



HIRSCHMANN

A **BELDEN** BRAND

Reference Manual

Command Line Interface (CLI) HiSecOS (Global Overview)

The naming of copyrighted trademarks in this manual, even when not specially indicated, should not be taken to mean that these names may be considered as free in the sense of the trademark and tradename protection law and hence that they may be freely used by anyone.

© 2024 Hirschmann Automation and Control GmbH

Manuals and software are protected by copyright. All rights reserved. The copying, reproduction, translation, conversion into any electronic medium or machine scannable form is not permitted, either in whole or in part. An exception is the preparation of a backup copy of the software for your own use.

The performance features described here are binding only if they have been expressly agreed when the contract was made. This document was produced by Hirschmann Automation and Control GmbH according to the best of the company's knowledge. Hirschmann reserves the right to change the contents of this document without prior notice. Hirschmann can give no guarantee in respect of the correctness or accuracy of the information in this document.

Hirschmann can accept no responsibility for damages, resulting from the use of the network components or the associated operating software. In addition, we refer to the conditions of use specified in the license contract.

You can get the latest version of this manual on the Internet at the Hirschmann product site (www.hirschmann.com).

Hirschmann Automation and Control GmbH
Stuttgarter Str. 45-51
72654 Neckartenzlingen
Germany

Contents

Safety instructions	21
First login (Password change)	22
About this Manual	23
1 Access Control List (ACL)	24
1.1 mac	24
1.1.1 mac acl add	24
1.1.2 mac acl delete	24
1.1.3 mac acl assign	24
1.1.4 mac acl deassign	24
1.1.5 mac acl counter reset	24
1.1.6 mac acl trapflag	25
1.1.7 mac acl rule add	25
1.1.8 mac acl rule delete	26
1.2 ip	26
1.2.1 ip acl add	26
1.2.2 ip acl delete	26
1.2.3 ip acl assign	27
1.2.4 ip acl deassign	27
1.2.5 ip acl counter reset	27
1.2.6 ip acl trapflag	27
1.2.7 ip acl rule add	27
1.2.8 ip acl rule delete	30
1.3 show	30
1.3.1 show access-list trapflag	30
1.3.2 show access-list mac rules	30
1.3.3 show access-list mac lists	30
1.3.4 show access-list mac counters	31
1.3.5 show access-list mac assignment	31
1.3.6 show access-list ip rules	31
1.3.7 show access-list ip lists	31
1.3.8 show access-list ip counters	31
1.3.9 show access-list ip assignment	31
2 Application Lists	32
2.1 applists	32
2.1.1 applists set-authlist	32
2.1.2 applists enable	32
2.1.3 applists disable	32
2.2 show	32
2.2.1 show applists	32
3 Asset	33
3.1 asset	33
3.1.1 asset add	33
3.1.2 asset modify	34
3.1.3 asset delete	34
3.2 show	35
3.2.1 show asset list	35
4 Authentication Lists	36
4.1 authlists	36
4.1.1 authlists add	36
4.1.2 authlists delete	36
4.1.3 authlists set-policy	36
4.1.4 authlists enable	36

