

You can display the status of this function and other information with the `show ip ospf area-range / summary-address`command.

9.2.13.4 area range summary

Description

With this command, you assign an area ID an address range. The address range is used to group the routes within OSPF.

Note

This command is available only with layer 3.

Requirement

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call up the command with the following parameters:

```
area <AreaId> range
<Network>
<Mask>
{
  summary | Type7
}
[{
  advertise | notadvertise
}]
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`AreaId`	Area ID	specify an ID. x.x.x.x x = 0 ... 255 0.0.0.0 = backbone area
`Network`	IP address of the address range	specify the IP address
`Mask`	Subnet mask of the address range	specify the subnet mask.
`summary`	Summary LSA	-
`Type7`	LSA type 7	-

Parameter	Description	Range of values / note
`advertise`	The address range is advertised outside the ranges. If the Area ID is 0.0.0.0, the router generates an LSA message of Type 5. If the Area ID is not 0.0.0.0, the router generates an LSA message of Type 7 in an NSSA.	-
`notadvertise`	The address range is not advertised to the outside.	-

Result

The address range is configured.

Further notes

You delete the address range with the `no area range` command.

You can display the status of this function and other information with the `show ip ospf area-range / summary-address`command.

9.2.13.5 no area range

Description

With this command, you delete the address range.

Note

This command is available only with layer 3.

Requirement

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call up the command with the following parameters:

```
area <AreaId> range <Network> <Mask>
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`AreaId`	Area ID	specify an ID. x.x.x.x x = 0 ... 255 0.0.0.0 = backbone area
`Network`	IP address of the address range	specify the IP address
`Mask`	Subnet mask of the address range	specify the subnet mask.

Result

The address range is deleted.

Further notes

You create address ranges with the `area range` command.

9.2.13.6 area nssa

Description

With this command, you configure areas of the type NSSA (not-so-stubby-area).

Note

This command is available only with layer 3.

Requirement

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call up the command with the following parameters:

```
area <area-id> nssa
[{
   no-summary | default-information-originate
}]
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`area-id`	Area ID	specify a valid ID. x.x.x.x x = 0 ... 255 0.0.0.0 = backbone area
`no-summary`	NSSA does not receive a summary LSA.	--
`default-information-originate`	Generating a standard route (LSA type 7) in the NSSA.	--

Result

The area of the type NSSA is configured.

Further notes

You change the type of the area with the `no area` command.

9.2.13.7 area stub

Description

With this command, you configure areas of the type Stub.

Note

This command is available only with layer 3.

Requirement

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call up the command with the following parameters:

```
area <area-id> stub [ no-summary ]
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
area-id	Area ID	specify a valid ID. x.x.x.x x = 0 ... 255 0.0.0.0 = backbone area
no-summary	The router does not send or receive a summary LSA	--

Result

The area of the type Stub is configured.

Further notes

You change the type of the area with the `no area` command.

9.2.13.8 no area

Description

With this command, you remove or change an area of the type "Stub" or "NSSA".

Note

This command is available only with layer 3.

Requirement

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call up the command with the following parameters:

```
no area <area-id>
[
  { stub | nssa }
]
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
area-id	Area ID	specify a valid ID. x.x.x.x x = 0 ... 255 0.0.0.0 = backbone area
stub	Stub area	--
nssa	NSSA area	--

Result

The area is removed or changed.

9.2.13.9 area virtual-link

Description

With this command, you create a virtual connection to the backbone area.

Note

This command is available only with layer 3. The router must be an Area Border Router (ABR) or an Autonomous System Boundary Router (ASBR). The router ID must correspond to the IP address of the interface of the transit area network.

Requirement

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call up the command with the following parameters:

```
area <area-id> virtual-link <router-id>
  [authentication
   {
    simple |messagedigest| null
   }
  ]
  [hello-interval <value (1-65535)>]
  [retransmit-interval <value(0-3600)>]
  [transmit-delay <value (0-3600)>]
  [dead-interval <value>]
  [{
   authentication-key <key (8)> | message-digest-key <Key-id (0-255)>
```

```
    md5 <key(16)>
  }]
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`area-id`	Area ID	specify a valid ID. x.x.x.x x = 0 ... 255 0.0.0.0 = backbone area
`router-id`	ID of the router. The router ID must correspond to the IP address of the interface of the transit area network.	-
`authentication`	Keyword for the authentication method of the virtual connection	• `simple` enables authentication using a password • `messagedigest` enables authentication using MD5 • `none` no authentication
`hello-interval`	Keyword for the interval at which Hello packets are sent over the virtual link	-
`value`	specifies the length of the interval in seconds.	enter the interval `1-65535`
`retransmit-interval`	Keyword for the interval after which packets whose receipt was not confirmed are transferred again.	-
`value`	specifies the length of the interval in seconds.	enter the interval `0-3600`
`transmit-delay`	Keyword for the time that a link state update packet requires for transmission over the virtual link.	--
`value`	Specifies the length of the interval in seconds.	enter the interval `0-3600`
`dead-interval`	Keyword for the interval after which the neighbor router is classified as "failed" if Hello packets from it are not received.	-
`value`	Specifies the length of the interval in seconds.	enter the interval 0–0x7fffffff
`authentication-key`	Keyword for the unencrypted password	-
key	Password	enter the password. Maximum length: `8` characters
`message-digest-key`	Keyword for the ID of the password	-
key-id	ID of the password.	specify the ID `0 ... 255`

Parameter	Description	Range of values / note
`md5`	Keyword for the password	-
key	Password	enter the password Maximum length: `16` characters

Result

The virtual link is created.

Further notes

You delete the virtual link with the `no area virtual link` command.

You display information about the virtual link with the `show ip ospf virtual` command.

9.2.13.10 no area virtual-link

Description

With this command, you delete a virtual link.

Note

This command is available only with layer 3.

Requirement

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call up the command with the following parameters:

```
no area <area-id> virtual-link <router-id>
  [authentication]
  [hello-interval]
  [retransmit-interval]
  [transmit-delay]
  [dead-interval
  [{
    authentication-key | message-digest-key <Key-id (0-255)>

  }]
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`area-id`	Area ID	specify a valid ID. x.x.x.x x = 0 ... 255 0.0.0.0 = backbone area
`router-id`	ID of the router	-
`authentication`	Keyword for the authentication method of the virtual connection	• `simple` enables authentication using a password • `messagedigest` enables authentication using MD5 • `none` no authentication
`hello-interval`	Keyword for the interval at which Hello packets are sent over the virtual link	-
`value`	specifies the length of the interval in seconds.	enter the interval `1-65535`
`retransmit-interval`	Keyword for the interval after which packets whose receipt was not confirmed are transferred again.	-
`value`	specifies the length of the interval in seconds.	enter the interval `0-3600`
`transmit-delay`	Keyword for the time that a link state update packet requires for transmission over the virtual link.	--
`value`	Specifies the length of the interval in seconds.	enter the interval `0-3600`
`dead-interval`	Keyword for the interval after which the neighbor router is classified as "failed" if Hello packets from it are not received.	-
`value`	Specifies the length of the interval in seconds.	enter the interval 0–0x7fffffff
`authentication-key`	Keyword for the unencrypted password	-
key	Password	enter the password. Maximum length: `8` characters
`message-digest-key`	Keyword for the ID of the password	-
key-id	ID of the password.	specify the ID `0 ... 255`

Result

The virtual link is removed.

Further notes

You create virtual links with the `area virtual link` command.

You display information about the virtual link with the `show ip ospf virtual` command.

9.2.13.11 compatible rfc1583

Description

With this command, you enable compatibility with RFC 1583. Use the command if you still have old OSPFv2 routers in operation that are not compatible with RFC 2328.

Note

This command is available only with layer 3.

Requirement

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call the command without parameters:

```
compatible rfc1583
```

Result

The compatibility with RFC 1583 is enabled.

Further notes

You disable the compatibility with the `no compatible rfc1583` command.

You can display the status of this function and other information with the `show ip ospf`command.

9.2.13.12 no compatible rfc1583

Description

With this command, you disable compatibility with RFC 1583.

Note

This command is available only with layer 3.

Requirement

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call the command without parameters:

```
compatible rfc1583
```

Result

The compatibility with RFC 1583 is disabled.

Further notes

You enable the compatibility with the `compatible rfc1583` command.

You can display the status of this function and other information with the `show ip ospf`command.

9.2.13.13 default-information originate

Description

With this command, you enable the function with which a standard route is generated for external routes into the OSPF routing domain.

Note

This command is available only with layer 3.

Requirement

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call up the command with the following parameters:

```
default-information originate [(
   [always]
```

```
[metric <metric-value (0-0xffffff)>]
[metric-type <type (1-2)>])]
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`always`	An external standard route is always generated.	
`metric`	Keyword for the metric of the external standard route.	--
`metric-value`	Value of the metric	`0-0xffffff`
`metric-type`	Keyword for the type of the external standard route	--
`Type`	Type of the external route	• `1` - type 1 • `2` - type 2

Result

The function is enabled.

Further notes

You disable the function with the `no default-information originate` command.

9.2.13.14 no default-information originate

Description

With this command, you disable the function with which a standard route is generated for external routes into the OSPF routing domain.

Note

This command is available only with layer 3.

Requirement

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call up the command with the following parameters:

```
no default-information originate [(
   [always]
   [metric <metric-value (0-0xffffff)>]
   [metric-type <type (1-2)>])]
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`always`	The external standard route is always generated.	
`metric`	Keyword for the metric of the external standard route.	--
`metric-value`	Value of the metric	`0-0xffffff`
`metric-type`	Keyword for the type of the external standard route	--
`Type`	Type of the external route	• 1 - type 1 • 2 - type 2

Result

The function is disabled.

Further notes

You enable the function with the `default-information originate` command.

9.2.13.15 default-information originate always

Description

With this command, you enable the function with which a standard route is always generated for external routes into the OSPF routing domain.

Note

This command is available only with layer 3.

Requirement

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call up the command with the following parameters:

```
default-information originate always
   [metric <metric-value (0-0xffffff)>]
   [metric-type <type (1-2)>]
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`metric`	Keyword for the metric of the external standard route.	--
`metric-value`	Value of the metric	`0-0xffffff`
`metric-type`	Keyword for the type of the external standard route	--
`Type`	Type of the external route	• 1 - type 1 • 2 - type 2

Result

The function is enabled.

Further notes

You disable the function with the `no default-information originate always` command.

9.2.13.16 no default-information originate always

Description

With this command, you disable the function with which a standard route is always generated for external routes into the OSPF routing domain.

Note

This command is available only with layer 3.

Requirement

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call up the command with the following parameters:

```
no default-information originate always
   [metric <metric-value (0-0xffffff)>]
   [metric-type <type (1-2)>]
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`metric`	Keyword for the metric of the external standard route.	--
`metric-value`	Value of the metric	`0-0xffffff`
`metric-type`	Keyword for the type of the external standard route	--
`Type`	Type of the external route	• 1 - type 1 • 2 - type 2

Result

The function is disabled.

Further notes

You enable the function with the `default-information originate always` command.

9.2.13.17 network area

Description

With this command, you specify an OSPF interface and the Area ID connected to the OSPF interface.

Note

This command is available only with layer 3.

Requirement

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call up the command with the following parameters:

```
network <network number> area <area-id>
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`network number`	IP interface that will be used by OSPF.	Enter the IP address of the interface for which OSPF will be enabled.
`area-id`	Area ID	specify an ID. x.x.x.x x = 0 ... 255 0.0.0.0 = backbone area

Result

The OSPF interface is configured.

Further notes

You remove the OSPF interface and the area with the `no network area` command.

You can display the status of this function and other information with the `show ip ospf interface`command.

9.2.13.18 no network area

Description

With this command, you remove the OSPF interface and the Area ID connected to the OSPF interface.

Note

This command is available only with layer 3.

Requirement

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call up the command with the following parameters:

```
no network <Network number> area <area-id>
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`Network number`	Network number	Enter a valid network number
`area-id`	Area ID	enter an ID. x.x.x.x x = 0 ... 255 0.0.0.0 = backbone area

Result

The OSPF interface is removed.

Further notes

You create the OSPF interface and the area with the `network area` command.

You can display the status of this function and other information with the `show ip ospf interface`command.

9.2.13.19 redist-config

Description

With this command, you configure the information for the route. The routes are further distributed with this information

Note

This command is available only with layer 3.

Requirement

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call up the command with the following parameters:

```
redist-config <Network> <Mask>
[metric-value <metric (1 - 16777215)>]
[metrictype {
  asExttype1 | asExttype2
}]
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`Network`	Target address of the route.	specify the IP address.
`Mask`	Subnet mask of this route	specify the subnet mask.
`metric-value`	Keyword for the metric of the route	-
`metric`	Metric	`1 - 16777215`
`metrictype`	Keyword for the connection costs	--
`asExttype1`	External and internal costs	--
`asExttype2`	External costs	--

Result

The information for the route is specified.

Further notes

You remove the information with the `no default-information originate always` command.

You distribute the routes with the `restribute` command.

9.2.13.20 no redist-config

Description

With this command, you delete the information for the new external routes.

Note

This command is available only with layer 3.

Requirement

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call up the command with the following parameters:

```
no redist-config <Network> <Mask>
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`Network`	Target address of the route.	specify the IP address.
`Mask`	Subnet mask of this route	specify the subnet mask.

Result

The information for the route is deleted.

Further notes

You create the information with the `redist-config` command.

9.2.13.21 redistribute

Description

With this command, you specify which known routes are distributed via OSPF.

Note

This command is available only with layer 3.

Requirement

- The router is an ASBR router.

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call up the command with the following parameters:

```
redistribute {static | connected | rip | default | all}
```

The parameters have the following meaning:

Parameter	Description
`static`	static routes
`connected`	connected routes
`rip`	RIP routes
`default`	standard routes
`all`	all routes

Result

Which routes are distributed via OSPF is specified.

Further notes

You enable the ASBR router with the `ASBR Router` command.

You disable the distribution of the routes with the `no redistribute` command.

You create the information for the routes with the `redist-config` command.

You create the information for external the routes with the `default-information originate` command.

9.2.13.22 no redistribute

Description

With this command, you disable distribution of routes with OSPF.

Note

This command is available only with layer 3.

Requirement

- The router is an ASBR router.

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call up the command with the following parameters:

```
no redistribute {static | connected | rip | default | all}
```

The parameters have the following meaning:

Parameter	Description
`static`	static routes
`connected`	connected routes
`rip`	RIP routes
`default`	standard routes
`all`	all routes

Result

Which routes are distributed via OSPF is disabled.

Further notes

You enable the distribution of the routes with the `redistribute` command.

9.2.13.23 distribute-list route-map

Description

This command enables the filtering of the routing information according to a route map for incoming routing information.

Requirement

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call up the command with the following parameters:

```
distribute-list route-map <name(1-20)> in
```

The parameters have the following meaning:

Parameter	Description	Values
`name`	Name of the routing table.	Maximum of 20 characters.
`in`	Incoming routing information is filtered.	-

Result

The filtering is enabled.

9.2.13.24 no distribute-list route-map

Description

This command disables the filtering of the routing information according to a route map for incoming routing information.

Requirement

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call up the command with the following parameters:

```
no distribute-list route-map <name(1-20)> in
```

The parameters have the following meaning:

Parameter	Description	Values
`name`	Name of the routing table.	Maximum of 20 characters.
`in`	Incoming routing information is filtered.	-

Result

The filtering is disabled.

9.2.13.25 router id

Description

With this command, you specify the ID of the router.

Note

This command is available only with layer 3.

Requirement

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call up the command with the following parameters:

```
router-id <router ip address>
```

The parameter has the following meaning:

Parameter	Description	Range of values / note
`router ip address`	IP address	Enter the IP address of the router or a value in the IP address format.

Result

The ID of the router is specified.

Further notes

You display the router ID and other information with the `show ip ospf interface` command.

9.2.13.26 summary-address

Description

With this command, you assign an area ID an address range. The address range is used to group the external routes.

Note

This command is available only with layer 3.

Requirement

- The router is an area border router (ABR)

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call up the command with the following parameters:

```
summary-address <Network> <Mask> <AreaId>
[{
  allowAll | denyAll | advertise |not-advertise
}]
[
  Translation
  {enabled | disabled}]
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`Network`	IP address of the address range	specify the IP address
`Mask`	Subnet mask of the address range	specify the subnet mask.
`AreaId`	Area ID	specify a valid ID. x.x.x.x x = 255 0.0.0.0 = backbone area
`allowAll`	The backbone area generates an LSA message of Type 5 for the address range. LSA messages of Type 7 also generated for this address range in the connected NSSAs.	-
`denyAll`	No LSA is of Type 5 or Type 7 is generated for the address range.	-
`advertise`	The address range is advertised outside the areas. In the backbone area, the router generates an LSA message of Type 5. If the Area ID is not 0.0.0.0, the router generates an LSA message of Type 7 in an NSSA	-
`not-advertise`	No LSA messages of Type 5 are generated in the backbone area. The NSSAs connected to the backbone area generate LSA messages of Type 7. The other areas do not generate any LSA	-
`Translation`	Keyword for the P bit. The P bit indicates to the NSSA-ABR whether the LSA message of Type 7 is translated to Type 5.	-
`enabled`	P bit = 1. LSA message is translated	-
`disabled`	P bit = 0. LSA message is not translated	-

Result

The address range is created.

Further notes

You delete the address range with the `no summary-address` command.

You can display the status of this function and other information with the `show ip ospf area-range / summary-address`command

9.2.13.27 no summary-address

Description

With this command, you delete the address range.

Note

This command is available only with layer 3.

Requirement

You are in the OSPF Router configuration mode.

The command prompt is as follows:

```
cli(config-ospf)#
```

Syntax

Call up the command with the following parameters:

```
no summary-address <Network> <Mask> <AreaId>
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`Network`	IP address of the address range	specify the IP address
`Mask`	Subnet mask of the address range	specify the subnet mask.
`AreaId`	Area-ID	specify a valid ID. x.x.x.x x = 255 0.0.0.0 = backbone area

Result

The address range is deleted.

Further notes

You configure the address range with the `summary-address` command.

9.2.14 Commands in the Interface Configuration mode

This section describes commands that you can call up in the interface configuration mode. Depending on the Interface selected, various command sets are available.

In the Global configuration mode, enter the `interface` command to change to this mode.

Commands relating to other topics that can be called in the interface configuration mode can be found in the relevant sections.

- If you exit the Interface configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the Interface configuration mode with the `end` command, you return to the Privileged EXEC mode.

9.2.14.1 ip ospf authentication

Description

With this command, you specify the type of authentication. The following methods are possible:

- Authentication using an unencrypted password.
- Authentication using MD5

Note

This command is available only with layer 3.

Requirement

- The interface is a layer 3 interface.
- Authentication using MD5: A password and a key ID are created.
- Authentication using an unencrypted password: A password is created.

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
ip ospf authentication [{message-digest}]
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`message-digest`	Authentication using MD5	-

If you enter the command without parameters, an unencrypted password is used for authentication.

Result

The type of authentication is specified.

Further notes

You remove the type of authentication with the `no ip ospf authentication` command.

You create the password for MD5 with the `ip ospf message-digest-key` command.

You create the password with the `ip ospf authentication` command.

9.2.14.2 no ip ospf authentication

Description

With this command, you reset the type of authentication back to the default value.

Note

This command is available only with layer 3.

Requirement

- The interface is a layer 3 interface.

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameter assignment:

```
ip ospf authentication
```

Result

The type of authentication is reset.

Further notes

You enable the authentication with the `ip ospf authentication` command.

9.2.14.3 ip ospf authentication-key

Description

With this command, you specify the password.

Note

This command is available only with layer 3.

Requirement

- The interface is a layer 3 interface.

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
ip ospf authentication-key <password (8)>
```

The parameter has the following meaning:

Parameter	Description	Range of values / note
`Password`	Password	Enter a password. Maximum length: 8 characters

Result

The password is specified.

Further notes

You delete the password with the `no ip ospf authentication-key` command.

9.2.14.4 no ip ospf authentication-key

Description

With this command, you delete the password.

Note

This command is available only with layer 3.

Requirement

- The interface is a layer 3 interface.

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameter assignment:

```
no ip ospf authentication-key
```

Result

The password is deleted.

Further notes

You configure the password with the `ip ospf authentication-key` command.

9.2.14.5 ip ospf cost

Description

With this command, you specify the costs for the OSPF interface.

Note

This command is available only with layer 3.

Requirement

- The interface is a layer 3 interface.