4.1.5	authlists disable	37
4.2	show	37
4.2.1	show authlists	37
5	Class Of Service	38
5.1	classofservice	38
5.1.1	classofservice dot1p-mapping	38
5.2	show	38
5.2.1	show classofservice dot1p-mapping	38
6	Command Line Interface (CLI)	39
6.1	cli	39
6.1.1	cli serial-timeout	39
6.1.2	cli prompt	39
6.1.3	cli numlines	39
6.1.4	cli banner operation	39
6.1.5	cli banner text	39
6.2	show	40
6.2.1	show cli global	40
6.2.2	show cli command-tree	40
6.3	logging	40
6.3.1	logging cli-command	40
6.4	show	40
6.4.1	show logging cli-command	40
7	Clock	41
7.1	clock	41
7.1.1	clock set	41
7.1.2	clock timezone offset	41
7.1.3	clock timezone zone	41
7.1.4	clock summer-time mode	41
7.1.5	clock summer-time recurring start	41
7.1.6	clock summer-time recurring end	42
7.1.7	clock summer-time zone	43
7.2	show	43
7.2.1	show clock	43
8	Configuration	44
8.1	save	44
8.1.1	save profile	44
8.2	config	44
8.2.1	config watchdog admin-state	44
8.2.2	config watchdog timeout	44
8.2.3	config encryption password set	44
8.2.4	config encryption password clear	44
8.2.5	config envm choose-active	45
8.2.6	config envm log-device	45
8.2.7	config envm auto-update	45
8.2.8	config envm config-save	45
8.2.9	config envm load-priority	45
8.2.10	config profile select	46
8.2.11	config profile delete	46
8.2.12	config fingerprint verify nvm profile	46
8.2.13	config fingerprint verify nvm num	46
8.2.14	config fingerprint verify envm profile	46
8.2.15	config fingerprint verify envm num	46
8.3	copy	47
8.3.1	copy sysinfo system envm	47
8.3.2	copy sysinfoall system envm	47
8.3.3	copy firmware envm	47
8.3.4	copy firmware remote	47
8.3.5	copy config running-config nvm	47

8.3.6	copy config running-config remote	47
8.3.7	copy config nvram	47
8.3.8	copy config envm	48
8.3.9	copy config remote	48
8.4	clear	48
8.4.1	clear config	48
8.4.2	clear factory	48
8.4.3	clear sfp-white-list	48
8.5	show	48
8.5.1	show running-config	49
8.5.2	show running-config xml	49
8.6	show	49
8.6.1	show config envm settings	49
8.6.2	show config envm properties	49
8.6.3	show config envm active	49
8.6.4	show config watchdog	49
8.6.5	show config encryption	49
8.6.6	show config profiles	49
8.6.7	show config status	50
8.7	swap	50
8.7.1	swap firmware system backup	50
9	Device Monitoring	51
9.1	device-status	51
9.1.1	device-status monitor link-failure	51
9.1.2	device-status monitor temperature	51
9.1.3	device-status monitor envm-removal	51
9.1.4	device-status monitor envm-not-in-sync	51
9.1.5	device-status monitor power-supply	52
9.1.6	device-status trap	52
9.2	device-status	52
9.2.1	device-status link-alarm	52
9.3	show	52
9.3.1	show device-status monitor	52
9.3.2	show device-status state	53
9.3.3	show device-status trap	53
9.3.4	show device-status events	53
9.3.5	show device-status link-alarm	53
9.3.6	show device-status all	53
10	Device Security	54
10.1	security-status	54
10.1.1	security-status monitor pwd-change	54
10.1.2	security-status monitor pwd-min-length	54
10.1.3	security-status monitor pwd-policy-config	54
10.1.4	security-status monitor pwd-policy-inactive	54
10.1.5	security-status monitor http-enabled	55
10.1.6	security-status monitor snmp-unsecure	55
10.1.7	security-status monitor sysmon-enabled	55
10.1.8	security-status monitor extnvm-upd-enabled	55
10.1.9	security-status monitor no-link-enabled	55
10.1.10	security-status monitor hidisc-enabled	56
10.1.11	security-status monitor extnvm-load-unsecure	56
10.1.12	security-status monitor https-certificate	56
10.1.13	security-status trap	56
10.2	security-status	56
10.2.1	security-status no-link	56
10.3	show	57
10.3.1	show security-status monitor	57
10.3.2	show security-status state	57
10.3.3	show security-status no-link	57
10.3.4	show security-status trap	57
10.3.5	show security-status events	57
10.3.6	show security-status all	57