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
ip ospf cost <cost (1-65535)>
```

The parameter has the following meaning:

Parameter	Description	Range of values / note
`cost`	Costs for the OSPF interface	1 ... 65535

Result

The costs are specified.

Further notes

You delete the costs with the `no ip ospf cost` command.

You show the configuration of the OSPF interface with the `show ip ospf interface` command.

9.2.14.6 no ip ospf cost

Description

With this command, you delete the costs.

Note

This command is available only with layer 3.

Requirement

- The interface is a layer 3 interface.

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameter assignment:

```
no ip ospf cost
```

Result

The costs are deleted.

Further notes

You create the costs with the `ip ospf cost` command.

You show the configuration of the OSPF interface with the `show ip ospf interface` command.

9.2.14.7 ip ospf dead-interval

Description

With this command, you specify the time that can elapse before the neighbor router is assumed to have "failed". This means that no more Hello packets were received from it during this time.

Note

This command is available only with layer 3.

Requirement

- The interface is a layer 3 interface.

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
ip ospf dead-interval <seconds (0-0x7fffffff)>
```

The parameter has the following meaning:

Parameter	Description	Range of values / note
`seconds`	Interval in seconds	`0 ... 0x7fffffff`

Result

The interval is specified.

Further notes

You delete the interval with the `no ip dead-interval` command.

You show the configuration of the OSPF interface with the `show ip ospf interface` command.

9.2.14.8 no ip ospf dead-interval

Description

With this command, you delete the interval.

Note

This command is available only with layer 3.

Requirement

- The interface is a layer 3 interface.

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameter assignment:

```
no ip ospf dead-interval
```

Result

The interval is deleted.

Further notes

You specify the interval with the `ip dead-interval` command.

You show the configuration of the OSPF interface with the `show ip ospf interface` command.

You configure the router port with the `no switchport` command.

9.2.14.9 ip ospf hello-interval

Description

With his command, you specify the interval between two Hello packets.

Note

This command is available only with layer 3.

Requirement

- The interface is a layer 3 interface.

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
ip ospf hello-interval <seconds (1 - 65535)>
```

The parameter has the following meaning:

Parameter	Description	Range of values / note
`seconds`	Interval in seconds	`0 ... 65535`

Result

The interval is specified.

Further notes

You delete the interval with the `no ip hello-interval` command.

You show the configuration of the OSPF interface with the `show ip ospf interface` command.

9.2.14.10 no ip ospf hello-interval

Description

With this command, you delete the interval.

Note

This command is available only with layer 3.

Requirement

- The interface is a layer 3 interface.

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameter assignment:

```
no ip ospf hello-interval
```

Result

The interval is deleted.

Further notes

You configure the interval with the `ip hello-interval` command.

9.2.14.11 ip ospf message-digest-key

Description

With this command, you specify the password and the ID for authentication with MD5.

Note

This command is available only with layer 3.

Requirement

- The interface is a layer 3 interface.

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
ip ospf message-digest-key <Key-ID (0-255)> md5 <md5-Key (16)>
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`Key-ID`	ID of the password	0 ... 255
`md5`	Keyword for the password	-
`md5-Key`	Password for authentication	enter a password Maximum length: 16 characters

Result

The password and the ID are specified.

Further notes

You delete the password with the `no ip ospf message-digest-key` command.

9.2.14.12 no ip ospf message-digest-key

Description

With this command, you delete the required password.

Note

This command is available only with layer 3.

Requirement

- The interface is a layer 3 interface.

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
no ip ospf message-digest-key <Key-ID (0-255)>
```

The parameter has the following meaning:

Parameter	Description	Range of values / note
`Key-ID`	ID of the password	Enter a valid ID.

Result

The password is deleted.

Further notes

You specify the password with the `ip ospf message-digest-key` command.

9.2.14.13 ip ospf retransmit-interval

Description

With this command, you specify the time after which an LSA message is transferred again if no confirmation has been received.

Note

This command is available only with layer 3.

Requirement

- The interface is a layer 3 interface.

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
ip ospf retransmit-interval <seconds (0 - 3600)>
```

The parameter has the following meaning:

Parameter	Description	Range of values / note
`seconds`	Interval in seconds	`0 - 3600`

Result

The interval is specified.

Further notes

You delete the interval with the `no ip retransmit-interval` command.

9.2.14.14 no ip ospf retransmit-interval

Description

With this command, you delete the interval.

Note

This command is available only with layer 3.

Requirement

- The interface is a layer 3 interface.

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameter assignment:

```
no ip ospf retransmit-interval
```

Result

The interval is deleted.

Further notes

You configure the interval with the `ip retransmit-interval` command.

You configure the router port with the `no switchport` command.

9.2.14.15 ip ospf transmit-delay

Description

With this command, you delete the interval.

Note

This command is available only with layer 3.

Requirement

- The interface is a layer 3 interface.

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameter assignment:

```
no ip ospf transmit-delay
```

Result

The interval is deleted.

Further notes

You create the interval with the `ip transmit-delay` command.

9.2.14.16 no ip ospf transmit-delay

Description

With this command, you delete the interval.

Note

This command is available only with layer 3.

Requirement

- The interface is a layer 3 interface.

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameter assignment:

```
no ip ospf transmit-delay
```

Result

The interval is deleted.

Further notes

You configure the interval with the `ip ospf transmit-delay` command.

9.2.14.17 ip ospf priority

Description

With this command, you specify the router priority. The designated router is identified based on the priority.

Note

This command is available only with layer 3.

Requirement

- The interface is a layer 3 interface.
- You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if)#
```

Syntax

Call up the command with the following parameters:

```
ip ospf priority <value (0 - 255)>
```

The parameter has the following meaning:

Parameter	Description	Range of values / note
`Value`	Priority	0 ... 255; Default: 100

Result

The priority is specified.

Further notes

You delete the priority with the `no ip ospf priority` command.

You display the router ID and other information with the `show ip ospf interface` command.

9.2.14.18 no ip ospf priority

Description

With this command, you delete the router priority.

Note

This command is available only with layer 3.

Requirement

- The interface is a layer 3 interface.
- You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if)#
```

Syntax

Call the command without parameter assignment:

```
no ip ospf priority
```

Result

The priority is deleted.

Further notes

You configure the priority with the `ip ospf priority` command.

You display the router ID and other information with the `show ip ospf interface` command.

9.3 RIPv2

9.3.1 show ip rip

Description

This command shows the RIP information.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show ip rip {database [<ip-address> <mask>] | statistic }
```

The parameters have the following meaning:

Parameter	Description	Values
`database`	The information of the RIP database is displayed.	-
`ip-address`	The destination address of the route for which information is displayed.	Specify a valid IP address.
`mask`	The subnet mask of this route.	Enter a valid subnet mask.
`statistic`	Statistical information is displayed, for example the number of updates.	-

Result

The database or statistical information is displayed.

9.3.2 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

9.3.2.1 router rip

Description

With this command, you enable the RIP protocol and change to the Router configuration mode.

Note

This command is available only in the layer 3 firmware.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameter assignment:

```
router rip
```

Result

Routing with RIP is enabled.

You are now in the Router configuration mode.

The command prompt is as follows:

```
cli (config-rip)#
```

Further notes

You disable the RIP protocol with the `no router rip` command.

9.3.2.2 no router rip

Description

With this command, you disable the RIP protocol.

Note

This command is available only in the layer 3 firmware.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameter assignment:

```
no router rip
```

Result

Routing with RIP is disabled.

Further notes

You enable the RIP protocol with the `router rip` command.

9.3.3 Commands in the RIPv2 Router configuration mode

This section describes commands that you can call up in the RIPv2 Router configuration mode.

In the Global configuration mode, enter the `router rip` command to change to this mode.

- If you exit the RIPv2 Router configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the RIPv2 Router configuration mode with the `end` command, you return to the Privileged EXEC mode.

9.3.3.1 auto-summary

Description

This command automatically summarizes routing information according to IP classes. When possible, subnets are summarized according to classes (A, B or C) and entered as single routes. As default, this function is enabled.

Requirement

You are in the RIP Router configuration mode.

The command prompt is as follows:

```
cli(config-rip)#
```

Syntax

Call the command without parameter assignment:

```
auto-summary
```

Result

Subnets are entered in the routing table summarized as class A, B or C networks.

9.3.3.2 no auto-summary

Description

This command disables the automatic summarizing of routing information.

Requirement

You are in the RIP Router configuration mode.

The command prompt is as follows:

```
cli(config-rip)#
```

Syntax

Call the command without parameter assignment:

```
no auto-summary
```

Result

Subnets are not summarized according to classes.

9.3.3.3 distance

Description

With this command, you specify the administrative distance for the RIP protocol. This value is taken into account if routing information is learned by several routers.

Requirement

You are in the RIP Router configuration mode.

The command prompt is as follows:

```
cli(config-rip)#
```

Syntax

Call up the command with the following parameters:

```
distance dist<1-255> [route-map <name(1-20)>]
```

The parameters have the following meaning:

Parameter	Description	Values
dist	The value for the administrative distance.	1 ... 255
route-map	Keyword for a route map	-
name	Name of the route map	Maximum of 20 characters.

Result

The value for the administrative distance is set.

9.3.3.4 no distance

Description

This command resets the administrative distance to the default (120).

Requirement

You are in the RIP Router configuration mode.

The command prompt is as follows:

```
cli(config-rip)#
```

Syntax

Call up the command with the following parameters:

```
no distance [route-map <name(1-20)>]
```

The parameters have the following meaning:

Parameter	Description	Values
route-map	Keyword for a route map	-
name	Name of the route map	Maximum of 20 characters.

Result

The administrative distance has the default value 120.

9.3.3.5 distibute-list route-map

Description

This command enables the filtering of the routing information according to a route map for incoming or outgoing routing information.

Requirement

You are in the RIP Router configuration mode.

The command prompt is as follows:

```
cli(config-rip)#
```

Syntax

Call up the command with the following parameters:

```
distibute-list route-map <name(1-20)> {in | out}
```

The parameters have the following meaning:

Parameter	Description	Values
`name`	Name of the routing table.	Maximum of 20 characters.
`in`	Incoming routing information is filtered.	-
`out`	Outgoing routing information is filtered.	-

Result

The filtering is enabled.

9.3.3.6 no distibute-list route-map

Description

This command disables the filtering of the routing information according to a route map for incoming or outgoing routing information.

Requirement

You are in the RIP Router configuration mode.

The command prompt is as follows:

```
cli(config-rip)#
```

Syntax

Call up the command with the following parameters:

```
no distibute-list route-map <name(1-20)> {in | out}
```

The parameters have the following meaning:

Parameter	Description	Values
name	Name of the routing table.	Maximum of 20 characters.
in	The filtering for incoming routing information is disabled.	-
out	The filtering for outgoing routing information is disabled.	-

Result

The filtering is disabled.

9.3.3.7 network

Description

This command enables the RIP protocol for an IP interface.

Requirement

You are in the RIP Router configuration mode.

The command prompt is as follows:

```
cli(config-rip)#
```

Syntax

Call up the command with the following parameters:

```
network <ip-address>
```

The parameter has the following meaning:

Parameter	Description	Values
ip-address	The IP address for which RIP will be enabled.	Specify a valid IP address.

Result

RIP is enabled for the specified IP interface.

9.3.3.8 no network

Description

This command disables the RIP protocol for an IP interface.

Requirement

You are in the RIP Router configuration mode.

The command prompt is as follows:

```
cli(config-rip)#
```

Syntax

Call up the command with the following parameters:

```
no network <ip-address>
```

The parameter has the following meaning:

Parameter	Description	Values
ip-address	The IP address for which RIP will be disabled.	Specify a valid IP address.

Result

RIP is disabled for the specified IP interface.

9.3.3.9 redistribute

Description

This command specifies which route information is forwarded by RIP.

Requirement

You are in the RIP Router configuration mode.

The command prompt is as follows:

```
cli(config-rip)#
```

Syntax

Call up the command with the following parameters:

```
redistribute {all | default | connected | ospf | static} [route-map
<name(1-20)>]
```

The parameters have the following meaning:

Parameter	Description	Values
`all`	All available route information is distributed.	-
`default`	Default routes are distributed.	-
`connected`	Routing information of local subnets (IP interfaces) is distributed for which RIP is not configured.	-
`ospf`	Routes learned by OSPF are distributed.	-
`static`	Static routes are distributed.	-
`route-map`	Keyword for a route map.	-
`name`	Name of the route map.	Maximum of 20 characters

Result

The information forwarded by RIP has been specified.

9.3.3.10 no redistribute

Description

This command specifies which route information is not forwarded by RIP.

Requirement

You are in the RIP Router configuration mode.

The command prompt is as follows:

```
cli(config-rip)#
```

Syntax

Call up the command with the following parameters:

```
no redistribute {all | default | connected | ospf | static} [route-
map <name(1-20)>]
```

The parameters have the following meaning:

Parameter	Description	Values
`all`	The forwarding of route information is disabled for all protocols.	-
`default`	Default routes are not forwarded.	-
`connected`	Route information of local subnets is not forwarded.	-
`ospf`	No routes learned by OSPF are distributed.	-
`static`	No static routes are forwarded.	-

Parameter	Description	Values
route-map	Keyword for a route map.	-
name	Name of the route map.	Maximum of 20 characters

Result

In certain cases, forwarding of routing information is disabled.

9.3.3.11 version

Description

With this command, you specify which version of incoming RIP packets is evaluated.

Requirement

You are in the RIP Router configuration mode.

The command prompt is as follows:

```
cli(config-rip)#
```

Syntax

Call up the command with the following parameters:

```
version <1 | 2| 12 | none>
```

The parameters have the following meaning:

Parameter	Description	Values
1	Only routing information corresponding to RIPv1 (RFC 1058) is evaluated.	-
2	Only routing information corresponding to RIPv2 (RFC 2453) is evaluated.	-
12	Only routing information corresponding to RIPv1 and RIPv2 is evaluated.	-
none	There is no processing of routing information using RIP.	-

Result

It has been specified which RIP packets will be processed.

9.3.3.12 no version

Description

The updating of route information is according to RIPv1 or RIPv2 (default for this parameter)

Requirement

You are in the RIP Router configuration mode.

The command prompt is as follows:

```
cli(config-rip)#
```

Syntax

Call the command without parameter assignment:

```
no version
```

Result

Both RIPv1 and RIPv2 packets are processed.

9.3.3.13 output-delay

Description

With this command, you configure the delayed forwarding of RIP updates.

Requirement

You are in the RIP Router configuration mode.

The command prompt is as follows:

```
cli(config-rip)#
```

Syntax

Call up the command with the following parameters:

```
output-delay <milli-seconds(8-50)>
```

The parameter has the following meaning:

Parameter	Description	Values
`milli-seconds`	Delay in milliseconds.	8 ... 50

Result

RIP updates are forwarded only after the set delay.

9.3.4 Commands in the VLAN configuration mode for an interface

This section describes commands that you can call up in the VLAN configuration mode for an interface or in the configuration mode for a router port.

In the Global configuration mode, enter the `interface vlan $$$` command, to change to the VLAN configuration mode for an interface ($$$ indicates the numbering of the interface).

To change to the configuration mode for a router port, the following entries are necessary:

- In the Global configuration mode, enter the `interface <itype> $$$` command, where <itype> is the interface type and $$$ the numbering of the interface.
- If the interface is a router port, the command prompt is displayed as follows:
  `CLI(config-if-RPort-...)`
- If the interface is not a router port, the following command prompt appears:
  `CLI(config-if-...)`
  You can then make this report a router port with the following command sequence:
  `CLI(config-if-...) shutdown; no switchport; no shutdown`
  The command prompt takes the form
  `CLI(config-if-RPort-...)`

If you exit the RIPv2 Router configuration mode with the `exit` command, you return to the Global configuration mode.

If you exit the RIPv2 Router configuration mode with the `end` command, you return to the Privileged EXEC mode.

9.3.4.1 ip rip default route originate

Description

This command enables the forwarding of a default route.

Requirement

You are in the VLAN configuration mode of the VLAN interface with the ID $$$ or in the configuration mode for a router port.

The command prompt is as follows:

```
cli(config-if-vlan-$$$)#
```

or

```
cli(config-if-RPort-%%$$$)#
```

where %% is a short name for the interface type and $$$ is the numbering of the interface.

Syntax

Call up the command with the following parameters:

```
ip rip default route originate <metric(1-15)>
```

The parameter has the following meaning:

Parameter	Description	Values
`metric`	Value for the metric information.	1 ... 15

Result

The default route is forwarded.

9.3.4.2 no ip rip default route originate

Description

This command disables the distribution of the default routes.

Requirement

You are in the VLAN configuration mode of the VLAN interface with the ID $$$ or in the configuration mode for a router port.

The command prompt is as follows:

```
cli(config-if-vlan-$$$)#
```

or

```
cli(config-if-RPort-%%$$$)#
```

where %% is a short name for the interface type and $$$ is the numbering of the interface.

Syntax

Call the command without parameters:

```
no ip rip default route originate
```

Result

No default route is forwarded.

9.3.4.3 ip rip receive version

Description

This command specifies the RIP version for incoming routing information.

Requirement

You are in the VLAN configuration mode of the VLAN interface with the ID $$$ or in the configuration mode for a router port.

The command prompt is as follows:

```
cli(config-if-vlan-$$$)#
```

or

```
cli(config-if-RPort-%%$$$)#
```

where %% is a short name for the interface type and $$$ is the numbering of the interface.

Syntax

Call up the command with the following parameters:

```
ip rip receive version (1 | 2 | 12 | none)
```

The parameters have the following meaning:

Parameter	Description	Values
1	Only RIPv1 updates are received.	-
2	Only updates to RIPv2 are received.	-
12	Updates that correspond to RIPv1 or RIPv2 are received.	-
none	No RIP updates are received.	-

Result

It has been specified which RIP version incoming updates need to have.

9.3.4.4 no ip rip receive version

Description

This command specifies that there is no restriction relating to the version of received RIP updates. Updates according to RIPv1 and RIPv2 are received.

Requirement

You are in the VLAN configuration mode of the VLAN interface with the ID $$$ or in the configuration mode for a router port.

The command prompt is as follows:

```
cli(config-if-vlan-$$$)#
```

or

```
cli(config-if-RPort-%%$$$)#
```

where %% is a short name for the interface type and $$$ is the numbering of the interface.

Syntax

Call the command without parameters:

```
no ip rip receive version
```

Result

All RIP updates are received.

9.3.4.5 ip rip send version

Description

This command specifies the RIP version for outgoing routing information.

Requirement

You are in the VLAN configuration mode of the VLAN interface with the ID $$$ or in the configuration mode for a router port.

The command prompt is as follows:

```
cli(config-if-vlan-$$$)#
```

or

```
cli(config-if-RPort-%%$$$)#
```

where %% is a short name for the interface type and $$$ is the numbering of the interface.

Syntax

Call up the command with the following parameters:

```
ip rip send [demand] version (1 | 2 | 12 | none)
```

The parameters have the following meaning:

Parameter	Description	Values
demand	Updates are sent only when requested.	-
1	Only RIPv1 updates are sent.	-
2	Only RIPv2 updates are sent.	-
12	RIPv1 and RIPv2 updates are sent.	-
none	No RIP updates are sent.	-

Result

It has been specified which RIP version outgoing updates need to have.

9.3.4.6 no ip rip send version

Description

This command specifies that there is no restriction relating to the version of outgoing RIP updates. Updates according to RIPv1 and RIPv2 are sent.

Requirement

You are in the VLAN configuration mode of the VLAN interface with the ID $$$ or in the configuration mode for a router port.

The command prompt is as follows:

```
cli(config-if-vlan-$$$)#
```

or

```
cli(config-if-RPort-%%$$$)#
```

where %% is a short name for the interface type and $$$ is the numbering of the interface.

Syntax

Call the command without parameters:

```
no ip rip send version
```

Result

All RIP updates are sent.

9.4 VRRP

This section describes the commands relevant for working with routing with VRRP.

Enable routing to be able to use VRRP.

Note
Enabling VRRP
You can only use VRRP in connection with VLAN interfaces. Router ports are not supported.

9.4.1 show vrrp interface

Description

This command shows the settings of VRRP for the interface.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show vrrp
[
  interface
  {
    vlan <VlanId(1-4094)>| <interface-type><interface-id>
  }
]
[{
   brief|detail |statistics
}]
```

The parameters have the following meaning:

Parameters	Description	Range of values
`vlan`	Keyword for a VLAN connection	-
`VlanId`	Number of the addressed VLAN	1 ... 4094

Parameters	Description	Range of values
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name
`brief`	shows brief information on VRRP	-
`detail`	shows detailed information on VRRP.	-
`statistics`	shows the statistics of the VRRP protocol	-

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The settings for the interface are displayed.

9.4.2 show vrrp interface - vrid

Description

This command shows the settings of a virtual router.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show vrrp
[
  interface
  {
    vlan <VlanId(1-4094)>| <interface-type><interface-id>
  }
 <VrId(1-255)>
]
[{
   brief|detail |statistics
}]
```

The parameters have the following meaning:

Parameters	Description	Range of values
`vlan`	Keyword for a VLAN connection	-
`VlanId`	Number of the addressed VLAN	1 ... 4094
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface.	Enter a valid interface name
`vrID`	ID of the virtual router	1 ... 255
`brief`	shows brief information on VRRP	-
`detail`	shows detailed information on VRRP.	-
`statistics`	shows the statistics of the VRRP protocol	-

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The settings of the virtual router are displayed.

9.4.3 Commands in the Global Configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

9.4.3.1 router vrrp

Description

With this command, you enable routing with VRRP and change to the VRRP Router Configuration mode.

Note

This command is available only with layer 3.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameter assignment:

```
router vrrp
```

Result

Routing with VRRP is enabled.

You are now in the VRRP Router Configuration mode.

The command prompt is as follows:

```
cli (config-vrrp)#
```

Further notes

You disable routing with VRRP with the `no router vrrp` command.

9.4.3.2 no router vrrp

Description

With this command, you disable routing with VRRP.

Note

This command is available only with layer 3.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameter assignment:

```
no router vrrp
```

Result

Routing with VRRP is disabled.

Further notes

You enable routing with VRRP with the `router vrrp` command.

9.4.4 Commands in the VRRP Router Configuration mode

This section describes commands that you can call up in the VRRP Router Configuration mode.

In the Global Configuration mode, enter the `router vrrp` command to change to this mode.

- If you exit the VRRP Router Configuration mode with the `exit` command, you return to the Global Configuration mode.
- If you exit the VRRP Router Configuration mode with the `end` command, you return to the Privileged EXEC mode.

9.4.4.1 interface

Description

With this command, you decide the interface for which you want to assign parameters in the VRRP Configuration mode.

There you can edit the settings for a VRRP interface. You select the VRRP interface with the parameters of this command.

Note

This command is available only with layer 3.

Requirement

You are in the VRRP Router Configuration mode.

The command prompt is as follows:

```
cli(config-vrrp)#
```

Syntax

Call up the command with the following parameters:

```
interface{vlan<vlan-id(1-4094)
          <interface-type><interface-id>}
```

The parameters have the following meaning:

Parameter	Description	Values
`vlan`	Keyword for a VLAN connection	-
`vlan-id`	Number of the addressed VLAN	1 … 4094
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

You are in the VRRP Interface Configuration mode.

The command prompt is as follows:

```
cli(config-vrrp-if)#
```

Further notes

You exit the Interface Configuration mode with the `end` or `exit` command.

You delete a VRRP interface with the `no interface` command.

You display the status and the configuration of the VRRP interfaces with the `show vrrp interface` `show vrrp interface - vrid`command.

9.4.4.2 no interface

Description

With this command, you delete a VRRP interface.

Note

This command is available only with layer 3.

Requirement

You are in the VRRP Router Configuration mode.

The command prompt is as follows:

```
cli(config-vrrp)#
```

Syntax

Call up the command with the following parameters:

```
no interface{vlan <vlan-id(1-4094)
            <interface-type><interface-id>}
```

The parameters have the following meaning:

Parameter	Description	Values
`vlan`	Keyword for a VLAN connection	-
`vlan-id`	Number of the addressed VLAN	1 ... 4094
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The logical interface is deleted.

Further notes

You configure a VRRP interface with the `interface` command.

You display the status and the configuration of the VRRP interface with the `show vrrp interface` `show vrrp interface - vrid`command.

9.4.4.3 vrrp virtual-ping

Description

With this command, you enable pings to virtual addresses.

Requirement

- The Router Configuration mode is activated.

You are in the Router vrrp Configuration mode.

The command prompt is as follows:

```
cli(config-vrrp)#
```

Syntax

Call the command without parameters:

```
vrrp virtual-ping
```

Result

The function for pings to virtual addresses is enabled.

Further notes

You disable the setting with the `no vrrp virtual-ping` command.

You can display the status of this function and other information in Exec mode with the `show vrrp`command.

9.4.4.4 no vrrp virtual-ping

Description

With this command, you disable pings to virtual addresses.

Requirement

- The Router Configuration mode is activated.

You are in the Router vrrp Configuration mode.

The command prompt is as follows:

```
cli(config-vrrp)#
```

Syntax

Call the command without parameters:

```
no vrrp virtual-ping
```

Result

The function for pings to virtual addresses is disabled.

Further notes

You enable the setting with the `vrrp virtual-ping` command.

You can display the status of this function and other information in Exec mode with the `show vrrp`command.

9.4.5 Commands in the Interface Configuration mode

This section describes commands that you can call up in the Interface Configuration mode.

Note

The commands are only available with layer 3 and when the interface is a VLAN interface.

In the Interface Configuration mode, enter the `interface` command to change to this mode.

Commands relating to other topics that can be called in the Interface Configuration mode can be found in the relevant sections.

- If you exit the Interface Configuration mode with the `exit` command, you return to the Interface Configuration mode.
- If you exit the Interface Configuration mode with the `end` command, you return to the Privileged EXEC mode.

9.4.5.1 vrrp associated-ip

Description

With this command, you specify which IP addresses the virtual router monitors.

Note

This command is available only with layer 3.

Requirement

You are in the VRRP Interface Configuration mode.

The command prompt is as follows:

```
cli(config-vrrp-if)#
```

Syntax

Call up the command with the following parameters:

```
vrrp <vrid(1-255)> associated-ip <ip_addr>
```

The parameters have the following meaning:

Parameter	Description	Range of values
`vrid`	ID of the virtual router	1 ... 255
`ip_addr`	Value for an IP address	specify a valid IP address

Result

The IP addresses are specified.

Further notes

You can create a maximum of 52 virtual IP addresses.

You configure a VRRP interface with the `interface` command.

You remove an IP address with the `no vrrp associated-ip` command.

You remove all IP addresses with the `vrrp group shutdown` command.

You display the IP addresses with the `show vrrp interface - vrid` command.

9.4.5.2 no vrrp associated-ip

Description

With this command, you remove an IP address from the virtual router.

Note

This command is available only with layer 3.

Requirement

You are in the VRRP Interface Configuration mode.

The command prompt is as follows:

```
cli(config-vrrp-if)#
```

Syntax

Call up the command with the following parameters:

```
no vrrp <vrid(1-255)> associated-ip <ip_addr>
```

The parameters have the following meaning:

Parameter	Description	Range of values
`vrid`	ID of the virtual router	1 ... 255
`ip_addr`	Value for an IP address	specify a valid IP address

Result

The IP address is removed from the virtual router.

Further notes

You configure a VRRP interface with the `interface` command.

You display the IP addresses with the `show vrrp interface - vrid` command.

9.4.5.3 vrrp group shutdown

Description

With this command, you remove all assigned IP addresses from the virtual router.

Note

This command is available only with layer 3.

Requirement

You are in the VRRP Interface Configuration mode.

The command prompt is as follows:

```
cli(config-vrrp-if)#
```

Syntax

Call up the command with the following parameters:

```
vrrp <vrid(1-255)> group shutdown
```

The parameter has the following meaning:

Parameter	Description	Range of values
`vrid`	ID of the virtual router	1 ... 255

Result

All IP addresses of the group are removed.

Further notes

You configure a VRRP interface with the `interface` command.

You display the IP addresses with the `show vrrp interface - vrid` command.

9.4.5.4 vrrp preempt

Description

With this command, you specify that a virtual router with higher priority can interrupt a virtual router with lower priority, for example a backup router can interrupt a Master router.

Note

This command is available only with layer 3.

Requirement

- An IP address is assigned to the virtual router.
- You are in the VRRP Interface Configuration mode.

The command prompt is as follows:

```
cli(config-vrrp-if)#
```

Syntax

Call up the command with the following parameters:

```
vrrp <vrid(1-255)> preempt [delay minimum <value(0-30)>]
```

The parameters have the following meaning:

Parameter	Description	Range of values
`vrid`	ID of the virtual router	1 ... 255
`delay minimum`	Time after which the new Master router sends its VRRP packet.	0 ... 30

Result

The function is enabled.

Further notes

You enable routing with VRRP with the `router vrrp` command.

You disable the function with the `no vrrp preempt` command.

You can display the status of the function with the `show vrrp interface - vrid` or with the `show vrrp interface` command.

9.4.5.5 no vrrp preempt

Description

With this command, you specify that a virtual router with higher priority cannot interrupt a virtual router with lower priority.

Note

This command is available only with layer 3.

Requirement

- An IP address is assigned to the virtual router.
- You are in the VRRP Interface Configuration mode.

The command prompt is as follows:

```
cli(config-vrrp-if)#
```

Syntax

Call up the command with the following parameters:

```
no vrrp <vrid(1-255)> preempt
```

The parameter has the following meaning:

Parameter	Description	Range of values
`vrid`	ID of the virtual router	1 ... 255

Result

The function is disabled.

Further notes

You configure a VRRP interface with the `interface` command.

You assign IP addresses to a virtual router with the `vrrp associated -ip` command.

You enable the function with the `vrrp preempt` command.

You can display the status of the function with the `show vrrp interface - vrid` or with the `show vrrp interface` command.

9.4.5.6 vrrp primary-ip

Description

With this command, you specify the primary IP address specified with the VRRP packets as the source address.

Note

This command is available only with layer 3.

Requirement

- You are in the VRRP Interface Configuration mode.

The command prompt is as follows:

```
cli(config-vrrp-if)#
```

Syntax

Call up the command with the following parameters:

```
vrrp <vrid(1-255)> primary-ip <ip_addr>
```

The parameters have the following meaning:

Parameter	Description	Range of values
`vrid`	ID of the virtual router	1 ... 255
`ip_addr`	Value for an IP address	specify a valid IP address

Result

The primary IP address is specified.

Further notes

You configure a VRRP interface with the `interface` command.

You remove the primary IP address with the `no vrrp pirmary-ip` command.

You show the configuration of the virtual router with the `show vrrp interface - vrid` command.

9.4.5.7 no vrrp primary-ip

Description

With this command, you remove an IP address from the virtual router.

Note

This command is available only with layer 3.

Requirement

You are in the VRRP Interface Configuration mode.

The command prompt is as follows:

```
cli (config-vrrp-if)#
```

Syntax

Call up the command with the following parameters:

```
no vrrp <vrid(1-255)> ipv4 <ucast_addr > [secondary]}]
```

The parameters have the following meaning:

Parameter	Description	Range of values
`vrid`	ID of the virtual router	1 ... 255
`ucast_addr`	Value for an IPv4 unicast address	Enter a valid IPv4 unicast address
`secondary`	Secondary IP addresses	

Result

The IP address is removed from the virtual router.

Further notes

You configure a VRRP interface with the `interface` command.

You assign IP addresses to a virtual router with the `vrrp associated-ip` command.

You display the IP addresses with the `show vrrp interface - vrid` command.

9.4.5.8 vrrp priority

Description

With this command, you specify the priority of the virtual router. The current master router is automatically given 255. All other priorities can be distributed freely among the VRRP routers. The higher the priority, the earlier the VRRP router becomes "Master".

Note

This command is available only with layer 3.

Requirement

- An IP address is assigned to the virtual router.
- You are in the VRRP Interface Configuration mode.

The command prompt is as follows:

```
cli(config-vrrp-if)#
```

Syntax

Call up the command with the following parameters:

```
vrrp <vrid(1-255)> priority <priority(1-254)>
```

The parameters have the following meaning:

Parameter	Description	Range of values
`vrid`	ID of the virtual router	1 ... 255
`priority`	Priority of the virtual router	1 ...254

Result

The priority of the virtual router is specified.

Further notes

You configure a VRRP interface with the `interface` command.

You remove the priority with the `no vrrp priority` command.

You assign IP addresses to a virtual router with the `vrrp associated-ip` command.

You display the priority with the `show vrrp interface - vrid` command.

9.4.5.9 no vrrp priority

Description

With this command, you remove the priority of the virtual router.

Note

This command is available only with layer 3.

Requirement

- An IP address is assigned to the virtual router.
- You are in the VRRP Interface Configuration mode.

The command prompt is as follows:

```
cli(config-vrrp-if)#
```

Syntax

Call up the command with the following parameters:

```
no vrrp <vrid(1-255)> priority
```

The parameters have the following meaning:

Parameter	Description	Range of values
`vrid`	ID of the virtual router	1 ... 255

Result

The IP addresses are removed from the virtual router.

Further notes

You configure a VRRP interface with the `interface` command.

You create the priority with the `vrrp priority` command.

You assign IP addresses to a virtual router with the `vrrp associated-ip` command.

9.4.5.10 vrrp text-authentication

Description

With this command, you specify that VRRP packets are authenticated using an unencrypted password. If an incoming VRRP packet contains an invalid password, it is discarded.

Note

This command is available only with layer 3.

Requirement

- An IP address is assigned to the virtual router.

You are in the VRRP Interface Configuration mode.

The command prompt is as follows:

```
cli(config-vrrp-if)#
```

Syntax

Call up the command with the following parameters:

```
vrrp <vrid(1-255)> text-authentication <password>
```

The parameters have the following meaning:

Parameter	Description	Range of values
`vrid`	ID of the virtual router	1 ... 255
`password`	Password	enter a password. Maximum length: 8 characters

Result

The authentication is enabled.

Further notes

You configure a VRRP interface with the `interface` command.

You disable the authentication with the `no vrrp text-authentication` command.

You assign IP addresses to a virtual router with the `vrrp associated-ip` command.

9.4.5.11 no vrrp text-authentication

Description

Was this command, you specify that VRRP packets are not authenticated.

Note

This command is available only with layer 3.

Requirement

- An IP address is assigned to the virtual router.
- You are in the VRRP Interface Configuration mode.

The command prompt is as follows:

```
cli(config-vrrp-if)#
```

Syntax

Call up the command with the following parameters:

```
no vrrp <vrid(1-255)> text-authentication
```

The parameter has the following meaning:

Parameter	Description	Range of values
`vrid`	ID of the virtual router	1 ... 255

Result

The authentication is disabled.

Further notes

You configure a VRRP interface with the `interface` command.

You enable the authentication with the `vrrp text-authentication` command.

You assign IP addresses to a virtual router with the `vrrp associated-ip` command.

9.4.5.12 vrrp timer

Description

With this command, you specify the time interval after which a virtual router with the "Master" status sends an advertisement packet again.

Note

This command is available only with layer 3.

Requirement

- An IP address is assigned to the virtual router.
- You are in the VRRP Interface Configuration mode.

The command prompt is as follows:

```
cli(config-vrrp-if)#
```

Syntax

Call up the command with the following parameters:

```
vrrp <vrid(1-255)> timer <interval(1-255)secs>
```

The parameters have the following meaning:

Parameter	Description	Range of values
`vrid`	ID of the virtual router	1 ... 255
`interval`	Time interval in seconds	1 ... 255

Result

The time interval is specified

Further notes

You configure a VRRP interface with the `interface` command.

You enable routing with VRRP with the `router vrrp` command.

You remove the interval with the `no vrrp timer` command.

You assign IP addresses to a virtual router with the `vrrp associated-ip` command.

You show the interval with the `show vrrp interface - vrid` command.

9.4.5.13 no vrrp timer

Description

With this command, you remove the time interval.

Note

This command is available only with layer 3.

Requirement

- Routing with VRRP is enabled.
- An IP address is assigned to the virtual router.

You are in the VRRP Interface Configuration mode.

The command prompt is as follows:

```
cli (config-vrrp-if)#
```

Syntax

Call up the command with the following parameters:

```
no vrrp <vrid(1-255)> timer
```

The parameter has the following meaning:

Parameter	Description	Range of values
`vrid`	ID of the virtual router	1 ... 255

Result

The time interval is removed.

Further notes

You configure a VRRP interface with the `interface` command.

You enable routing with VRRP with the `router vrrp` command.

You configure the interval with the `vrrp timer` command.

You assign IP addresses to a virtual router with the `vrrp ipv4` command.

You show the interval with the `show vrrp interface - vrid` command.

Load control

10

This part contains the sections describing the functions for controlling and balancing network load.

10.1 Rate control

This section describes commands for controlling and restricting the data transmission rate of an interface.

10.1.1 show rate-limit output

Description

This command shows the packet rate for limiting the outgoing data stream of one or all interfaces.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show rate-limit output[interface<interface-type><interface-id>]
```

The parameters have the following meaning:

Parameters	Description	Values
`interface`	Keyword for a an interface description	-
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you do not select any parameter from the parameter list, the entries are displayed for all available interfaces.

Result

The entries are displayed.

10.1.2 Commands in the interface configuration mode

This section describes commands that you can call up in the interface configuration mode. Depending on the Interface selected, various command sets are available.

In the Global configuration mode, enter the `interface` command to change to this mode.

Commands relating to other topics that can be called in the interface configuration mode can be found in the relevant sections.

- If you exit the Interface configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the Interface configuration mode with the `end` command, you return to the Privileged EXEC mode.

10.1.2.1 rate-limit output

Description

With this command, you configure and enable the packet rate for limiting the outgoing data stream of the interface.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
rate-limit output [rate-value<Mbps(1-80000000)>]
```

The parameters have the following meaning:

Parameter	Description	Range of values
`rate-value`	Keyword for the value of the packet rate	-
`Mbps`	Value for the packet rate in packets/second	1 ... 80000000 Default: The packet rate is set to 0. The outgoing data stream is not limited.

If you do not select any parameters from the parameter list, the default value is used.

Result

The limitation of the outgoing data stream of the interface with the packet rate is enabled.

Further notes

You disable the function with the `no rate-limit output` command.

10.1.2.2 no rate-limit output

Description

With this command, you disable the packet rate for limiting the outgoing data stream of the interface.

Requirement

You are in the interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no rate-limit-output
```

Result

The limitation of the outgoing data stream of the interface with the packet rate is disabled.

Further notes

You enable the function with the `rate-limit-output` command.

10.1.2.3 storm-control

Description

If several packets are sent to some or all nodes in a network at the same time, processing bottlenecks may occur. To prevent this, the sending of these packets can be delayed until the network load has fallen below a threshold.

This function is known as storm control.

With this command, you enable the storm control function for broadcast, multicast or unknown unicast packets of an interface.

You configure the threshold value for the storm control function with the `storm-control level` command.

Note
Applications

Storm control is only supported on physical interfaces.

Requirement

You are in the Interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
storm-control{broadcast|multicast|dlf}
```

The parameters have the following meaning:

Parameter	Description
`broadcast`	Limits broadcast packets
`multicast`	Limits multicast packets
`dlf`	Limits unicast packets with unresolvable addresses (dfl = destination lookup fail)

As default the function is "disabled" for all transfer types.

Note
Configuration of the threshold value

The default value for the storm control level is 0 packets per second.

The packets are sent without any delay even when there is high network load.

To have the sending of the packets delayed when necessary, configure the threshold value with the `storm-control level` command.

Result

The storm control function is enabled.

Further notes

You enable the function with the `no storm-control`command.

You configure the threshold value for the storm control function with the `storm-control level` command.

10.1.2.4 no storm-control

Description

With this command, you disable the storm control function for broadcast, multicast or unknown unicast packets.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
no storm-control{broadcast|multicast|dlf}
```

The parameters have the following meaning:

Parameters	Description
broadcast	Disables broadcast storm control
multicast	Disables multicast storm control
dlf	Disables unknown unicast storm control

if you call up the function without parameters, it is disabled for all types of transmission.

Result

The storm control function is disabled.

Further notes

You enable the function with the `storm-control` command.

10.1.2.5 storm-control level

Description

With this command, you configure the value for the storm control function.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
storm-control level <rate-value>
```

The parameters have the following meaning:

Parameter	Description	Range of values
`rate-value`	Value for the storm control level in packets per second	The value range depends on the port speed. The entry is rounded down to the next valid value. If small values are entered, the value is rounded up to the next valid value. Default: The value for the storm control level is configured to 0 packets per second. The packets are sent without any delay even when there is high network load.

Result

The value for the storm control function is configured.

Further notes

You can reset the setting to the default with the `no storm-control level` command.

10.1.2.6 no storm-control level

Description

With this command, you reset the value for the storm control function to the default value.

The default value for the storm control level is 0 packets per second.

The packets are sent without any delay even when there is high network load.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no storm-control level
```

Result

The value for the storm control function is reset to the default.

Further notes

You configure the value for the storm control function with the `storm-control level` command.

10.2 Static MAC filtering

This section describes commands for filtering data packet on an interface.

10.2.1 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

10.2.1.1 mac-address-table block static multicast

Description

With this command, you configure a static multicast MAC address without outgoing ports.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
mac-address-table block static
multicast<aa:aa:aa:aa:aa:aa>vlan<vlan-id(1-4094)>
```

The parameters have the following meaning:

Parameters	Description	Range of values
–	MAC address of the interface	aa:aa:aa:aa:aa:aa
`vlan`	Keyword for a VLAN connection	-
`vlan-id`	Number of the addressed VLAN	1 ... 4094

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The static multicast MAC address is configured.

Further notes

You delete the static multicast MAC address with the `no mac-address-table static multicast` command.