11	Dynamic Host Configuration Protocol (DHCP)	58
11.1	dhcp-server	58
11.1.1	dhcp-server operation	58
11.2	show	59
11.2.1	show dhcp-server operation	59
11.2.2	show dhcp-server pool	59
11.2.3	show dhcp-server interface	59
11.2.4	show dhcp-server lease	60
12	Domain Name System (DNS)	61
12.1	dns	61
12.1.1	dns caching-server adminstate	61
12.1.2	dns caching-server flush	61
12.1.3	dns client adminstate	61
12.1.4	dns client cache adminstate	61
12.1.5	dns client servers add	61
12.1.6	dns client servers delete	62
12.1.7	dns client servers modify	62
12.1.8	dns client servers enable	62
12.1.9	dns client servers disable	62
12.1.10	dns client timeout	62
12.1.11	dns client retry	62
12.2	show	63
12.2.1	show dns caching-server info	63
12.2.2	show dns client hosts	63
12.2.3	show dns client info	63
12.2.4	show dns client servers	63
13	DoS Mitigation	64
13.1	dos	64
13.1.1	dos tcp-null	64
13.1.2	dos tcp-xmas	64
13.1.3	dos tcp-syn-fin	64
13.1.4	dos tcp-min-header	64
13.1.5	dos icmp-fragmented	65
13.1.6	dos icmp payload-check	65
13.1.7	dos icmp payload-size	65
13.1.8	dos ip-land	65
13.1.9	dos ip-src-route	65
13.1.10	dos tcp-offset	65
13.1.11	dos tcp-syn	66
13.1.12	dos l4-port	66
13.1.13	dos l2-frame-forwarding	66
13.2	show	66
13.2.1	show dos	66
14	Deep Packet Inspection (DPI)	67
14.1	dpi	67
14.1.1	dpi modbus commit	67
14.1.2	dpi modbus addprofile	67
14.1.3	dpi modbus modifyprofile	68
14.1.4	dpi modbus copyprofile	69
14.1.5	dpi modbus delprofile	69
14.1.6	dpi modbus enableprofile	70
14.1.7	dpi modbus disableprofile	70
14.1.8	dpi opc commit	70
14.1.9	dpi opc addprofile	70
14.1.10	dpi opc modifyprofile	70
14.1.11	dpi opc copyprofile	71
14.1.12	dpi opc delprofile	71
14.1.13	dpi opc enableprofile	71
14.1.14	dpi opc disableprofile	71
14.1.15	dpi iec104 commit	71

14.1.16	dpi iec104 add	71
14.1.17	dpi iec104 modify	74
14.1.18	dpi iec104 delete	76
14.1.19	dpi iec104 enable	76
14.1.20	dpi iec104 disable	76
14.1.21	dpi iec104 copy	76
14.1.22	dpi dnp3 profile add	77
14.1.23	dpi dnp3 profile modify	78
14.1.24	dpi dnp3 profile delete	79
14.1.25	dpi dnp3 profile enable	80
14.1.26	dpi dnp3 profile disable	80
14.1.27	dpi dnp3 profile commit	80
14.1.28	dpi dnp3 profile copy	80
14.1.29	dpi dnp3 object add	80
14.1.30	dpi dnp3 object delete	81
14.1.31	dpi amp profile add	81
14.1.32	dpi amp profile copy	82
14.1.33	dpi amp profile delete	82
14.1.34	dpi amp profile disable	82
14.1.35	dpi amp profile enable	83
14.1.36	dpi amp profile modify	83
14.1.37	dpi amp commit	84
14.1.38	dpi amp task-code add	84
14.1.39	dpi amp task-code delete	85
14.1.40	dpi amp task-code modify	85
14.1.41	dpi amp protect-mode	85
14.1.42	dpi enip profile add	85
14.1.43	dpi enip profile modify	86
14.1.44	dpi enip profile delete	86
14.1.45	dpi enip profile enable	87
14.1.46	dpi enip profile disable	87
14.1.47	dpi enip profile commit	87
14.1.48	dpi enip profile copy	87
14.1.49	dpi enip object add	87
14.1.50	dpi enip object modify	87
14.1.51	dpi enip object delete	88
14.1.52	dpi goose add	88
14.1.53	dpi goose modify	88
14.1.54	dpi goose delete	88
14.1.55	dpi goose enable	88
14.1.56	dpi goose disable	89
14.1.57	dpi goose commit	89
14.1.58	dpi goose copy	89
14.2	show	89
14.2.1	show dpi modbus profiletable	89
14.2.2	show dpi modbus pending	89
14.2.3	show dpi opc profiletable	89
14.2.4	show dpi opc pending	89
14.2.5	show dpi iec104 profiletable	89
14.2.6	show dpi iec104 pending	90
14.2.7	show dpi dnp3 profiletable	90
14.2.8	show dpi dnp3 pending	90
14.2.9	show dpi dnp3 objectlist	90
14.2.10	show dpi amp global	90
14.2.11	show dpi amp profiletable	90
14.2.12	show dpi amp taskcodetable	90
14.2.13	show dpi enip profiletable	90
14.2.14	show dpi enip pending	90
14.2.15	show dpi enip objectlist	91
14.2.16	show dpi goose profiletable	91
14.2.17	show dpi goose pending	91
15	Filtering Database (FDB)	92
15.1	mac-filter	92
15.1.1	mac-filter	92
15.2	bridge	92
15.2.1	bridge aging-time	92
15.3	show	92