10.2.1.2 mac-address-table static multicast

Description

With this command, you generate a static multicast MAC address entry in the forwarding database.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
mac-address-table static multicast<aa:bb:cc:dd:ee:ff>
    vlan<vlan-id(1-4094)>
    interface([<interface-type><0/a-b,0/c,...>]
              [<interface-type><0/a-b,0/c,...>]
              [port-channel<1-8>]])
   [forbidden-ports([<interface-type><0/a-b,0/c,...>]
                    [<interface-type><0/ab,0/c, ...>]
                    [port-channel <1-8>]])
```

The parameters have the following meaning:

Parameter	Description	Values or range of values
-	MAC address of the interface	aa:bb:cc:dd:ee:ff
`vlan`	Keyword for a VLAN connection	-
`vlan-id`	Number of the addressed VLAN	1 ... 4094
`interface`	Keyword for a an interface description	-
`interface-type`	Type of interface	• `gigabitethernet` • `extreme-ethernet`
`0/a-b, 0/c,...`	Slot no. and port no. of the interface	Enter a valid interface name

Parameter	Description	Values or range of values
`port-channel`	Specifies the name of a port channel	1-8
`forbidden-ports`	Keyword for the interface description of the blocked ports	-

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The entry is generated.

Further notes

With the `show mac-address-table static multicast` command, you display the list of configured entries.

With the `no mac-address-table static multicast` command, you delete an entry.

10.2.1.3 no mac-address-table static multicast

Description

With this command, you delete a static multicast MAC address entry from the forwarding database.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no mac-address-table static multicast<aa:aa:aa:aa:aa:aa>
      vlan<vlan-id(1-4094)>
```

The parameters have the following meaning:

Parameters	Description	Values or range of values
-	MAC address of the interface	aa:aa:aa:aa:aa:aa
`vlan`	Keyword for the number of a VLAN connection	-
`vlan-id`	Number of the addressed VLAN	1 ... 4094

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The entry is deleted.

Further notes

With the `show mac-address-table static multicast` command, you display the list of configured entries.

With the `mac-address-table static multicast` command, you create an entry.

10.2.1.4 mac-address-table static unicast

Description

With this command, you generate a static unicast MAC address entry in the forwarding database.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
mac-address-table static unicast<aa:aa:aa:aa:aa:aa>
  vlan<vlan-id(1-4094)>
  interface([<interface-type><0/a-b, 0/c,...>]
            [<interface-type><0/a-b, 0/c,...>]
            [port-channel<a,b,c-d>])
```

The parameters have the following meaning:

Parameters	Description	Values or range of values
-	MAC address of the interface	aa:aa:aa:aa:aa:aa
`vlan`	Keyword for a VLAN connection	-
`vlan-id`	Number of the addressed VLAN	1 ... 4094
`interface`	Keyword for a an interface description	-
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`

Parameters	Description	Values or range of values
`0/a-b, 0/c,...`	Slot no. and port no. of the interface	Enter a valid interface name
`port-channel`	Specifies the name of a port channel	a,b,c-d

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The entry is generated.

Further notes

With the `show mac-address-table static unicast` command, you display the list of configured entries.

With the `no mac-address-table static unicast` command, you delete an entry.

10.2.1.5 no mac-address-table static unicast

Description

With this command, you delete a static unicast MAC address entry from the forwarding database.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no mac-address-table static unicast <aa:aa:aa:aa:aa:aa>
   vlan<vlan-id(1-4094)>
```

The parameters have the following meaning:

Parameters	Description	Values
-	MAC address of the interface	aa:aa:aa:aa:aa:aa
`vlan`	Keyword for a VLAN connection	-
`vlan-id`	Number of the addressed VLAN	1 ... 4094

Result

The entry is deleted.

Further notes

With the `show mac-address-table static unicast` command, you display the list of configured entries.

With the `mac-address-table static unicast` command, you create an entry.

10.2.2 Commands in the interface configuration mode

This section describes commands that you can call up in the interface configuration mode. Depending on the Interface selected, various command sets are available.

In the Global configuration mode, enter the `interface` command to change to this mode.

Commands relating to other topics that can be called in the interface configuration mode can be found in the relevant sections.

- If you exit the Interface configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the Interface configuration mode with the `end` command, you return to the Privileged EXEC mode.

10.2.2.1 switchport ingress-filter

Description

With incoming packets, the ingress filter checks whether the port on which the packet was received belongs to the sending VLAN. If this is not the case, the packet is not processed.

With this command, you enable the ingress filter.

Requirement

You are in the interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
switchport ingress-filter
```

Result

The ingress filter is activated.

Further notes

You disable the filter with the `no switchport ingress-filter` command.

You can display the status of the ingress filter and other settings with the `show vlan port config` command.

10.2.2.2 no switchport ingress-filter

Description

With this command, you disable the ingress filter.

Requirement

You are in the interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no switchport ingress-filter
```

Result

The ingress filter is deactivated.

Further notes

You enable the filter with the `switchport ingress-filter` command.

You can display the status of the ingress filter and other settings with the `show vlan port config` command.

10.3 Dynamic MAC aging

The section describes commands with which the aging of dynamically learned entries is configured in a MAC address list.

10.3.1 show mac-address-table aging-time

Description

To ensure that the address entries are up-to-date, MAC addresses are only kept in the address table for a specified time.

This command shows the time after which the MAC addresses are removed from the address table.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show mac-address-table aging-time
```

Result

The time is displayed.

10.3.2 show mac-address-table aging-status

Description

This command shows whether or not MAC aging is enabled.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show mac-address-table aging-status
```

Result

The status of the MAC aging is displayed.

10.3.3 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

10.3.3.1 mac-address-table aging-time

Description

With this command, you configure the aging of a dynamically learned entry in the MAC address list.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
mac-address-table aging-time <seconds(10-630)>
```

The parameter has the following meaning:

Parameter	Description	Range of values
`seconds`	Life of the entry in seconds	10 ... 630 Default: 40

Result

The value of the aging of a dynamically learned entry is configured.

Further notes

You can reset the setting to the default with the `no mac-address-table aging-time` command.

You display the setting with the `show mac-address-table aging-time` command.

10.3.3.2 no mac-address-table aging-time

Description

With this command, you reset the value for the aging of a dynamically learned entry in the MAC address list to the default value.

The default value is 40 s.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no mac-address-table aging-time
```

Result

The value of the aging of a dynamically learned entry is reset to the default value.

Further notes

You configure the setting with the `mac-address-table aging-time` command.

You display the setting with the `show mac-address-table aging-time` command.

10.3.3.3 mac-address-table aging

Description

With this command, you enable the "Aging" function. The "Aging" function ensures that an entry in the MAC address list that was learned dynamically is deleted again after a certain time.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
mac-address-table aging
```

Result

The "Aging" function is enabled.

Further notes

You configure the time with the `mac-address-table aging-time` command.

You disable the "Aging" function with the `no mac-address-table aging` command.

10.3.3.4 no mac-address-table aging

Description

With this command, you disable the "Aging" function.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no mac-address-table aging
```

Result

The "Aging" function is disabled.

Further notes

You enable the "Aging" function with the `mac-address-table aging` command.

10.4 Flow control

The flow control function monitors the incoming data traffic of a port. If there is overload ("Congestion", "Overflow") it sends a signal to the connection partner. If the flow control function receives a signal at the sending end, it stops the data transmission to avoid loss of data.

This section describes commands of the flow control function.

10.4.1 show flow-control

Description

This command shows the settings of the flow control function.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show flow-control [interface <interface-type><interface-id>]
```

The parameters have the following meaning:

Parameters	Description	Values
`interface`	Keyword for a an interface description	-
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you do not select any parameters from the parameter list, the information for the router will be displayed.

Result

The settings of the flow control function are displayed.

10.4.2 Commands in the interface configuration mode

This section describes commands that you can call up in the interface configuration mode. Depending on the Interface selected, various command sets are available.

In the Global configuration mode, enter the `interface` command to change to this mode.

Commands relating to other topics that can be called in the interface configuration mode can be found in the relevant sections.

- If you exit the Interface configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the Interface configuration mode with the `end` command, you return to the Privileged EXEC mode.

10.4.2.1 flowcontrol

Description

The flow control function monitors a connection at the receiving end to make sure that not more data is received than can be processed. If flow control detects a threat of data overflow, the partner at the sending end is sent a signal to stop transmitting.

With this command, you configure the flow control function for an interface.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
flowcontrol {on|off}
```

The parameters have the following meaning:

Parameters	Description
`on`	Enables the function
`off`	Disables the function

Result

The settings are configured.

Further notes

You can display the status of this function with the `show flow-control` command.

10.5 Service classes

This section describes commands for configuring the assignment tables for service classes and the Differentiated Services Code Point (DSCP).

10.5.1 show qos cos-map

Description

This command shows assignment table for service classes.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show qos cos-map
```

Result

The assignment table for service classes is displayed.

10.5.2 show qos dscp-map

Description

This command shows assignment table for DSCP.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show qos dscp-map
```

Result

The assignment table for DSCP is displayed.

10.5.3 Commands in the Global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

10.5.3.1 qos

Description

With this command, you change to the QOS configuration mode.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
qos
```

Result

You are now in the QOS configuration mode.

The command prompt is as follows:

```
cli(config-qos)#
```

Further notes

You exit the QOS configuration modewith the command `end` or `exit`.

10.5.4 Commands in the QOS configuration mode

This section describes commands that you can call up in the QOS configuration mode.

In the Global configuration mode, enter the `qos` command to change to this mode.

- If you exit the QOS configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the QOS configuration mode with the `end` command, you return to the Privileged EXEC mode.

10.5.4.1 cos-map

Description

In a network, each data stream is assigned a service class that decides its priority. In special situations, it may be necessary to change this priority.

This change is made using a table in which the service classes are assigned to another queue.

With this command, you configure the assignment table for service classes.

Requirement

You are in the QOS Configuration mode.

The command prompt is as follows:

```
cli(config-qos)#
```

Syntax

Call up the command with the following parameters:

```
cos-map <cos(0-7)> queue <queue(1-8)>
```

The parameters have the following meaning:

Parameter	Description	Range of values
`cos`	Service class	0 … 7 Default: 1
`queue`	Queue that it is assigned to this service class	1 … 8 Default: 2

For the following default service classes, the rule applies accordingly.

Result

The assignment table for service classes is configured.

10.5.4.2 dscp-map

Description

In a network, each IP packet is assigned a DSCP code that decides its priority. In special situations, it may be necessary to change this priority.

This change is made using a table in which the DSCP codes are assigned to another queue.

With this command, you configure the assignment table for DSCP codes.

Requirement

You are in the QOS Configuration mode.

The command prompt is as follows:

```
cli(config-qos)#
```

Syntax

Call up the command with the following parameters:

```
dscp-map < dscp (0-63)> queue <queue(1-8)>
```

The parameters have the following meaning:

Parameter	Description	Range of values
`dscp`	DSCP code	0 … 63
`queue`	Queue that is assigned to this DSCP code	1 … 8

The default settings are as follows:

- The DSCP codes 0 to 7 are assigned to queue 1.
- The DSCP codes 8 to 15 are assigned to queue 2.
  The rules apply accordingly to the DSCP codes following.

Result

The assignment table for DSCP codes is configured.

Security and authentication

11

This part contains the sections that describe the access rights and authentication methods.

11.1 User rights management

This section describes commands for access as administrator and the configuration of the authentication methods.

11.1.1 show users

Description

This command shows the logged-in CLI users.

Requirement

You are in the Privileged EXEC mode.

The command prompt is as follows:

```
cli#
```

Syntax

Call the command without parameters:

```
show users
```

Result

The logged-in CLI users are displayed.

11.1.2 whoami

Description

This command shows the user name of the logged in user.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
whoami
```

Result

The user name of the logged in user is displayed.

11.2 Radius client

RADIUS (**R**emote **A**uthentication **D**ial-**I**n **U**ser **S**ervice) is a client/server protocol that allows the centralized authentication of users logging on in a physical or virtual network. This makes central administration of user data possible.

This section describes commands relevant for the configuration of this service.

11.2.1 show radius statistics

Description

This command shows the connection statistics from the RADIUS client to the RADIUS server.

Requirement

You are in the Privileged EXEC mode.

The command prompt is as follows:

```
cli#
```

Syntax

Call the command without parameters:

```
show radius statistics
```

Result

The connection statistics are displayed.

11.2.2 show radius server

Description

This command shows the RADIUS server configuration.

Requirement

You are in the Privileged EXEC mode.

The command prompt is as follows:

```
cli#
```

Syntax

Call up the command with the following parameters:

```
show radius server [{ucast_addr}]
```

The parameters have the following meaning:

Parameters	Description	Range of values
`ucast_addr`	Value for an IPv4 unicast address	Enter a valid unicast address

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If no parameters are specified, all configured RADIUS servers are displayed.

Result

The RADIUS server configuration is displayed.

11.2.3 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

11.2.3.1 radius-server

Description

With this command, you configure a RADIUS server entry on the RADIUS client.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
radius-server {ipv4 <ip address> | fqdn-name <FQDN(100)>} [auth-port
<number(1-65535)>] [retransmit <rtm(1-254)>][key<secret-key-string>]
[primary]
```

The parameters have the following meaning:

Parameter	Description	Range of values
ipv4	Keyword for an IP address	-
ip address	IPv4 Internet address of the Syslog server	Format: 0.0.0.0
fqdn-name	Keyword for a domain name	-
FQDN(100)	Domain name (Fully Qualified Domain Name)	Maximum of 100 characters
auth-port	Keyword for the UDP port number for authentication	-
number	Number of the port	1 … 65535
retransmit	Keyword for the number of connection retries	-
rtm	Maximum number of connection retries	1 ... 254
key	Keyword for communication between the authenticator and the server	-
secret-key-string	Value for the key	46 characters
primary	Identifies the RADIUS server as primary server	-

For information on addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If optional parameters are not specified when configuring, the following defaults apply:

Parameter	Default value
auth-port	1812
retransmit	3
secret-key-string	empty string

Note

Primary server

In a network, only one RADIUS server can be selected as the primary server.

If you select a RADIUS server as the primary server, this replaces the server that previously had the role of primary server.

11.2.3.2 no radius-server

Description

With this command, you delete a RADIUS server entry on the RADIUS client.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no radius-server {ipv4 <ip address> | fqdn-name <FQDN(100)>}
[primary]
```

The parameters have the following meaning:

Parameter	Description	Range of values
`ipv4`	Keyword for an IP address	-
`ip address`	IPv4 Internet address of the Syslog server	Format: 0.0.0.0
`fqdn-name`	Keyword for a domain name	-
`FQDN(100)`	Domain name (Fully Qualified Domain Name)	Maximum of 100 characters
`primary`	Identifies the RADIUS server as primary server	-

For information on addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If optional parameters are not specified when configuring, the following defaults apply:

Result

The entry for a connection between the RADIUS client and a server or the identification as primary server is deleted.

Further notes

You configure the connection of a RADIUS client to a server with the `radius-server` command.

You show the configuration of a RADIUS server on the client with the `show radius server` command.

You show the statistical information of this function with the `show radius statistics` command.

11.3 MAC access control list

This section describes commands for working with MAC access control lists.

11.3.1 show access-lists

Description

This command shows the configuration of the access control lists (Access Control List).

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show access-lists [ [{ip | mac}] <access-list-number (1-128)> ]
```

The parameters have the following meaning:

Parameters	Description	Range of values
`ip`	Selects IP-based access lists (IP ACL)	-
`mac`	Selects MAC-based access lists (MAC ACL)	-
`access-list-number`	Number of the access control list	1 … 128

If you do not select any parameters from the parameter list, the configuration of all access control lists will be displayed.

Result

The configuration of the access control lists is displayed.

11.3.2 show interface access lists

Description

This command shows the access control list of one or all interfaces.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

`show interface access-lists<interface-type><interface-id>]`

The parameters have the following meaning:

Parameters	Description	Values
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you do not select any parameter from the parameter list, the configuration is displayed for all available IP interfaces.

Result

The access control list of the selected IP interface is displayed.

11.3.3 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

11.3.3.1 mac access-list extended

Description

With this command, you generate a MAC access control list and change to the MAC ACL configuration mode.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
mac access-list extended<access-list-number(1-128)>
```

The parameter has the following meaning:

Parameters	Description	Range of values
`access-list-number`	Number of the access control list	1 ... 128

Result

A MAC access control list has been generated.

You are now in the MAC ACL configuration mode.

The command prompt is as follows:

```
cli(config-ext-macl)#
```

Further notes

You delete the MAC access control list with the `no mac access-list extended` command.

You exit the MAC ACL configuration mode with the `exit` command.

You display the configuration of the access control list with the `show access-lists` command.

11.3.3.2 no mac access-list extended

Description

With this command, you delete a MAC access control list.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no mac access-list extended<short(1-128)>
```

The parameter has the following meaning:

Parameters	Description	Range of values
short	Number of the access control list	1 ... 128

Result

The MAC access control list is deleted.

Further notes

You generate a MAC ACL with the `mac access-list extended` command.

You display the configuration of the access control list with the `show access-lists` command.

11.3.4 Commands in the interface configuration mode

This section describes commands that you can call up in the interface configuration mode. Depending on the Interface selected, various command sets are available.

In the Global configuration mode, enter the `interface` command to change to this mode.

Commands relating to other topics that can be called in the interface configuration mode can be found in the relevant sections.

- If you exit the Interface configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the Interface configuration mode with the `end` command, you return to the Privileged EXEC mode.

11.3.4.1 mac access-group

Description

With this command, you enable the access control of the packets of an interface.

Requirement

- A MAC access control list has been created.

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
mac access-group <access-list-number(1-128)>{in|out}
```

The parameters have the following meaning:

Parameters	Description	Values
`access-list-number`	Number of the access control list	1 ... 128
`in`	Specifies that incoming packets are filtered	-
`out`	Specifies that outgoing packets are filtered	-

Result

The packets are filtered according to the access control list (ACL).

Further notes

You disable the setting with the `no mac access-group` command.

You display the statistical data of the access control list with the `show access-lists` command.

11.3.4.2 no mac access-group

Description

With this command, you disable the access control of the packets of an interface.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
no mac access-group <access-list-number(1-128)>{in|out}
```

The parameters have the following meaning:

Parameters	Description	Values
`access-list-number`	Number of the access control list	1 ... 128
`in`	Specifies that incoming packets are filtered	-
`out`	Specifies that outgoing packets are filtered	-

Result

The packet filtering according to the access control list (ACL) is canceled.

Further notes

You enable the setting with the `mac access-group` command.

You display the configuration of the access control list with the `show access-lists` command.

11.3.5 Commands in the MAC ACL configuration mode

This section describes commands that you can call up in the MAC ACL configuration mode.

In the Global configuration mode, enter the `mac access-list extended` command to change to this mode.

- If you exit the MAC ACL configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the MAC ACL configuration mode with the `end` command, you return to the Privileged EXEC mode.

11.3.5.1 permit

Description

With this command, you configure a MAC address control list that describes the MAC addresses for which incoming and/or outgoing data traffic is permitted.

The access control list contains only one entry. If you want to lock or permit further addresses, create a new access control list.

Note

Processing order of the lists

The access control lists are processed on he interface in the order in which they were created.

The index number of the access control list is not used for this.

Requirement

You are in the MAC ACL Configuration mode.

The command prompt is as follows:

```
cli(config-ext-macl)#
```

Syntax

Call up the command with the following parameters:

```
permit {any|host<src-mac-address>}{any|host<dest-mac-address>}
```

The parameters have the following meaning:

Parameter	Description	Values
`any`	Keyword for "all"	-
`host`	Keyword for the MAC address of an incoming connection that is permitted	-
`src-mac-address`	MAC address of the permitted incoming connection	Enter a valid MAC address
`any`	Keyword for "all"	-
`host`	Keyword for the MAC address of an outgoing connection that is permitted	-
`dest-mac-address`	MAC address of the permitted outgoing connection	Enter a valid MAC address

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Note

MAC address input

Use "any", if the rule is to apply to all src and/or dest MAC addresses. This corresponds to the MAC address "00:00:00:00:00:00".

Result

The MAC access control list is configured.

Further notes

You exit the MAC ACL Configuration mode with the `exit` command.

You delete the MAC access control list with the `no mac access-list extended` command.

You display the configuration of the access control list with the `show access-lists` command.

11.3.5.2 deny

Description

With this command, you configure a MAC address control list that describes the MAC addresses for which incoming and/or outgoing data traffic is locked.

The access control list contains only one entry. If you want to lock or permit further addresses, create a new access control list.

Note

Processing order of the lists

The access control lists are processed on he interface in the order in which they were created.

The index number of the access control list is not used for this.

Requirement

You are in the MAC ACL Configuration mode.

The command prompt is as follows:

```
cli(config-ext-macl)#
```

Syntax

Call up the command with the following parameters:

```
deny {any|host<src-mac-address>}{any|host<dest-mac-address>}
```

The parameters have the following meaning:

Parameter	Description	Values
`any`	Keyword for "all"	-
`host`	Keyword for the MAC address of an incoming connection that is locked	-
`src-mac-address`	MAC address of the locked incoming connection	Enter a valid MAC address
`any`	Keyword for "all"	-
`host`	Keyword for the MAC address of an outgoing connection that is locked	-
`dest-mac-address`	MAC address of the locked outgoing connection	Enter a valid MAC address

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Note

MAC address input

Use "any", if the rule is to apply to all src and/or dest MAC addresses. This corresponds to the MAC address "00:00:00:00:00:00".

Result

The MAC access control list is configured.

Further notes

You exit the MAC ACL Configuration mode with the `exit` command.

You delete the MAC access control list with the `no mac access-list extended` command.

You display the configuration of the access control list with the `show access-lists` command.

11.4 IP access control list

This section describes commands for working with IP access control lists.

11.4.1 Commands in the Global Configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

11.4.1.1 ip access-list

Description

With this command, you generate a MAC access control list and change to the ACL standard configuration mode.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
ip access-list standard<access-list-number(1-1000)>
```

The parameters have the following meaning:

Parameter	Description	Range of values
`standard`	Specifies that a standard access control list is generated	-
`access-list-number`	Number of the standard access control list	1 ... 1000

Result

The access control list has been generated.

You are now in the ACL Standard Access Control List configuration mode.
The command prompt is as follows:
`cli(config-std-nacl)#`

Further notes

You delete the IP access control list with the `no ip access-list` command.

You exit the ACL Standard Access List configuration mode with the `exit` command.

You display the configuration of the access control list with the `show access-lists` command.

11.4.1.2 no ip access-list

Description

With this command, you delete an IP access control list.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

`cli(config)#`

Syntax

Call up the command with the following parameters:

`no ip access-list standard<access-list-number(1-1000)`

The parameters have the following meaning:

Parameters	Description	Range of values
`standard`	Specifies that a standard access control list is generated	-
`access-list-number`	Number of the standard access control list	1 ... 1000

Result

The access control list is deleted.

Further notes

You generate an IP access control list with the `ip access-list` command.

You display the configuration of the access control list with the `show access-lists` command.

11.4.2 Commands in the Interface Configuration mode

This section describes commands that you can call up in the interface configuration mode. Depending on the Interface selected, various command sets are available.

In the Global configuration mode, enter the `interface` command to change to this mode.

Commands relating to other topics that can be called in the interface configuration mode can be found in the relevant sections.

- If you exit the Interface configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the Interface configuration mode with the `end` command, you return to the Privileged EXEC mode.

11.4.2.1 ip access-group

Description

With this command, you enable the access control of the packets of an interface.

Requirement

- An IP access list has been created.

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
ip access-group <access-list-number(1-65535)>{in|out}
```

The parameters have the following meaning:

Parameters	Description	Values
access-list-number	Number of the access control list	1 ... 65535
in	Specifies that incoming packets are filtered	-
out	Specifies that outgoing packets are filtered	-

Note

Restrictions when filtering layer 2 interfaces

The filtering of outgoing packets is not supported on layer 2 interfaces

Filtering on a layer 2 interface using an IP access control list is only effective for IP packets. To filter packets with other data formats, use an expanded MAC access control list.

Result

The packets are filtered according to the access control list (ACL).

Further notes

You disable the setting with the `no ip access-group` command.

You show the configuration of the access control list with the `show access-lists` command.

11.4.2.2 no ip access-group

Description

With this command, you disable the access control of the packets of an interface.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
no ip access-group [<access-list-number(1-65535)>]{in|out}
```

The parameters have the following meaning:

Parameters	Description	Values
access-list-number	Number of the access control list	1 ... 65535
in	Specifies that incoming packets are filtered	-
out	Specifies that outgoing packets are filtered	-

If you do not specify a number of for an access control list, all lists are deleted.

Result

The packet filtering according to the access control list (ACL) is canceled.

Further notes

You enable the setting with the `ip access-group` command.

You show the configuration of the access control list with the `show access-lists` command.

11.4.3 Commands in the ACL standard configuration mode

This section describes commands that you can call up in the ACL standard configuration mode.

In the Global configuration mode, enter the `ip access-list standard <acl-num>` command, to change to the configuration mode for this ACL. If an ACL with the specified number does not exist, an ACL with the corresponding number is created.

Note

You can display existing access control lists with the `show access-lists` command.

- If you exit the ACL standard configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the ACL standard configuration mode with the `end` command, you return to the Privileged EXEC mode.

11.4.3.1 permit

Description

With this command, you configure an IP access control list. The IP ACL contains a description of the IP addresses for which the incoming and outgoing frames will be forwarded.

You have the following options:

- All incoming and/or outgoing frames are forwarded.
- Incoming and/or outgoing frames of a specific host are forwarded.

- Incoming and/or outgoing frames of hosts of a specific subnet are forwarded.
- Incoming and/or outgoing frames of a specific protocol are forwarded.

Note
Processing order of the lists
The access control lists are processed on the interface in the order in which they were created.
The index number of the access control list is not used for this.

Requirement

You are in the ACL standard configuration mode.

The command prompt is as follows:

```
cli(config-std-nacl)#
```

Syntax

Call up the command with the following parameters:

```
permit {any | host <src-ip> | <network-src-ip> <mask>} [{any | host
<dest-ip> | <network-dest-ip> <mask>}]
```

or

```
permit {any | ospf | vrrp | <protocol-type type(1-255)>} {any | host
<src-ip> | <network-src-ip> <mask>} {any | host <dest-ip> | <dest-ip>
<mask>} [dscp <value(0-63)>]
```

The parameters have the following meaning:

Parameter	Description	Values
`any`	Allows all protocols.	-
`ospf`	Forwarding of OSPF frames.	-
`vrrp`	Forwarding of VRRP frames.	-
`protocol-type`	Keyword for the protocol type	-
`type`	Protocol type	1 ... 255
`any`	Allows all incoming frames	-
`host`	Keyword for a 32 bit long subnet mask.	-
`src-ip`	Source IP address	Enter a valid IP address.
`network-src-ip`	Network source address	Enter a valid combination of IP address and subnet mask.
`mask`	Corresponding subnet mask	
`any`	Allows all outgoing frames	-
`host`	Keyword for a 32 bit long subnet mask.	-
`dest-ip`	Destination IP address	Enter a valid IP address.
`network-dest-ip`	Network destination address	Enter a valid combination of IP address and subnet mask.
`mask`	Corresponding subnet mask	

Parameter	Description	Values
`dscp`	Keyword for the Differentiated Services Codepoint	-
`value`	Value for the Differentiated Services Codepoint	0 ... 63

Result

The IP access list has been configured.

Note

Subnet mask for individual hosts

If you create the rule for a host (one IP address), you will need to specify a 32-bit long subnet mask. This is then "255.255.255.255". As an alternative, you can specify the keyword "host" followed by the IP address.

Further notes

You delete an IP access control list with the `no ip access-list standard <acl-num>` command.

You display the configuration of the access control list with the `show access-lists` command.

11.4.3.2 deny

Description

With this command, you configure an IP access control list. The IP ACL contains a description of the IP addresses for which the incoming and outgoing frames will not be forwarded.

You have the following options:

- All incoming and/or outgoing frames are not forwarded.
- Incoming and/or outgoing frames of a specific host are not forwarded.
- Incoming and/or outgoing frames of hosts of a specific subnet are not forwarded.
- Incoming and/or outgoing frames of a specific protocol are not forwarded.

Note

Processing order of the lists

The access control lists are processed on the interface in the order in which they were created.

The index number of the access control list is not used for this.

Requirement

You are in the ACL standard configuration mode.

The command prompt is as follows:

```
cli(config-std-nacl)#
```

Syntax

Call up the command with the following parameters:

```
deny {any | host <src-ip> | <network-src-ip> <mask>} [ { any | host
<dest-ip> | <network-dest-ip> <mask>}]
```

or

```
deny {any | ospf | vrrp | <protocol-type type(1-255)>} {any | host
<src-ip> | <network-src-ip> <mask>} {any | host <dest-ip> | <dest-ip>
<mask>} [dscp <value(0-63)>]
```

The parameters have the following meaning:

Parameter	Description	Values
`any`	Blocks all protocols.	-
`ospf`	Blocks OSPF frames.	-
`vrrp`	Blocks VRRP frames.	-
`protocol-type`	Keyword for the protocol type	-
`type`	Protocol type	1 ... 255
`any`	Blocks all incoming frames	-
`host`	Keyword for a 32 bit long subnet mask.	-
`src-ip`	Source IP address	enter a valid IP address.
`network-src-ip`	Network source address	enter a valid combination of IP address and subnet mask.
`mask`	Corresponding subnet mask	
`any`	Blocks all outgoing frames	-
`host`	Keyword for a 32 bit long subnet mask.	-
`dest-ip`	Destination IP address	enter a valid IP address.
`network-dest-ip`	Network destination address	enter a valid combination of IP address and subnet mask.
`mask`	Corresponding subnet mask	
`value`	Value	0 ... 63
`dscp`	Keyword for the Differentiated Services Codepoint	-
`value`	Value for the Differentiated Services Codepoint	0 ... 63

Result

The IP access list has been configured.

Note

Subnet mask for individual hosts

If you create the rule for a single system (one IP address), you will need to specify a 32-Bit long subnet mask. This is then "255.255.255.255". As an alternative, you can specify the keyword "host" followed by the IP address.

Further notes

You delete an IP access control list with the `no ip access-list standard <acl-num>` command.

You display the configuration of the access control list with the `show access-lists` command.

11.4.3.3 permit icmp

Description

With this command, you configure an IP access control list for ICMP messages.

You have the following options:

- All incoming and/or outgoing ICMP messages are forwarded.
- Incoming and/or outgoing ICMP messages of a specific host are forwarded.
- Incoming and/or outgoing ICMP messages of hosts of a specific subnet are forwarded.

Note

Processing order of the lists

The access control lists are processed on the interface in the order in which they were created.

The index number of the access control list is not used for this.

Requirement

You are in the ACL standard configuration mode.

The command prompt is as follows:

```
cli(config-std-nacl)#
```

Syntax

Call up the command with the following parameters:

```
permit icmp {any | host <src-ip> | <network-src-ip> <mask>} [{any |
host <dest-ip> | <network-dest-ip> <mask>}] [<message-type
type(0-255)>] [<message-code code(0-255)>]
```

The parameters have the following meaning:

Parameter	Description	Values
`any`	Allows all incoming frames	-
`host`	Keyword for a 32 bit long subnet mask.	-
`src-ip`	Source IP address	enter a valid IP address.
`network-src-ip`	Network source address	enter a valid combination of IP address and subnet mask.
`mask`	Corresponding subnet mask	
`any`	Allows all outgoing frames	-
`host`	Keyword for a 32 bit long subnet mask.	-
`dest-ip`	Destination IP address	enter a valid IP address.
`network-dest-ip`	Network destination address	enter a valid combination of IP address and subnet mask.
`mask`	Corresponding subnet mask	
`message-type`	Keyword for the ICMP message type	-
`type`	ICMP message type	0 ... 255
`message-code`	Keyword for the ICMP message code	-
`code`	ICMP message code	0 ... 255

Result

The IP access list for ICMP messages has been configured.

Note

Subnet mask for individual hosts

If you create the rule for a single system (one IP address), you will need to specify a 32-Bit long subnet mask. This is then "255.255.255.255". As an alternative, you can specify the keyword "host" followed by the IP address.

Further notes

You delete an IP access control list with the `no ip access-list standard <acl-num>` command.

You display the configuration of the access control list with the `show access-lists` command.

11.4.3.4 deny icmp

Description

With this command, you configure an IP access control list for ICMP messages.

You have the following options:

- All incoming and/or outgoing ICMP messages are not forwarded.
- Incoming and/or outgoing ICMP messages of a specific host are not forwarded.
- Incoming and/or outgoing ICMP messages of hosts of a specific subnet are not forwarded.

Note

Processing order of the lists

The access control lists are processed on the interface in the order in which they were created.

The index number of the access control list is not used for this.

Requirement

You are in the ACL standard configuration mode.

The command prompt is as follows:

```
cli(config-std-nacl)#
```

Syntax

Call up the command with the following parameters:

```
deny icmp {any | host <src-ip> | <network-src-ip> <mask>} [{any |
host <dest-ip> | <network-dest-ip> <mask>}] [<message-type
type(0-255)>] [<message-code code(0-255)>]
```

The parameters have the following meaning:

Parameter	Description	Values
`any`	Blocks all incoming frames	-
`host`	Keyword for a 32 bit long subnet mask.	-
`src-ip`	Source IP address	enter a valid IP address.
`network-src-ip`	Network source address	enter a valid combination of IP address and subnet mask.
`mask`	Corresponding subnet mask	
`any`	Blocks all outgoing frames	-
`host`	Keyword for a 32 bit long subnet mask.	-
`dest-ip`	Destination IP address	enter a valid IP address.
`network-dest-ip`	Network destination address	enter a valid combination of IP address and subnet mask.
`mask`	Corresponding subnet mask	

Parameter	Description	Values
message-type	Keyword for the ICMP message type	-
type	ICMP message type	0 ... 255
message-code	Keyword for the ICMP message code	-
code	ICMP message code	0 ... 255

Result

The IP access list for ICMP messages has been configured.

Note

Subnet mask for individual hosts

If you create the rule for a single system (one IP address), you will need to specify a 32-Bit long subnet mask. This is then "255.255.255.255". As an alternative, you can specify the keyword "host" followed by the IP address.

Further notes

You delete an IP access control list with the `no ip access-list standard <acl-num>` command.

You display the configuration of the access control list with the `show access-lists` command.

11.4.3.5 permit tcp

Description

With this command, you configure an IP access control list for the TCP protocol.

You have the following options:

- All incoming and/or outgoing TCP segments are forwarded.
- Incoming and/or outgoing TCP segments of a specific host are forwarded.
- Incoming and/or outgoing TCP segments of hosts of a specific subnet are forwarded.
- Incoming and/or outgoing TCP segments are forwarded to specific ports.

Note

Processing order of the lists

The access control lists are processed on the interface in the order in which they were created.

The index number of the access control list is not used for this.

Requirement

You are in the ACL standard configuration mode.

The command prompt is as follows:

```
cli(config-std-nacl)#
```

Syntax

Call up the command with the following parameters:

```
permit tcp {any | host <src-ip> | <network-src-ip> <mask>}
[{ gt <port-number(1-65535)> | lt <port-number(1-65535)> | eq <port-
number(1-65535)> | range <port-number (1-65535)> <port-number
(1-65535)>}] [{any | host <dest-ip> | <network-dest-ip> <mask>}]
[{ gt <port-number(1-65535)> | lt <port-number(1-65535)> | eq <port-
number(1-65535)> | range <port-number (1-65535)> <port-number
(1-65535)>}] [dscp<value(0-63)>] [{ack | rst}]
```

The parameters have the following meaning:

Parameter	Description	Values
`any`	Forwards all incoming TCP segments.	-
`host`	Keyword for a 32 bit long subnet mask.	-
`src-ip`	Source IP address	enter a valid IP address.
`network-src-ip`	Network source address	enter a valid combination of IP address and subnet mask.
`mask`	Corresponding subnet mask	
`port-number`	Port number	1 ... 65535
`gt`	Keyword for port numbers higher than the specified number (gt: greater than).	-
`lt`	Keyword for port numbers lower than the specified number (lt: less than).	-
`eq`	Keyword for a specific port number (eq:equal).	-
`range`	Keyword for a range of port numbers. Following this, the first and last port number of the range is specified.	-
`any`	Forwards all outgoing TCP segments.	-
`host`	Keyword for a 32 bit long subnet mask.	-
`dest-ip`	Destination IP address	enter a valid IP address.
`network-dest-ip`	Network destination address	enter a valid combination of IP address and subnet mask.
`mask`	Corresponding subnet mask	
`dscp`	Keyword for the Differentiated Services Codepoint	-
`value`	Value for the Differentiated Services Codepoint	0 ... 63
`ack`	Forwards ACK segments.	-
`rst`	Forwards RST segments.	-

Result

The IP access list for TCP segments has been configured.

Note

Subnet mask for individual hosts

If you create the rule for a single system (one IP address), you will need to specify a 32-Bit long subnet mask. This is then "255.255.255.255". As an alternative, you can specify the keyword "host" followed by the IP address.

Further notes

You delete an IP access control list with the `no ip access-list standard <acl-num>` command.

You display the configuration of the access control list with the `show access-lists` command.

11.4.3.6 deny tcp

Description

With this command, you configure an IP access control list for the TCP protocol.

You have the following options:

- All incoming and/or outgoing TCP segments are not forwarded.
- Incoming and/or outgoing TCP segments of a specific host are not forwarded.
- Incoming and/or outgoing TCP segments of hosts of a specific subnet are not forwarded.
- Incoming and/or outgoing TCP segments are not forwarded to specific ports.

Note

Processing order of the lists

The access control lists are processed on the interface in the order in which they were created.

The index number of the access control list is not used for this.

Requirement

You are in the ACL standard configuration mode.

The command prompt is as follows:

```
cli(config-std-nacl)#
```

Syntax

Call up the command with the following parameters:

```
deny tcp {any | host <src-ip> | <network-src-ip> <mask>} [{ gt <port-
number(1-65535)> | lt <port-number(1-65535)> | eq <port-
number(1-65535)> | range <port-number (1-65535)> <port-number
(1-65535)>}] [{any | host <dest-ip> | <network-dest-ip> <mask>}]
[{ gt <port-number(1-65535)> | lt <port-number(1-65535)> | eq <port-
number(1-65535)> | range <port-number (1-65535)> <port-number
(1-65535)>}] [dscp<value(0-63)>] [{ack | rst}]
```

The parameters have the following meaning:

Parameter	Description	Values
`any`	Blocks all incoming TCP segments	-
`host`	Keyword for a 32 bit long subnet mask.	-
`src-ip`	Source IP address	enter a valid IP address.
`network-src-ip`	Network source address	enter a valid combination of IP address and subnet mask.
`mask`	Corresponding subnet mask	
`port-number`	Port number	1 ... 65535
`gt`	Keyword for port numbers higher than the specified number (gt: greater than).	-
`lt`	Keyword for port numbers lower than the specified number (lt: less than).	-
`eq`	Keyword for a specific port number (eq:equal).	-
`range`	Keyword for a range of port numbers. Following this, the first and last port number of the range is specified.	-
`any`	Blocks all outgoing TCP segments	-
`host`	Keyword for a 32 bit long subnet mask.	-
`dest-ip`	Destination IP address	enter a valid IP address.
`network-dest-ip`	Network destination address	enter a valid combination of IP address and subnet mask.
`mask`	Corresponding subnet mask	
`dscp`	Keyword for the Differentiated Services Codepoint	-
`value`	Value for the Differentiated Services Codepoint	0 ... 63
`ack`	Blocks ACK segments	-
`rst`	Blocks RST segments	-

Result

The IP access list for TCP segments has been configured.

Note

Subnet mask for individual hosts

If you create the rule for a single system (one IP address), you will need to specify a 32-Bit long subnet mask. This is then "255.255.255.255". As an alternative, you can specify the keyword "host" followed by the IP address.

Further notes

You delete an IP access control list with the `no ip access-list standard <acl-num>` command.

You display the configuration of the access control list with the `show access-lists` command.

11.4.3.7 permit udp

Description

With this command, you configure an IP access control list for the UDP protocol.

You have the following options:

- All incoming and/or outgoing UDP datagrams are forwarded.
- Incoming and/or outgoing UDP datagrams of a specific host are forwarded.
- Incoming and/or outgoing UDP datagrams of hosts of a specific subnet are forwarded.
- Incoming and/or outgoing UDP datagrams are forwarded to specific ports.

Note

Processing order of the lists

The access control lists are processed on the interface in the order in which they were created.

The index number of the access control list is not used for this.

Requirement

You are in the ACL standard configuration mode.

The command prompt is as follows:

```
cli(config-std-nacl)#
```

Syntax

Call up the command with the following parameters:

```
permit udp {any | host <src-ip> | <network-src-ip> <mask>}
[{ gt <port-number(1-65535)> | lt <port-number(1-65535)> | eq <port-
number(1-65535)> | range <port-number (1-65535)> <port-number
(1-65535)>}] [{any | host <dest-ip> | <network-dest-ip> <mask>}]
[{ gt <port-number(1-65535)> | lt <port-number(1-65535)> | eq <port-
number(1-65535)> | range <port-number (1-65535)> <port-number
(1-65535)>}] [dscp<value(0-63)>]
```

The parameters have the following meaning:

Parameter	Description	Values
`any`	Forwards all incoming TCP segments.	-
`host`	Keyword for a 32 bit long subnet mask.	-
`src-ip`	Source IP address	enter a valid IP address.
`network-src-ip`	Network source address	enter a valid combination of IP address and subnet mask.
`mask`	Corresponding subnet mask	
`port-number`	Port number	1 ... 65535
`gt`	Keyword for port numbers higher than the specified number (gt: greater than).	-
`lt`	Keyword for port numbers lower than the specified number (lt: less than).	-
`eq`	Keyword for a specific port number (eq:equal).	-
`range`	Keyword for a range of port numbers. Following this, the first and last port number of the range is specified.	-
`any`	Forwards all outgoing TCP segments.	-
`host`	Keyword for a 32 bit long subnet mask.	-
`dest-ip`	Destination IP address	enter a valid IP address.
`network-dest-ip`	Network destination address	enter a valid combination of IP address and subnet mask.
`mask`	Corresponding subnet mask	
`dscp`	Keyword for the Differentiated Services Codepoint	-
`value`	Value for the Differentiated Services Codepoint	0 ... 63

Result

The IP access list for UDP datagrams has been configured.