15.3.1	show mac-filter-table static	92
15.4	show	92
15.4.1	show bridge aging-time	92
15.5	show	93
15.5.1	show mac-addr-table	93
15.6	clear	93
15.6.1	clear mac-addr-table	93
16	Firewall Learning Mode (FLM)	94
16.1	flm	94
16.1.1	flm operation	94
16.1.2	flm action	94
16.1.3	flm interface add	94
16.1.4	flm interface delete	94
16.2	show	94
16.2.1	show flm global	95
16.2.2	show flm interface	95
17	HiDiscovery	96
17.1	network	96
17.1.1	network hidiscovery operation	96
17.1.2	network hidiscovery mode	96
17.1.3	network hidiscovery blinking	96
17.2	show	96
17.2.1	show network hidiscovery	96
18	Hypertext Transfer Protocol (HTTP)	97
18.1	http	97
18.1.1	http port	97
18.1.2	http server	97
18.2	show	97
18.2.1	show http	97
19	HTTP Secure (HTTPS)	98
19.1	https	98
19.1.1	https server	98
19.1.2	https port	98
19.1.3	https fingerprint-type	98
19.1.4	https certificate	98
19.2	copy	98
19.2.1	copy https-cert remote	98
19.2.2	copy https-cert envm	99
19.3	show	99
19.3.1	show https	99
20	IGMP Querier	100
20.1	ip	100
20.1.1	ip igmp-querier operation	100
20.1.2	ip igmp-querier interval	100
20.1.3	ip igmp-querier response-interval	100
20.1.4	ip igmp-querier last-member-interval	100
20.1.5	ip igmp-querier robustness	100
20.2	ip	100
20.2.1	ip igmp-querier operation	101
20.2.2	ip igmp-querier version	101
20.3	show	101
20.3.1	show ip igmp-querier global	101
20.3.2	show ip igmp-querier interface	101

21	Interface	102
21.1	shutdown	102
21.1.1	shutdown	102
21.2	auto-negotiate	102
21.2.1	auto-negotiate	102
21.3	auto-power-down	102
21.3.1	auto-power-down	102
21.4	cable-crossing	103
21.4.1	cable-crossing	103
21.5	linktraps	103
21.5.1	linktraps	103
21.6	speed	103
21.6.1	speed	103
21.7	name	103
21.7.1	name	103
21.8	power-state	104
21.8.1	power-state	104
21.9	mac-filter	104
21.9.1	mac-filter	104
21.10	dhcp-client	104
21.10.1	dhcp-client	104
21.11	show	104
21.11.1	show port	105
22	Interface Statistics	106
22.1	utilization	106
22.1.1	utilization control-interval	106
22.1.2	utilization alarm-threshold lower	106
22.1.3	utilization alarm-threshold upper	106
22.2	clear	106
22.2.1	clear port-statistics	106
22.3	show	106
22.3.1	show interface counters	106
22.3.2	show interface statistics	107
22.3.3	show interface ether-stats	107
23	Intern	108
23.1	help	108
23.2	logout	108
23.3	history	108
23.4	vlan	108
23.4.1	vlan database	108
23.5	exit	108
23.6	end	108
23.7	serviceshell	109
23.7.1	serviceshell start	109
23.7.2	serviceshell deactivate	109
23.8	traceroute	109
23.9	traceroute	109
23.9.1	traceroute source	109
23.10	reboot	109
23.11	ping	109
23.11.1	ping count	109