Note

Subnet mask for individual hosts

If you create the rule for a single system (one IP address), you will need to specify a 32-Bit long subnet mask. This is then "255.255.255.255". As an alternative, you can specify the keyword "host" followed by the IP address.

Further notes

You delete an IP access control list with the `no ip access-list standard <acl-num>` command.

You display the configuration of the access control list with the `show access-lists` command.

11.4.3.8 deny udp

Description

With this command, you configure an IP access control list for the UDP protocol.

You have the following options:

- All incoming and/or outgoing UDP datagrams are not forwarded.
- Incoming and/or outgoing UDP datagrams of a specific host are not forwarded.
- Incoming and/or outgoing UDP datagrams of hosts of a specific subnet are not forwarded.
- Incoming and/or outgoing UDP datagrams are not forwarded to specific ports.

Note

Processing order of the lists

The access control lists are processed on the interface in the order in which they were created.

The index number of the access control list is not used for this.

Requirement

You are in the ACL standard configuration mode.

The command prompt is as follows:

```
cli(config-std-nacl)#
```

Syntax

Call up the command with the following parameters:

```
deny udp {any | host <src-ip> | <network-src-ip> <mask>} [{ gt <port-
number(1-65535)> | lt <port-number(1-65535)> | eq <port-
number(1-65535)> | range <port-number (1-65535)> <port-number
(1-65535)>}] [{any | host <dest-ip> | <network-dest-ip> <mask>}]
[{ gt <port-number(1-65535)> | lt <port-number(1-65535)> | eq <port-
number(1-65535)> | range <port-number (1-65535)> <port-number
(1-65535)>}] [dscp<value(0-63)>]
```

The parameters have the following meaning:

Parameter	Description	Values
`any`	Blocks all incoming TCP segments	-
`host`	Keyword for a 32 bit long subnet mask.	-
`src-ip`	Source IP address	enter a valid IP address.
`network-src-ip`	Network source address	enter a valid combination of IP address and subnet mask.
`mask`	Corresponding subnet mask	
`port-number`	Port number	1 ... 65535
`gt`	Keyword for port numbers higher than the specified number (gt: greater than).	-
`lt`	Keyword for port numbers lower than the specified number (lt: less than).	-
`eq`	Keyword for a specific port number (eq:equal).	-
`range`	Keyword for a range of port numbers. Following this, the first and last port number of the range is specified.	-
`any`	Blocks all outgoing TCP segments	-
`host`	Keyword for a 32 bit long subnet mask.	-
`dest-ip`	Destination IP address	enter a valid IP address.
`network-dest-ip`	Network destination address	enter a valid combination of IP address and subnet mask.
`mask`	Corresponding subnet mask	
`dscp`	Keyword for the Differentiated Services Codepoint	-
`value`	Value for the Differentiated Services Codepoint	0 ... 63

Result

The IP access list for UDP datagrams has been configured.

Note

Subnet mask for individual hosts

If you create the rule for a single system (one IP address), you will need to specify a 32-Bit long subnet mask. This is then "255.255.255.255". As an alternative, you can specify the keyword "host" followed by the IP address.

Further notes

You delete the IP access control list with the `no ip access-list standard <acl-num>` command.

You display the configuration of the access control list with the `show access-lists` command.

11.5 Port Access Control List Locked Ports

With the Port Access Control List Locked Ports, MAC addresses that do not age are collected on a port after the `start` command. With the `stop` command, these addresses are converted to static entries in the address list and the aging is reactivated for all the addresses that follow.

If the learning of addresses on this port is then disabled, data packets are only forwarded to the static addresses entered in the table.

This section describes commands relevant for the configuration of this function.

11.5.1 show lock port

Description

This command shows whether or not the learning of MAC entries is enabled or locked on an interface.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show lock port [< ifXtype >< ifnum >]
```

The parameters have the following meaning:

Parameters	Description	Range of values
`ifXtype`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`ifnum`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you do not select an interface, the configuration of all interfaces is displayed.

Result

The configuration of the interface for the learning of MAC entries is displayed.

11.5.2 Commands in the Global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

11.5.2.1 clear-all-static-unicast

Description

With this command, you delete all static unicast MAC address entries from the MAC address table.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
clear-all-static-unicast
```

Result

The static unicast MAC address entries are deleted from the MAC address table.

11.5.2.2 auto-learn

Description

With this command, you change to the AUTOLEARN mode.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
auto-learn
```

Result

You are now in the AUTOLEARN mode.

The command prompt is as follows:

```
cli(config-auto-learn)#
```

Further notes

You exit the AUTOLEARN configuration modewith the command `end` or `exit`.

11.5.3 Commands in the interface configuration mode

This section describes commands that you can call up in the interface configuration mode. Depending on the Interface selected, various command sets are available.

In the Global configuration mode, enter the `interface` command to change to this mode.

Commands relating to other topics that can be called in the interface configuration mode can be found in the relevant sections.

- If you exit the Interface configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the Interface configuration mode with the `end` command, you return to the Privileged EXEC mode.

11.5.3.1 switchport lock

Description

With this command, you block the learning of MAC entries. Only the static address entries of the MAC address list are used on the port.

Requirement

You are in the interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
switchport lock
```

Result

The learning of MAC addresses is blocked.

Further notes

You permit the learning of MAC addresses with the `no switchport lock` command.

11.5.3.2 no switchport lock

Description

With this command, you enable the learning of MAC addresses.

Requirement

You are in the interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no switchport lock
```

Result

The learning of MAC addresses is enabled.

Further notes

You block the learning of MAC addresses with the `switchport lock` command.

11.5.4 Commands in the AUTOLEARN mode

This section describes commands that you can call up in the AUTOLEARN mode.

In the Global configuration mode, enter the `auto-learn` command to change to this mode.

- If you exit the AUTOLEARN mode with the `exit` command, you return to the Global configuration mode.
- If you exit the AUTOLEARN mode with the `end` command, you return to the Privileged EXEC mode.

11.5.4.1 start

Description

With this command, you start automatic learning. During automatic learning, the aging time is disabled for all learned addresses.

Requirement

You are in the AUTOLEARN mode.

The command prompt is as follows:

```
cli(config-auto-learn)#
```

Syntax

Call the command without parameters:

```
start
```

Result

The learned MAC addresses are entered in the port database with the aging time 0 (the entries are NOT deleted when the mac address aging time expires).

Further notes

You stop automatic learning with the `stop` command.

11.5.4.2 stop

Description

With this command, you stop automatic learning and convert all learned MAC addresses to static entries.

Requirement

You are in the AUTOLEARN mode.

The command prompt is as follows:

```
cli(config-auto-learn)#
```

Syntax

Call the command without parameters:

```
stop
```

Result

Automatic learning is stopped and all learned entries are converted to static entries.

Further notes

You start automatic learning with the `start` command.

11.6 Management Access Control List

This section describes the commands relevant for working with the management access control list.

11.6.1 show authorized-managers

Description

This command shows the information about the configuration of the authorized managers.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show authorized-managers[ip-source<ip-address>]
```

The parameters have the following meaning:

Parameters	Description	Range of values
`ip-source`	Keyword for the network or host address	-
`ip-address`	Value for an IP address	Enter a valid IP address

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The information about the configuration of the authorized managers is displayed.

11.6.2 Commands in the Global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

11.6.2.1 authorized-manager

Description

With this command, you enable the authorized manager.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameter assignment:

```
authorized-manager
```

Result

The function is enabled.

Further notes

You disable the function with the `no authorized-manager` command.

11.6.2.2 no authorized-manager

Description

With this command, you disable the authorized manager.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameter assignment:

```
no authorized-manager
```

Result

The function is disabled.

Further notes

You enable the function with the `authorized-manager` command.

11.6.2.3 authorized-manager ip-source

Description

With this command, you configure the interfaces and protocols via which an authorized manager is allowed to access the device.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
authorized-manager ip-source <ip-address>
   [{<subnet-mask>|/<prefixlength(1-32)>}]
   [interface[<interface-type<0/a-b,0/c,...>]
             [<interface-type<0/a-b,0/c,...>]]
   [vlan<a,b or a-b or a,b,c-d>]
   [cpu0]
   [service[snmp][telnet][http][https][ssh]]
```

The parameters have the following meaning:

Parameter	Description	Range of values
`ip-address`	Specifies the network or the IP address for which the IP manager is authorized	Enter a valid IP address or a network
`subnet-mask`	Subnet mask that restricts the authorization	Enter a valid mask
`prefixlength`	Decimal representation of the mask as a number of "1" bits	1 ... 32
`interface`	Keyword for a an interface description	-
`interface-type`	Type of interface	• `gigabitethernet` • `extreme-ethernet`

Parameter	Description	Range of values
`0/a-b,0/c,...`	Slot no. and port no. of the interface	Enter a valid interface name
`vlan`	Keyword for a VLAN connection	-
`a,b or a-b or a,b,c-d`	Number of a VLAN or VLAN range	enter a valid VLAN or VLAN range
`cpu0`	the Out of Band interface is configured as a management Interface	-
`service`	Specifies the services for which the manager is authorized. You can select several options.	• `snmp` • `telnet` • `http` • `https` • `ssh`

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

The IP address 0.0.0.0 means "any manager"

If optional parameters are not specified when configuring, the following defaults apply:

- The manager is authorized for all services.

Note

Configuration of the first entry

As long as the list of authorized managers is empty, access to the system is not restricted.

As soon as the list contains an entry and the "authorized-manager" command is executed, access to the system is blocked for all others.

You should therefore configure the interface via which you access the system first because your access is otherwise blocked.

Result

The interfaces and protocols via which an authorized manager is allowed to access the device are configured.

Note

No restrictions for console port

The restrictions do not apply to the serial console (console port).

Further notes

You delete an interface for access of an authorized manager with the `no authorized-manager ip-source` command.

You show the information about the configuration of the authorized managers with the `show authorized-manager` command.

11.6.2.4 no authorized-manager ip-source

Description

With this command, you delete an interface via which an authorized manager is allowed to access the device.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
authorized-manager ip-source <ip-address>
   [{<subnet-mask>|/<prefixlength(1-32)>}]
```

The parameters have the following meaning:

Parameters	Description	Range of values
`ip-address`	Specifies the network or the IP address for which the IP manager is authorized	Enter a valid IP address or a network
`subnet-mask`	Subnet mask that restricts the authorization	Enter a valid mask
`prefixlength`	Decimal representation of the mask as a number of "1" bits	1 ... 32

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

An authorized manager is deleted from the list.

Further notes

You configure the interfaces and protocols via which an authorized manager is allowed to access the device with the `authorized-manager ip-source` command.

You show the information about the configuration of the authorized managers with the `show authorized-manager` command.

11.7 Port Based Network Access Control

This section describes commands for working with port-based network access control (PNAC).

11.7.1 show dot1x

Description

This command shows information about port-based network access control (PNAC).

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show dot1x[{interface<interface-type><interface-id>|
     statistics interface<interface-type><interface-id>}]
```

The parameters have the following meaning:

Parameters	Description	Values
`interface`	Keyword for a an interface description	-
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name
`statistics interface`	Keyword for the display of the statistical data of the dot1x Authenticator for an interface	-
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The dot1x information is displayed.

11.7.2 show dot1x guest-vlan mac-info

Description

This command displays which MAC address and which port are assigned to a guest VLAN.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show dot1x guest-vlan mac-info
```

Result

A list with guest VLAN, MAC address and port is displayed.

11.7.3 show dot1x mac-auth mac-info

Description

This command shows the MAC addresses for which MAC authentication is enabled.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show dot1x mac-auth mac-info
```

Result

A list of the MAC addresses is displayed.

11.7.4 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

11.7.4.1 dot1x guest-vlan

Description

With this command, you enable the guest VLAN function for the device.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
dot1x guest-vlan
```

Result

The guest VLAN function is enabled for the device.

Further notes

You also still need to enable the guest VLAN function for every port intended to use this function. You do this with the `dot1x guest-vlan` command in the Interface configuration mode.

You disable the function with the `no dot1x guest-vlan` command

11.7.4.2 no dot1x guest-vlan

Description

With this command, you disable the guest VLAN function for the device.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no dot1x guest-vlan
```

Result

The guest VLAN function is disabled for the device.

11.7.4.3 dot1x mac-auth

Description

With this command, you enable MAC authentication for the device.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
dot1x mac-auth
```

Result

MAC authentication is enabled for the device.

Further notes

You also still need to enable MAC authentication for every port intended to use this function. You do this with the `dot1x mac-auth` command in the Interface configuration mode.

You disable the function with the `no dot1x mac-auth` command

11.7.4.4 no dot1x mac-auth

Description

With this command, you disable MAC authentication for the device.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no dot1x mac-auth
```

Result

MAC authentication is disabled for the device.

11.7.5 Commands in the interface configuration mode

This section describes commands that you can call up in the interface configuration mode. Depending on the Interface selected, various command sets are available.

In the Global configuration mode, enter the `interface` command to change to this mode.

Commands relating to other topics that can be called in the interface configuration mode can be found in the relevant sections.

- If you exit the Interface configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the Interface configuration mode with the `end` command, you return to the Privileged EXEC mode.

11.7.5.1 dot1x guest-vlan

Description

With this command, you enable the guest VLAN function for a port.

Requirement

You are in the Interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
dot1x guest-vlan
```

Result

The guest VLAN function is enabled for the device.

Further notes

You also need to enable the guest VLAN function for the device. You do this with the `dot1x guest-vlan` command in the Global configuration mode.

You disable the function with the `no dot1x guest-vlan` command

11.7.5.2 no dot1x guest-vlan

Description

With this command, you disable the guest VLAN function for a port.

Requirement

You are in the Interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no dot1x guest-vlan
```

Result

The guest VLAN function is disabled for the device.

11.7.5.3 dot1x guest-vlan vlan-id

Description

With this command, you configure a guest VLAN for a port.

Requirement

You are in the Interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
dot1x guest-vlan vlan-id <vlan-id (1 - 4096)
```

The parameters have the following meaning:

Parameter	Description	Range of values
`vlan`	Keyword for the VLAN ID	-
-	VLAN ID	1 - 4096

Result

The guest VLAN ID is assigned to the port.

11.7.5.4 no dot1x guest-vlan vlan-id

Description

With this command, the guest VLAN ID is reset to the default value 1.

Requirement

You are in the Interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no dot1x guest-vlan vlan-id
```

Result

The ID of the guest VLAN has the value 1.

11.7.5.5 dot1x guest-vlan reset

Description

This command removes MAC addresses from the guest VLAN. If you specify a MAC address, only this MAC address is removed from the guest VLAN. If you use this command without parameters, all MAC addresses are removed from the guest VLAN.

Requirement

You are in the Interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
dot1x guest-vlan reset [mac <aa:aa:aa:aa:aa:aa>]
```

The parameter has the following meaning:

Parameter	Description	Range of values
`mac`	Keyword for the MAC address	-
`aa:aa:aa:aa:aa:aa`	MAC address to be removed from the guest VLAN.	-

Result

The specified MAC address or all MAC addresses are no longer assigned to the guest VLAN.

11.7.5.6 set dot1x guest-vlan mac-addr count

Description

With this command, you specify how many end devices are allowed to be connected to the port at the same time.

Requirement

You are in the Interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
set dot1x guest-vlan mac-addr count <num-of-addresses (1-100)>
```

The parameter has the following meaning:

Parameter	Description	Range of values
num-of-addresses	Maximum number of devices	1 ... 100

Result

The maximum number of devices for the port has been specified.

11.7.5.7 dot1x mac-auth

Description

With this command, you enable MAC authentication for a port.

Requirement

You are in the Interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
dot1x mac-auth
```

Result

MAC authentication is enabled for a port.

Further notes

You also still need to enable MAC authentication for the device. You do this with the `dot1x mac-auth` command in the Global configuration mode.

You disable the function with the `no dot1x mac-auth` command

11.7.5.8 no dot1x mac-auth

Description

With this command, you disable MAC authentication for a port.

Requirement

You are in the Interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no dot1x mac-auth
```

Result

MAC authentication is disabled for a port.

11.7.5.9 dot1x mac-auth port reset

Description

With this command, you reset MAC authentication for a port.

Requirement

You are in the Interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
dot1x mac-auth port [mac <aa:aa:aa:aa:aa:aa>] reset
```

The parameters have the following meaning:

Parameter	Description	Range of values
`mac`	Keyword for a MAC address	-
`aa:aa:aa:aa:aa:aa`	MAC address of the interface	aa:aa:aa:aa:aa:aa

Result

MAC authentication is reset for the port.

11.7.5.10 dot1x mac-auth vlan-assign

Description

With this command you enable the assignment of the VLAN ID for a MAC address by the RADIUS server.

Requirement

You are in the Interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
dot1x mac-auth vlan-assign
```

Result

The VLAN ID for a MAC address is assigned by the RADIUS server.

11.7.5.11 no dot1x mac-auth vlan-assign

Description

With this command you disable the assignment of the VLAN ID for a MAC address by the RADIUS server.

Requirement

You are in the Interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no dot1x mac-auth vlan-assign
```

Result

The VLAN ID for a MAC address is no longer assigned by the RADIUS server.

11.7.5.12 dot1x port-control

Description

With this command, you configure port control parameter of the authenicator.

Requirement

You are in the Interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
dot1x port-control {auto|force-authorized|force-unauthorized}
```

The parameters have the following meaning:

Parameter	Description
`auto`	Authentication according to IEEE 802.1x is enabled for the interface. The data traffic via the interface is permitted or blocked depending on the authentication result.
`force-authorized`	data traffic via the interface is permitted without restrictions Default: `force-authorized` enabled
`force-unauthorized`	data traffic via the interface is blocked

The default value of the function is "`force-authorized`".

Result

The port control parameter is configured.

Further notes

You can reset the port control parameter to the default with the `no dot1x port-control` command.

You can display the status of this function and other information with the `show dot1x`command.

11.7.5.13 no dot1x port-control

Description

With this command, you reset the port control parameter of the authenicator to the default value.

The default value is `force-authorized`.

With this, data traffic is permitted without restrictions.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no dot1x port-control
```

Result

The port control parameter of the authenicator is reset to the default value.

Further notes

You configure the port control parameter with the `dot1x port-control` command.

You can display the status of this function and other information with the `show dot1x`command.

11.7.5.14 set dot1x mac-auth mac-addr count

Description

With this command, you specify how many end devices are allowed to be connected to the port at the same time.

Requirement

You are in the Interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
set dot1x mac-auth mac-addr count <num-of-addresses (1-100)>
```

The parameter has the following meaning:

Parameter	Description	Range of values
num-of-addresses	Maximum number of devices	1 ... 100

Result

The maximum number of devices for the port has been specified.

11.7.5.15 dot1x reauthentication

Description

With this command, you enable the function that repeats the authentication of the client by the authenticator periodically on all interfaces.

Requirement

You are in the Interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
dot1x reauthentication
```

Result

Periodic authentication is enabled for all interfaces.

Further notes

You disable the function with the `no dot1x reauthentication` command.

You can display the status of this function and other information with the `show dot1x`command.

11.7.5.16 no dot1x reauthentication

Description

With this command, you disable the function that repeats the authentication of the client by the authenticator periodically.

Requirement

You are in the Interface configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no dot1x reauthentication
```

Result

Periodic authentication is disabled.

Further notes

You enable the function with the `dot1x reauthentication` command.

You can display the status of this function and other information with the `show dot1x`command.

Diagnostics

12

The monitoring of the system and error diagnostics are handled in different ways:

- Events and faults handling:
  Predefined events generate a message. These messages can be distributed in different ways:
  - Entry in the local log
  - Transfer to the Syslog server
  - Sending as e-mail
  - Sending as SNMP trap
- Syslog:
  Configures the transfer to the Syslog server
- Remote Monitoring (RMON):
  Variables of the Management Information Base are monitored for the violation of limit values and messages are generated if they do. These messages are collected and can be distributed in the following ways:
  - Entry in the local log
  - Sending as SNMP trap
- Port mirroring:
  Mirroring of ports to analyze the data stream without disturbing operation
- Loop detection
  Detection and elimination of damaging loops. Loops in the network can cause total failure of the transfer and must be detected and eliminated.

12.1 Event and fault handling

In events and faults handling, you set the events whose messages will be distributed in one of the available ways.

You configure the monitoring of certain system events and power supply and physical interfaces in the Events configuration mode.

12.1.1 logging console

Description

With this command, you enable the logging of inputs and outputs to the console.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
logging console
```

Result

The logging function is enabled on the console.

Further notes

You disable the setting with the `no logging console` command.

As default the function is "disabled".

12.1.2 no logging console

Description

With this command, you disable the logging of inputs and outputs to the console.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
no logging console
```

Result

The logging function is disabled on the console.

Further notes

You enable the setting with the `logging console` command.

As default the function is "disabled".

12.1.3 show events config

Description

This command shows the current configuration for forwarding the messages of the various event types.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show events config
```

Result

The current configuration of the events display is displayed.