23.12	ping	110
23.12.1	ping source	110
23.13	show	110
23.13.1	show serviceshell	110
24	Intrusion Detection System (IDS)	111
24.1	ids	111
24.1.1	ids operation	111
24.1.2	ids user	111
24.2	show	111
24.2.1	show ids global	111
25	Open Shortest Path First (OSPF)	112
25.1	ip	112
25.1.1	ip ospf area	112
25.1.2	ip ospf trapflags all	114
25.1.3	ip ospf operation	114
25.1.4	ip ospf 1583compatability	114
25.1.5	ip ospf default-metric	114
25.1.6	ip ospf router-id	115
25.1.7	ip ospf external-lsdb-limit	115
25.1.8	ip ospf exit-overflow	115
25.1.9	ip ospf maximum-path	115
25.1.10	ip ospf spf-delay	115
25.1.11	ip ospf spf-holdtime	115
25.1.12	ip ospf auto-cost	116
25.1.13	ip ospf distance intra	116
25.1.14	ip ospf distance inter	116
25.1.15	ip ospf distance external	116
25.1.16	ip ospf re-distribute	116
25.1.17	ip ospf distribute-list	117
25.1.18	ip ospf default-info originate	117
25.2	ip	117
25.2.1	ip ospf operation	117
25.2.2	ip ospf area-id	118
25.2.3	ip ospf link-type	118
25.2.4	ip ospf priority	118
25.2.5	ip ospf transmit-delay	118
25.2.6	ip ospf retransmit-interval	118
25.2.7	ip ospf hello-interval	118
25.2.8	ip ospf dead-interval	119
25.2.9	ip ospf cost	119
25.2.10	ip ospf mtu-ignore	119
25.2.11	ip ospf authentication type	119
25.2.12	ip ospf authentication key	119
25.2.13	ip ospf authentication key-id	119
25.3	show	120
25.3.1	show ip ospf global	120
25.3.2	show ip ospf area	120
25.3.3	show ip ospf stub	120
25.3.4	show ip ospf database internal	120
25.3.5	show ip ospf database external	120
25.3.6	show ip ospf range	120
25.3.7	show ip ospf interface	120
25.3.8	show ip ospf virtual-link	120
25.3.9	show ip ospf virtual-neighbor	121
25.3.10	show ip ospf neighbor	121
25.3.11	show ip ospf statistics	121
25.3.12	show ip ospf re-distribute	121
25.3.13	show ip ospf nssa	121
25.3.14	show ip ospf route	121
26	Virtual Router Redundancy Protocol (VRRP)	122
26.1	ip	122