12.1.4 show events severity

Description

This command shows the degree of severity of an event ("Info", "Warning" or "Critical") starting at which a notification (sending of an e-mail, entry in the log table, entry in the Syslog file) is generated.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show events severity
```

Result

The corresponding degree of severity is shown for each type of notification.

Further notes

You configure the assignment of the degree of severity of an event and the type of notification with the `severity` command.

12.1.5 show events faults config

Description

This command shows the current configuration of the following error monitoring functions:

- Monitoring of the power supply for power outage
- Monitoring of the network connections for a change in the connection status

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show events faults config [{power|link}]
```

The parameters have the following meaning:

Parameters	Description
power	Monitoring of the power supply for power outage
link	Monitoring of the network connections for a change in the connection status

If no parameters are specified, the settings for both error monitoring functions are displayed.

Result

The current configuration of the selected error monitoring function is displayed.

12.1.6 show events faults status

Description

This command shows the status messages of fault monitoring of the power supply and network connections.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show events faults status
```

Result

A table with the status messages of the error monitoring functions is displayed.

12.1.7 show startup-information

Description

This command shows the startup information.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>`or`cli#`

Syntax

Call the command without parameters:

```
show startup-information
```

Result

Startup information is shown.

12.1.8 show logbook

Description

With this command, you display the content of the logbook.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show logbook
```

or

Call up the command with the following parameters:

```
show logbook { info | warning | critical }
```

Parameter

The parameters have the following meaning:

Parameter	Description	Range of values / note
info	Information	-
warning	Warning	-
critical	Critical	-

Result

The content of the logbook is displayed.

12.1.9 clear logbook

Description

With this command, you delete the content of the logbook.

Requirement

You are in the Privileged EXEC mode.

The command prompt is as follows:

```
cli#
```

Syntax

Call the command without parameters:

```
clear logbook
```

Result

The content of the logbook is deleted.

12.1.10 show cabletest interface

Description

You can display the status of this function and other information with the `show cabletest interface` command.

Requirement

- The interface has no active data traffic
- The `cabletest interface` function was used on the specified interface in the Global Configuration mode.

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

`show cabletest interface <iftype> <if-id>`

The parameters have the following meaning:

Parameter	Description	Range of values / note
`iftype`	Type of interface	
`if-id`	Interface identifier	

For information on names of addresses and interfaces, refer to the section "Auto-Hotspot".

Result

The result of the cable test of the interface is displayed.

Further notes

You enable the setting with the `cabletest interface` command in the Global Configuration mode.

See also

Addresses and interface names (Page 32)

12.1.11 show interface transceiver details

Description

This command runs error diagnostics for an SFP port.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show interface transceiver details <if-id>
```

The parameter has the following meaning:

Parameter	Description	Range of values / note
`if-id`	Interface identifier	

Result

Hardware information (model, serial number) and operating parameters (data transmission rate, voltage and current consumption as well as the transmit and receive power) for SFP port are displayed.

12.1.12 show power-line-state

Description

This command shows the status of the power supply.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show power-line-state
```

Result

The status of the power supply is displayed.

12.1.13 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

12.1.13.1 events

Description

With this command, you change to the EVENTS configuration mode.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
events
```

Result

You are now in the EVENTS configuration mode.

The command prompt is as follows:

```
cli(config-events)#
```

Further notes

You exit the EVENTS configuration mode with the command `end` or `exit`.

12.1.13.2 cabletest interface

Description

With this command, you enable the cable test for the specified interface.

Requirement

- The interface has no active data traffic

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command without parameters / with the following parameter assignment:

```
cabletest interface <iftype> <if-id> [force]
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`iftype`	Type of interface	
`if-id`	Interface identifier	
`force`	Forces a `link down` during the test	Necessary parameter if there is a `link up` on the interface.

If you do not select any parameters from the parameter list, the default value is used.

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

Following the test phase, the result is displayed.

12.1.14 Commands in the Events configuration mode

This section describes commands that you can call up in the EVENTS configuration mode.

In the Global configuration mode, enter the `events` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

- If you exit the EVENTS configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the EVENTS configuration mode with the `end` command, you return to the Privileged EXEC mode.

12.1.14.1 add log

Description

With this command, you make an entry in the logbook.

Requirement

You are in the EVENTS Configuration mode.

The command prompt is as follows:

```
cli(config-events)#
```

Syntax

Call the command without parameters:

```
add log <log entry>
```

The parameter has the following meaning:

Parameters	Description	Note
`log entry`	Entry in the logbook	max. 150 characters

Result

The entry has been made in the logbook.

12.1.14.2 client config

Description

With this command, you enable one of the clients that processes or forwards the messages of the device.

The following clients are available:

- `syslog`: sends the messages to the central log server
- `trap`: sends the messages as SNMP trap to a configured recipient
- `email`: sends the messages as e-mail

Requirement

You are in the EVENTS configuration mode.

The command prompt is as follows:

```
cli(config-events)#
```

Syntax

Call up the command with the following parameters:

```
client config {syslog|trap|email|all}
```

The parameters have the following meaning:

Parameter	Description
`syslog`	Enables the client that sends the messages to the log server
`trap`	Enables the client that sends the SNMP traps
`email`	Enables the client that sends the e-mails
`all`	Enables all clients at once

Result

The function of the client selected for the transfer is enabled.

Further notes

You display the status of the events and the clients with the `show events config` command.

You disable a client with the `no client config` command.

12.1.14.3 no client config

Description

With this command, you disable one of the clients that processes or forwards the messages of the device.

Requirement

You are in the EVENTS configuration mode.

The command prompt is as follows:

```
cli(config-events)#
```

Syntax

Call up the command with the following parameters:

```
no client config {syslog|trap|email|all}
```

The parameters have the following meaning:

Parameter	Description
`syslog`	Disables the client that sends the messages to the log server
`trap`	Disables the client that sends the SNMP traps

Parameter	Description
email	Disables the client that sends the e-mails
all	Disables all clients at once

Result

The client selected for the transfer is disabled.

Further notes

You display the status of the events and the clients with the `show events config` command.

You enable the function with the `client config` command.

12.1.14.4 event config

Description

With this command, you configure which of the various message types of the device will be stored or forwarded.

The following events or message types are available:

- Message if there is cold or warm restart
- Message when there is a status change on a physical interface
- Message if there is an incorrect login
- Message when there is aRemote Monitoring (RMON) alarm
- Message when there is a status change in the power supply
- Message when there is a status change in the redundancy manager (RM)
- Message when there is a status change on a standby connection
- Message when there is a status change in the error monitoring
- Message when there is a change in the spanning tree
- Message on status change of the VRRP routers
- Message if there is a status change in the detection of network loops
- Message on status change of OSPF routers

These messages can be processed by the clients in different ways:

- Entry in the logbook of the device
- Sending the message to the log server of the system
- Sending an e-mail
- Sending an SNMP trap

Requirement

You are in the EVENTS Configuration mode.

The command prompt is as follows:

```
cli(config-events)#
```

Syntax

Call up the command with the following parameters:

```
event config
   {cold-warmstart|linkchange|authentication-failure|
    rmon-alarm|power-change|rm-state-change|standby-state-change|
faultstate-change|
    stp-change|vrrp-state-change|loopd-state-change|ospf-state-
change|all}
{logtable|syslog|email|trap|faults|all}
```

The parameters have the following meaning:

Parameter	Description
`cold-warmstart`	Message if there is cold or warm restart
`linkchange`	Message when there is a status change on a physical interface
`authentication-failure`	Message if there is an incorrect login
`rmon-alarm`	Message when there is a RMONalarm
`power-change`	Message when there is a status change in the power supply
`rm-state-change`	Message when there is a status change in the redundancy manager
`standby-state-change`	Message when there is a status change on a standby connection
`faultstate-change`	Message when there is a status change in the error monitoring
`stp-change`	Message when there is a change in the spanning tree
`vrrp-state-change`	Message on status change of VRRP routers
`loopd-state-change`	Message if there is a status change in the detection of network loops
`ospf-state-change`	Message on status change of OSPF routers
`all`	All messages
`logtable`	Client that processes the logbook entries
`syslog`	Client that sends the messages to the log server
`email`	Client that sends the e-mails
`trap`	Client that sends the SNMP traps
`faults`	Error LED lights up. The setting is possible only for a cold or warm restart.
`all`	All clients at once

Result

The setting deciding which message of the device is stored or forwarded is configured.

Further notes

You display the status of the events and the clients with the `show events config` command.

You delete the settings with the `no event config` command.

With this command, the clients are not enabled.

To enable the clients, use the `client config` command.

Note

Changing several message types or clients

With each command call, you can only select one message type and one client.

If you want to process several message types or clients, it may be more efficient to first select the `all` option and then disable individual elements.

12.1.14.5 no event config

Description

With this command, you configure which of the various message types of the device will no longer be stored or forwarded.

Requirement

You are in the EVENTS Configuration mode.

The command prompt is as follows:

```
cli(config-events)#
```

Syntax

Call up the command with the following parameters:

```
no event config
   {cold-warmstart|linkchange|authentication-failure|
    rmon-alarm|power-change|rm-state-change|standby-state-change|
    faultstate-change|stp-change|vrrp-state-change|all}
    {logtable|syslog|email|trap|faults|all}
```

The parameters have the following meaning:

Parameters	Description
`cold-warmstart`	Message if there is cold or warm restart
`linkchange`	Message when there is a status change on a physical interface
`authentication-failure`	Message if there is an incorrect login
`rmon-alarm`	Message when there is a RMON alarm

Parameters	Description
power-change	Message when there is a status change in the power supply
rm-state-change	Message when there is a status change in the redundancy manager
standby-state-change	Message when there is a status change on a standby connection
faultstate-change	Message when there is a status change in the error monitoring
stp-change	Message when there is a change in the spanning tree
vrrp-state-change	Message on status change of VRRP routers
all	All messages
logtable	Client that processes the logbook entries
syslog	Client that sends the messages to the log server
email	Client that sends the e-mails
trap	Client that sends the SNMP traps
faults	Error LED lights up. The setting is possible only for a cold or warm restart.
all	All clients at once

Result

The setting deciding which messages of the device are not stored or forwarded is configured.

Further notes

You display the status of the events and the clients with the `show events config` command.

You configure which of the various message types of the device will be stored or forwarded with the `event config` command.

12.1.14.6 eventgroup

Description

With this command, you configure the message level for alarm message groups.

Requirement

You are in the EVENTS configuration mode.

The command prompt is as follows:

```
cli (config-events)#
```

Syntax

Call up the command with the following parameters:

```
eventgroup <string> {info | warning | critical }
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
string	Name of the event group	max. 32 characters
`info`	Message level information	-
`warning`	Message level warning	-
`critical`	Message level critical	-

If you do not select any parameters from the parameter list, the default value is used.

Result

The settings of the event grouping are configured.

Further notes

You disable the setting with the `no eventgroup` command.

You can display the status of this function and other information with the show events configcommand.

12.1.14.7 no event

Description

With this command, you disable eventgroup.

Requirement

You are in the EVENTS configuration mode.

The command prompt is as follows:

```
cli (config-events)#
```

Syntax

Call up the command without parameters / with the following parameter assignment:

```
no eventgroup <string>
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
string	Name of the event group	max. 32 characters

If you do not select any parameters from the parameter list, the default value is used.

Result

The settings of the EVENTS grouping are disabled.

Further notes

You enable the setting with the `eventgroup` command.

You can display the status of this function and other information with the show events configcommand.

12.1.14.8 severity

Description

With this command, you enable the sending of events.

Requirement

You are in the EVENTS configuration mode.

The command prompt is as follows:

```
cli (config-events) #
```

Syntax

Call up the command with the following parameters:

```
severity {mail | log | syslog } {info | warning | critical }
```

The parameters have the following meaning:

Example

Parameter	Description	Range of values / note
`mail`	Specifies that messages are sent by e-mail.	-
`log`	Specifies that messages are sent to the log file.	Default
`syslog`	Specifies that messages are sent to the Syslog server.	-
`info`	Message level information	-
`warning`	Message level warning	-
`critical`	Message level critical	-

If you do not select any of the parameters from the parameter list, the default value is used.

If you do not select any of the info | warning | critical parameters, messages of all three levels are sent.

Result

The settings are configured.

The severity function is enabled.

Further notes

You disable the setting with the `no severity` command.

You display the status of this function and other information `show events config`

12.1.14.9 no severity

Description

With this command, you disable the sending of events.

Requirement

You are in the EVENTS configuration mode.

The command prompt is as follows:

```
cli (config-events) #
```

Syntax

Call up the command with the following parameters:

```
no severity {mail | log | syslog }
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`mail`	Specifies that messages are no longer sent by e-mail.	-
`log`	Specifies that messages are no longer sent to the log file.	Default
`syslog`	Specifies that messages are no longer sent to the Syslog server.	-

If you do not select any parameters from the parameter list, the default value is used.

Result

The settings for sending event messages are configured.

Further notes

You enable the setting with the `severity` command.

You display the status of this function and other information `show events config`.

12.1.14.1 power
0

Description

With this command, you configure and activate the monitoring of the power supplies.

Requirement

You are in the EVENTS configuration mode.

The command prompt is as follows:

```
cli(config-events)#
```

Syntax

Call up the command with the following parameters:

```
power [{L1|L2}]
```

The parameters have the following meaning:

Parameters	Description
L1	Monitoring of power supply 1
L2	Monitoring of power supply 2

If you do not select any parameters from the parameter list, the default value "L1 and L2" is used.

Result

The setting for monitoring the power supplies is configured.

Further notes

You can display the current setting with the `show events faults config` command.

You disable the function with the `no power` command.

12.1.14.1 no power
1

Description

With this command, you disable the monitoring of the power supplies.

Requirement

You are in the EVENTS configuration mode.

The command prompt is as follows:

```
cli(config-events)#
```

Syntax

Call up the command with the following parameters:

```
no power [{L1|L2}]
```

The parameters have the following meaning:

Parameters	Description
L1	No monitoring of power supply 1
L2	No monitoring of power supply 2

If you do not select any parameters from the parameter list, the default value "L1 and L2" is used.

Result

The setting for monitoring the power supplies is configured.

Further notes

You can display the current setting with the `show events faults config` command.

You enable the function with the `power` command.

12.1.14.1 link 2

Description

With this command, you configure and enable the monitoring of the physical network connections for cable breaks or for pulling of the connector.

Requirement

You are in the EVENTS Configuration mode.

The command prompt is as follows:

```
cli(config-events)#
```

Syntax

Call up the command with the following parameters:

`link {up|down}[{<ifXtype><iface_list>}]` The parameters have the following meaning:

Parameters	Description	Range of values
`up`	Only the establishment of a connection is signaled	-
`down`	Only a break on a connection is signaled	-
`ifXtyp`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`iface_list`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you do not select an interface, the function is enabled for all available interfaces.

Result

The settings for monitoring the physical network connections have been configured.

Further notes

You display the setting with the `show events faults config` command.

You disable the function with the `no link` command.

12.1.14.1 no link 3

Description

With this command, you disable the monitoring of the physical network connections for cable breaks or for pulling of the connector.

Requirement

You are in the EVENTS Configuration mode.

The command prompt is as follows:

```
cli(config-events)#
```

Syntax

Call up the command with the following parameters:

```
no {up|down}[{<ifXtype><iface_list>}]
```

The parameters have the following meaning:

Parameters	Description	Range of values
up	The message when establishing a connection is disabled	-
down	The message when a connection is down is disabled	-
ifXtype	Type or speed of the interface	• gigabitethernet • extreme-ethernet
iface_list	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you do not select an interface, the function is disabled for all available interfaces.

Result

The settings for monitoring the physical network connections have been configured.

Further notes

You can display the current setting with the `show events faults config` command.

You enable the function with the `link` command.

12.1.14.1 syslogserver 4

Description

With this command, you configure the Syslog server address.

Requirement

You are in the EVENTS configuration mode.

The command prompt is as follows:

```
cli (config-events) #
```

Syntax

Call up the command with the following parameters:

```
syslogserver {ipv4 <ip address> | fqdn-name <FQDN(100)>}
[<port(1-65535)>]
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
ipv4	Keyword for an IP address	-
ip address	IPv4 Internet address of the Syslog server	Format: 0.0.0.0
fqdn-name	Keyword for a domain name	-
FQDN(100)	Domain name (Fully Qualified Domain Name)	Maximum of 100 characters
port	Serverport	1 .. 65535 Default: 514

If you do not select any parameters from the parameter list, the default value is used.

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The settings for the Syslog server are configured.

Further notes

You disable the setting with the `no syslogserver` command.

You can display the status of this function and other information with the `show events config`command.

12.1.14.1 no syslogserver 5

Description

With this command, you configure the Syslog server address.

Requirement

You are in the EVENTS configuration mode.

The command prompt is as follows:

```
cli (config-events) #
```

Syntax

Call up the command with the following parameters:

```
syslogserver {ipv4 <ip address> | fqdn-name <FQDN(100)>}
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
ipv4	Keyword for an IP address	-
ip address	IPv4 Internet address of the Syslog server	Format: 0.0.0.0
fqdn-name	Keyword for a domain name	-
FQDN(100)	Domain name (Fully Qualified Domain Name)	Maximum of 100 characters

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The settings for the Syslog server are disabled.

Further notes

You enable the setting with the `syslogserver` command.

You can display the status of this function and other information with the `show events config`command.

12.2 Syslog client

With the commands in this section, the following settings are configured:

- Transfer of the messages to the log server
- Local buffering and storage of messages
- Receipt and forwarding of messages from other devices (relay mode)

12.2.1 show events syslogserver

Description

This command shows the entries of the configured log server.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show events syslogserver
```

Result

The entries of the configured log server are displayed.

12.2.2 Commands in the Events configuration mode

This section describes commands that you can call up in the EVENTS configuration mode.

In the Global configuration mode, enter the `events` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

- If you exit the EVENTS configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the EVENTS configuration mode with the `end` command, you return to the Privileged EXEC mode.

12.2.2.1 syslogserver

Description

With this command, you configure the Syslog server.

Requirement

You are in the EVENTS configuration mode.

The command prompt is as follows:

```
cli(config-events)#
```

Syntax

Call up the command with the following parameters:

```
syslogserver {ipv4 address}[port]{info | warning | critical}
```

The parameters have the following meaning:

Parameter	Description	Range of values
`ipv4 address`	IP v4 address	Enter a valid IPv4 address
`port`	Port of the Syslog server on which the messages are received	0 … 65535 Default: 514
`info`	Information	-
`warning`	Warning	-
`critical`	Critical	-

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you do not select any parameters from the parameter list, the default value is used.

Result

The settings for the Syslog server are configured. The Syslog server was entered in the table

Further notes

You delete the entry with the `no syslogserver` command.

You can display the status of this function and other information with the `show events config`command.

12.2.2.2 no syslogserver

Description

With this command, you delete an entry from the table.

Requirement

You are in the EVENTS configuration mode.

The command prompt is as follows:

```
cli(config-events)#
```

Syntax

Call up the command with the following parameters:

```
no syslogserver {ipv4 address}
```

The parameter has the following meaning:

Parameter	Description	Range of values
`ipv4 address`	IP v4 address	Enter a valid IPv4 address

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The entry is deleted from the table.

Further notes

You add an entry with the `syslogserver` command.

12.3 RMON

The RMON function provides commands with which variables of the Management Information Base (MIB) can be monitored for violation of limit values and to store or forward these events in the following ways:

- Entry in the local log
- Sending as SNMP trap

12.3.1 show rmon

Description

This command shows the settings of the remote monitoring function.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

You are in the User EXEC mode or in the Privileged EXEC mode or in the Global Configuration mode.

The command prompt is as follows:

`cli>` or `cli#` or `cli(config)#`

The parameters have the following meaning:

Parameters	Description	Range of values
`statistics`	Shows counts for various packet characteristics and sizes	-
`stats-index`	Index number for the statistical values	1 ... 65535
`alarms`	Shows the threshold values and event assignments for alarms	-
`events`	Shows the status and the actions that are triggered	-
`history`	Shows the stored statistical values for earlier transmission periods	-
`history-index`	Index number for the previous statistical values	1 ... 65535
`overview`	Displays an overview	-

With this command, you can display several parameters with one call.

If you do not select any parameters from the parameter list, only the `enabled`/`disabled` status is shown.

Result

The settings of the remote monitoring function are displayed.

12.3.2 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

12.3.2.1 rmon alarm

Description

With this command, you configure an alarm for monitoring a MIB variable. The variable is checked at specific intervals to determine whether or not it has exceeded or fallen below threshold values. Events are assigned to these occurrences.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
rmon alarm <alarm-number><mib-object-id(255)>
   <sample-interval-time(1-65535)>
   {absolute|delta}
   rising-threshold<value(0-2147483647)>[risingevent-
number(1-65535)]
   falling-threshold<value(0-2147483647)>[fallingevent-
number(1-65535)]
   [owner<ownername(127)>]
```

The parameters have the following meaning:

Parameters	Description	Range of values
`alarm-number`	Number of the alarm	1 ... 52
`mib-object-id`	Name of the MIB variable	max. 255 characters
`sample-interval-time`	Interval for the check [s]	1 ... 65535
`absolute`	The current absolute value of the monitored MIB is evaluated	-
`delta`	The difference between the current and the previous value of the monitored MIB is evaluated	-
`rising-threshold`	Threshold value for rising or high variable values	1 ... 2147483647
`risingevent-number`	Event number for this	1 ... 65535
`falling-threshold`	Threshold value for falling or low variable values	1 ... 2147483647
`fallingevent-number`	Event number for this	1 ... 65535
`value`	Relevant threshold value	1 ... 2147483647
`owner`	User to which the alarm is assigned	-
`ownername`	User name of the user	max. 127 characters

If you do not select a parameter from the parameter list, the events for high and low threshold values are assigned the lowest event number available in the event table.

Note

MIB variables that can be monitored

With the RMON function, only MIB variables of the Ethernet interfaces can be monitored.

Note

Magnitude of the threshold values

The threshold value for falling or low variable values should be less than the threshold value for rising or high variable values.

Note

Conditions for working with alarms

The events assigned to the alarms are configured.

The remote monitoring function is started with the `set rmon` command.

Result

The alarm for monitoring a MIB variable is configured.

Further notes

You delete an alarm with the `no rmon alarm` command.

You display the list of configured RMON alarms with the `show rmon alarms` command.

12.3.2.2 no rmon alarm

Description

With this command, you delete an alarm for monitoring a MIB variable.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no rmon alarm <index (1-52)>
```

The parameter has the following meaning:

Parameters	Description	Range of values
`index`	Number of the alarm to be deleted	1 ... 52

Result

The entry is deleted.

12.3.2.3 rmon event

Description

With this command, you configure an event in the RMON Event Table.

You specify its name and the owner and whether or not a logbook entry is made or an SNMP trap is generated.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
rmon event <number(1-52)>[description<event-description(127)>]
   [log][owner<ownername(127)>][trap<community(127)>]
```

The parameters have the following meaning:

Parameters	Description	Range of values
`number`	Number of the event	1 ... 52
`description`	Title of the event	-
`event-description`	Description of the event	max. 127 characters
`log`	Specifies whether or not an entry will be made in the logbook of the device	-
`owner`	User to which the event is assigned	-
`ownername`	User name of the user	max. 127 characters
`trap`	Specifies whether an SNMP trap should be sent	-
`community`	Name of the community to which the SNMP trap will be sent	max. 127 characters

Result

The event is configured.

Further notes

You delete an entry with the `no rmon event` command.

You display the RMON Event Table with the `show rmon events` command.

You show the details of the SNMP community with the `show snmp community` command.

12.3.2.4 no rmon event

Description

With this command, you delete an entry from the RMON event table.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no rmon event <index (1-52)>
```

The parameter has the following meaning:

Parameters	Description	Range of values
`index`	Number of the event entry to be deleted	1 ... 52

Result

The entry is deleted.

12.3.2.5 set rmon

Description

With this command, you enable / disable the remote monitoring function.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
set rmon {enable|disable}
```

The parameters have the following meaning:

Parameter	Description
`enable`	Enables the remote monitoring function
`disable`	Disables the remote monitoring function Default: disabled

Result

The remote monitoring function is enabled or disabled.

Further notes

You can display the status of this function and other information with the `show rmon`command.

12.3.3 Commands in the interface configuration mode

This section describes commands that you can call up in the interface configuration mode. Depending on the Interface selected, various command sets are available.

In the Global configuration mode, enter the `interface` command to change to this mode.

Commands relating to other topics that can be called in the interface configuration mode can be found in the relevant sections.

- If you exit the Interface configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the Interface configuration mode with the `end` command, you return to the Privileged EXEC mode.

12.3.3.1 rmon collection stats

Description

With this command, you start the recording of statistical data of an interface.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
rmon collection stats <index (1-52)>[owner<ownername(127)>]
```

The parameters have the following meaning:

Parameters	Description	Range of values
`index`	Number of the recording	1 ... 52
`owner`	User to which the event is assigned	-
`ownername`	User name of the user	max. 127 characters

Result

The recording of statistical data is started.

Further notes

You can display the content of a recording with the `show rmon statistics` command.

12.3.3.2 no rmon collection stats

Description

With this command, you end the recording of statistical data of an interface.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
no rmon collection stats <index (1-52)>
```

The parameter has the following meaning:

Parameters	Description	Range of values
index	Number of the recording	1 ... 52

Result

The recording of statistical data is ended.

12.3.3.3 rmon collection history

Description

With this command, you configure the collection of statistical data of the interface in a selectable number of recording intervals ("Buckets ") with a specified period.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
rmon collection history<index(1-52)>
   [buckets<bucket-number(1-65535)>]
```

```
[interval<seconds(1-3600)>]
[owner<ownername(127)>]
```

The parameters have the following meaning:

Parameter	Description	Range of values
index	Number of the recording	1 ... 65535
buckets	Maximum number of recording intervals	-
bucket-number	Number of recording intervals	1 ... 65535 Default: 50
interval	Duration of an individual recording interval	-
seconds	Time in seconds	1 ... 3600 Default: 1800
owner	User to which the event is assigned	-
ownername	User name of the user	max. 127 characters Default: monitor

If you do not select any parameter from the parameter list, the default values are used.

Result

The data is recorded.

Further notes

You can display the content of a recording with the `show rmon history` command.

12.3.3.4 no rmon collection history

Description

With this command, you end the recording of statistical data of the interface.

Requirement

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
no rmon collection history <index(1-52)>
```

The parameter has the following meaning:

Parameters	Description	Range of values
`index`	Number of the recording	1 ... 52

Result

The data recording is ended.

12.4 Port Mirroring

With the port mirroring function, you copy the data stream of one or more ports to another interface to be able to analyze this data stream without disturbing operation.

Note

If the maximum data rate of the mirrored port is higher than that of the monitor port, data may be lost and the monitor port no longer reflects the data traffic at the mirrored port. Several ports can be mirrored to one monitor port at the same time.

Mirroring a port does not work beyond switch core boundaries.

Disable port mirroring if you want to connect a normal end device to the monitor port.

12.4.1 show monitor

Description

This command shows the settings of the port mirroring function.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show monitor status
```

Result

The status of the port mirroring function is displayed.

12.4.2 show monitor barrier

Description

This command shows the status of the communication via the mirror port.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show monitor barrier[{session<session-id(1)>|all}]
```

The parameters have the following meaning:

Parameters	Description	Range of values
`session`	Keyword for a session whose settings are displayed	-
`session-id`	Number of the session	1
`all`	Shows the settings of all sessions	-

Result

The settings are displayed.

12.4.3 show monitor session

Description

This command shows the settings used for mirroring ports.

You obtain information about the ports from which incoming and/or outgoing data traffic is mirrored and the port at which the mirrored data is output.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command with the following parameters:

```
show monitor[{session<session-id(1)>|all}]
```

The parameters have the following meaning:

Parameters	Description	Range of values
`session`	Keyword for a session whose settings are displayed	-
`session-id`	Number of the session	1
`all`	Shows the settings of all sessions	-

Result

The settings for mirroring ports are displayed.

12.4.4 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

12.4.4.1 monitor

Description

With this command, you enable the port mirroring function.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
monitor
```

As default the function is "disabled".

Result

The port mirroring function is enabled.

Further notes

You can display the status of this function with the `show monitor`command.

You disable the function with the `no monitor` command.

12.4.4.2 no monitor

Description

With this command, you disable the port mirroring function.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no monitor
```

Result

The port mirroring function is disabled.

Further notes

You can display the status of this function with the `show monitor`command.

You enable the function with the `monitor` command.

12.4.4.3 monitor barrier enabled

Description

With this command, you disable the communication via the monitor port.

Note

Effects of monitor barrier enabled

If you enable this option, management of the switch via the monitor port is no longer reachable. The following port-specific functions are changed:

- DCP forwarding is turned off
- LLDP is turned off
- Unicast, multicast and broadcast blocking is turned on

The previous statuses of these functions are no longer restored after disabling monitor barrier again. They are reset to the default values and may need to be reconfigured.

You can reconfigure these functions manually even if monitor barrier is turned on. The data traffic on the monitor port is also allowed again. If you do not require this, make sure that only the data traffic you want to monitor is forwarded to the interface.

If mirroring is disabled, the listed port-specific functions are reset to the default values. This reset takes place regardless of whether the functions were configured manually or automatically by enabling monitor barrier.

Requirement

You are in the Global configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
monitor barrier enabled
```

Result

Communication via the monitor port is disabled.

Further notes

You enable the communication with the `no monitor barrier enabled` command.

You display the configuration settings with the `show monitor barrier` command.

12.4.4.4 no monitor barrier enabled

Description

With this command, you enable the communication via the monitor port.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no monitor barrier enabled
```

Result

Communication via the monitor port is enabled.

Further notes

You disable the communication with the `monitor barrier enabled` command.

You display the configuration settings with the `show monitor barrier` command.

12.4.4.5 monitor session destination

Description

With this command, you configure the destination for mirroring a port.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
monitor session <session-id(1)> destination
  {interface <interface-type><interface-id>}
```

The parameters have the following meaning:

Parameter	Description	Values
`session-id`	Number of the session 7 parallel sessions are possible only with port-based mirroring and their ports must not overlap.	1 .. 7
`interface`	Keyword for a an interface description	-
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Note

Selecting the destination port

A port that is part of a port channel cannot be configured as the destination port for a monitor session.

VLAN / ACL mirroring

Tx mirroring is not supported with VLAN or ACL monitoring.

Result

As soon as you have configured the settings for the port to be monitored and the destination port, the session is complete and active.

Further notes

You delete the destination for mirroring a port with the `no monitor session ... destination` command.

You end and delete a session with the `no monitor session` command.

You display the configuration settings with the `show monitor session` command.

12.4.4.6 no monitor session destination

Description

With this command, you delete the destination for mirroring a port.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no monitor session <session-id(1)> destination
  {interface <interface-type><interface-id>}
```

The parameters have the following meaning:

Parameter	Description	Values
`session-id`	Number of the session 7 parallel sessions are possible only with port-based mirroring and their ports must not overlap.	1 .. 7
`interface`	Keyword for a an interface description	-
`interface-type`	Type or speed of the interface	• `gigabitethernet` • `extreme-ethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The destination for the mirroring of a port is deleted.

Further notes

You configure the destination for mirroring a port with the `monitor session ... destination` command.

You end and delete a session with the `no monitor session` command.

You display the configuration settings with the `show monitor session` command.

12.4.4.7 monitor session source

Description

With this command, you configure the source for mirroring a port or a VLAN.

Requirement

- You are in the Global Configuration mode.
- Monitoring is enabled

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command for the port to be monitored with the following parameter assignment:

```
monitor session<session-id(1-7)>{source
  {interface<interface-type><interface-id>[{rx|tx|both}]}}
```

or

Call up the command for the VLAN to be monitored with the following parameter assignment:

```
monitor session <session-id (1-1)> {source
    {vlan <vlan-id> | mac-acl <acl-id>}
```

The parameters have the following meaning:

Parameter	Description	Values
`session-id`	Number of the session 7 parallel sessions are possible only with port-based mirroring and their ports must not overlap.	1..7
`interface`	Keyword for a an interface description	-
`interface-type`	Type or speed of the interface	• `fastethernet` • `gigabitethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name
`rx`	Received data traffic will be mirrored (received)	-
`tx`	Transmitted data traffic will be mirrored (transmitted)	-
`both`	Received and sent data traffic will be mirrored	-
`vlan-id`	Number of the VLAN	1 .. 4094
`acl-id`	Number of the Access Control List	

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you do not select any parameters from the parameter list, the default value (both) is used.

Note

VLAN / ACL mirroring

Tx mirroring is not supported with VLAN or ACL monitoring.

Result

As soon as you have configured the settings for the port to be monitored and the destination port, the session is complete and active.

Further notes

You delete the source for mirroring a port with the `no monitor session ... source` command.

You end and delete a session with the `no monitor session` command.

You display the configuration settings with the `show monitor session` command.

12.4.4.8 no monitor session source

Description

With this command, you delete the source for mirroring a port or a VLAN.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command for the port to be monitored with the following parameter assignment:

```
no monitor session<session-id(1-7)>{source
  {interface<interface-type><interface-id>[{rx|tx|both}]}
```

or

Call up the command for the VLAN to be monitored with the following parameter assignment:

```
no monitor session <session-id (1-1)> {source
    {vlan <vlan-id> | mac-acl <acl-id>}
```

The parameters have the following meaning:

Parameter	Description	Values
`session-id`	Number of the session 7 parallel sessions are possible only with port-based mirroring and their ports must not overlap.	1 .. 7
`interface`	Keyword for a an interface description	-
`interface-type`	Type or speed of the interface	• `fastethernet` • `gigabitethernet`
`interface-id`	Slot no. and port no. of the interface	Enter a valid interface name
`rx`	Received data traffic will be mirrored (received)	-
`tx`	Transmitted data traffic will be mirrored (transmitted)	-
`both`	Received and sent data traffic will be mirrored	-
`vlan-id`	Number of the VLAN	1 .. 4094
`acl-id`	Number of the Access Control List	

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

If you do not select any parameters from the parameter list, the default value (both) is used.

Result

The source for the mirroring of a port is deleted.

Further notes

You configure the source for mirroring a port with the `monitor session ... source` command.

You end and delete a session with the `no monitor session` command.

You display the configuration settings with the `show monitor session` command.

12.4.4.9 no monitor session

Description

With this command, you delete the monitor session.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call up the command with the following parameters:

```
no monitor session<session-id(1)>
```

The parameter has the following meaning:

Parameter	Description	Range of values
`session-id`	Number of the session 7 parallel sessions are possible only with port-based mirroring and their ports must not overlap.	1 .. 7

Result

The monitor session is deleted.

Further notes

You display the configuration settings with the `show monitor session` command.

You configure and start mirroring of a port with the `monitor session` command.

12.5 Loop detection

With the "Loop detection" function, you specify the ports for which loop detection will be activated. The ports involved send special test frames - the loop detection frames. If these frames are sent back to the device, there is a loop.

A "Local loop" involving this device means that the frames are received again at a different port of the same device. If the sent frames are received again at the same port, there is a "remote loop" involving other network components.

Note

A loop is an error in the network structure that needs to be eliminated. The loop detection can help to find the errors more quickly but does not eliminate them.

Note

Note that loop detection is only possible at ports that were not configured as ring ports or standby ports.

With the commands in this section, you start loop detection and decide which actions will be used on the ports affected if loops are detected.

12.5.1 show loopd

Description

With this command, you display the information on loop detection.

Detected loops are shown.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call the command without parameters:

```
show loopd
```

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

Information on loop detection is displayed.

12.5.2 show loopd interface

Description

Displays information on the loop interface.

Requirement

You are in the User EXEC mode or in the Privileged EXEC mode.

The command prompt is as follows:

`cli>` or `cli#`

Syntax

Call up the command without parameters / with the following parameter assignment:

```
show loopd interface [{<interface-type> <interface-id> | port-
channel <port-channel-id (1-8)>}]
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
`interface`	Keyword for a an interface description	-
`interface-type`	Type or speed of the interface	gigabitethernet extreme-ethernet
`interface-id`	Slot no. and port no. of the interface	# digit /digit# Slot: 0 ... 6 or 12 Port: 1 ... 4
`port-channel`	Keyword for a port channel connection	-
`port-channel-id`	Number of the addressed port channel	1 ... 8

If you do not select any parameters from the parameter list, the default value is used.

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The loop interface is displayed.

Further notes

You can display the status of this function and other information with the `show loopd`command.

12.5.3 Commands in the global configuration mode

This section describes commands that you can call up in the Global configuration mode.

In Privileged EXEC mode, enter the `configure terminal` command to change to this mode.

Commands relating to other topics that can be called in the Global configuration mode can be found in the relevant sections.

You exit the Global configuration mode with the `end` or `exit` command and are then in the Privileged EXEC mode again.

12.5.3.1 loopd

Description

With this command, you enable the loop detection function.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
loopd
```

Result

The loop detection function is enabled

Further notes

You disable the function with the `no loopd` command.

You can display the status of this function and other information with the show loopdcommand.

12.5.3.2 no loopd

Description

With this command, you enable the loop detection function.

Requirement

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no loopd
```

Result

The loop detection function is disabled

Further notes

You enable the function with the `loopd` command.

You can display the status of this function and other information with the show loopdcommand.

12.5.3.3 loopd vlan mode

Description

With this command, you enable the loop detection function for VLAN.

Requirement

- Loopd is activated

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
loopd vlan mode
```

Result

The loop detection function is enabled for VLAN.

Further notes

You disable the function with the `no loopd vlan mode` command.

You can display the status of this function and other information with the "show loopd" command

12.5.3.4 no loopd vlan mode

Description

With this command, you disable the loop detection function for VLAN.

Requirement

- Loopd is activated

You are in the Global Configuration mode.

The command prompt is as follows:

```
cli(config)#
```

Syntax

Call the command without parameters:

```
no loopd vlan mode
```

Result

The loop detection function is disabled for VLAN.

Further notes

You enable the function with the `loopd vlan mode` command.

You can display the status of this function and other information with the "show loopd" command

12.5.4 Commands in the Interface Configuration mode

This section describes commands that you can call up in the interface configuration mode. Depending on the Interface selected, various command sets are available.

In the Global configuration mode, enter the `interface` command to change to this mode.

Commands relating to other topics that can be called in the interface configuration mode can be found in the relevant sections.

- If you exit the Interface configuration mode with the `exit` command, you return to the Global configuration mode.
- If you exit the Interface configuration mode with the `end` command, you return to the Privileged EXEC mode.

12.5.4.1 loopd

Description

With this command, you configure loop detection.

Requirement

- Loop detection is enabled
- The port is not part of a spanning tree if the port will be or is enabled as sender.

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call up the command with the following parameters:

```
loopd {blocked | forwarder | sender}
```

or

```
loopd {tx-interval <mSec(500-5000)> | detect-threshold
<integer(1-500)> | reaction-timeout <seconds(0-86400)>}
```

The parameters have the following meaning:

Parameter	Description	Range of values / note
blocked	Blocked	-
forwarder	Forwards	Default after enabling loop detection.
sender	Sends	-

Parameter	Description	Range of values / note
tx-interval	Transmit interval	500 .. 5000 [ms] Default: 1000 [ms]
detect-threshold	Threshold	1 .. 500 Default: 2
reaction-timeout	Time to the end of the reaction time	0 .. 86400 [seconds] Default: 0 [sec]

If you do not select any parameters from the parameter list, the default value is used. The default values apply only to a port enabled earlier with loopd sender .

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The settings for loopd are configured.

Further notes

You can reset the setting to the default with the `no loopd` command.

You can display the status of this function and other information with the show loopdcommand.

12.5.4.2 loopd port reset

Description

With this command, you enable the port reset for loop detection.

Requirement

- Loop detection is enabled

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
loopd port reset
```

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The port reset function is enabled.

Further notes

You disable the setting with the `no loopd port reset` command.

You can display the status of this function and other information with the show loopdcommand.

12.5.4.3 no loopd port reset

Description

With this command, you disable the port reset for loop detection.

Requirement

- Loop detection is enabled

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no loopd port reset
```

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

The port reset function is disabled.

Further notes

You enable the setting with the `loopd port reset` command.

You can display the status of this function and other information with the show loopdcommand.

12.5.4.4 loopd reaction local

Description

With this command, you activate "disable" for loopd reaction local.

Requirement

- Loop detection is enabled.

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
loopd reaction local
```

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

"disable" is activated for the "loopd reaction local" function.

"disable" is the default after enabling loop detection.

Further notes

You enable the "no action" setting with the `no loopd reaction local` command.

You can display the status of this function and other information with the show loopdcommand.

12.5.4.5 no loopd reaction local

Description

With this command, you enable "no action" for loopd reaction local.

Requirement

- Loop detection is enabled.

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:

```
no loopd reaction local
```

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

"no action" is activated for the "loopd reaction local" function.

"disable" is the default after enabling loop detection.

Further notes

You enable the "disable" setting with the `loopd reaction local` command.

You can display the status of this function and other information with the show loopdcommand.

12.5.4.6 loopd reaction remote

Description

With this command, you activate "disable" for loopd reaction remote.

Requirement

- loopd is enabled

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:
`loopd reaction remote`

If you do not select any parameters from the parameter list, the default value is used.

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

"disable" is activated for the loopd reaction remote function.

"disable" is the default after enabling loop detection.

Further notes

You enable the "no action" setting with the `no loopd reaction remote` command.

You can display the status of this function and other information with the show loopdcommand.

12.5.4.7 no loopd reaction remote

Description

With this command, you activate "no action" for loopd reaction remote.

Requirement

- loopd is enabled

You are in the Interface Configuration mode.

The command prompt is as follows:

```
cli(config-if-$$$)#
```

Syntax

Call the command without parameters:
`no loopd reaction remote`

If you do not select any parameters from the parameter list, the default value is used.

For information on names of addresses and interfaces, refer to the section "Addresses and interface names (Page 32)".

Result

"no action" is activated for the loopd reaction remote function.

"disable" is the default after enabling loop detection.

Further notes

You enable the "disable" setting with the `loopd reaction remote` command.

You can display the status of this function and other information with the show loopdcommand.

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