26.1.1	ip vrrp operation	122
26.1.2	ip vrrp trap auth-failure	122
26.1.3	ip vrrp trap new-master	122
26.2	ip	122
26.2.1	ip vrrp add	122
26.2.2	ip vrrp modify	123
26.2.3	ip vrrp delete	123
26.2.4	ip vrrp enable	123
26.2.5	ip vrrp disable	123
26.2.6	ip vrrp virtual-address add	124
26.2.7	ip vrrp virtual-address delete	124
26.2.8	ip vrrp track add	124
26.2.9	ip vrrp track modify	124
26.2.10	ip vrrp track delete	124
26.3	show	124
26.3.1	show ip vrrp interface	125
26.3.2	show ip vrrp global	125
27	Address Resolution Protocol (IP ARP)	126
27.1	ip	126
27.1.1	ip arp add	126
27.1.2	ip arp delete	126
27.1.3	ip arp enable	126
27.1.4	ip arp disable	126
27.1.5	ip arp timeout	126
27.1.6	ip arp response-time	126
27.1.7	ip arp retries	127
27.2	show	127
27.2.1	show ip arp info	127
27.2.2	show ip arp table	127
27.2.3	show ip arp static	127
27.2.4	show ip arp entry	127
27.3	clear	127
27.3.1	clear ip arp-cache	127
28	Internet Protocol Version 4 (IPv4)	128
28.1	network	128
28.1.1	network parms	128
28.2	clear	128
28.2.1	clear arp-table-switch	128
28.3	show	128
28.3.1	show network parms	128
28.4	show	128
28.4.1	show arp	128
29	Link Layer Discovery Protocol (LLDP)	129
29.1	lldp	129
29.1.1	lldp operation	129
29.1.2	lldp config chassis admin-state	129
29.1.3	lldp config chassis notification-interval	129
29.1.4	lldp config chassis re-init-delay	129
29.1.5	lldp config chassis tx-delay	129
29.1.6	lldp config chassis tx-hold-multiplier	129
29.1.7	lldp config chassis tx-interval	130
29.2	show	130
29.2.1	show lldp global	130
29.2.2	show lldp port	130
29.2.3	show lldp remote-data	130
29.3	lldp	130
29.3.1	lldp admin-state	130
29.3.2	lldp fdb-mode	131
29.3.3	lldp max-neighbors	131

29.3.4	lldp notification	131
29.3.5	lldp tlv mac-phy-config-state	131
29.3.6	lldp tlv max-frame-size	131
29.3.7	lldp tlv mgmt-addr	132
29.3.8	lldp tlv port-desc	132
29.3.9	lldp tlv port-vlan	132
29.3.10	lldp tlv protocol	132
29.3.11	lldp tlv sys-cap	133
29.3.12	lldp tlv sys-desc	133
29.3.13	lldp tlv sys-name	133
29.3.14	lldp tlv vlan-name	133
29.3.15	lldp tlv protocol-based-vlan	133
30	Logging	135
30.1	logging	135
30.1.1	logging audit-trail	135
30.1.2	logging buffered severity	135
30.1.3	logging host add	135
30.1.4	logging host delete	136
30.1.5	logging host enable	136
30.1.6	logging host disable	136
30.1.7	logging host modify	136
30.1.8	logging syslog operation	137
30.1.9	logging current-console operation	137
30.1.10	logging current-console severity	137
30.1.11	logging console operation	138
30.1.12	logging console severity	138
30.1.13	logging persistent operation	138
30.1.14	logging persistent numfiles	139
30.1.15	logging persistent filesize	139
30.1.16	logging persistent severity-level	139
30.2	show	139
30.2.1	show logging buffered	139
30.2.2	show logging traplogs	140
30.2.3	show logging console	140
30.2.4	show logging persistent	140
30.2.5	show logging syslog	140
30.2.6	show logging host	140
30.3	copy	140
30.3.1	copy eventlog buffered envm	140
30.3.2	copy eventlog buffered remote	140
30.3.3	copy eventlog persistent	140
30.3.4	copy traplog system envm	141
30.3.5	copy traplog system remote	141
30.3.6	copy audittrail system envm	141
30.3.7	copy audittrail system remote	141
30.4	clear	141
30.4.1	clear logging buffered	141
30.4.2	clear logging persistent	141
30.4.3	clear eventlog	142
31	Management Access	143
31.1	network	143
31.1.1	network management access web timeout	143
31.1.2	network management access add	143
31.1.3	network management access delete	143
31.1.4	network management access modify	143
31.1.5	network management access operation	144
31.1.6	network management access status	144
31.2	show	144
31.2.1	show network management access global	144
31.2.2	show network management access rules	144
32	Network Address Translation (NAT)	146
32.1	nat	146

32.1.1 nat dnat commit	146
32.1.2 nat dnat add	146
32.1.3 nat dnat modify	146
32.1.4 nat dnat delete	147
32.1.5 nat dnat logtrap	147
32.1.6 nat dnat state	147
32.1.7 nat dnat if add	148
32.1.8 nat dnat if delete	148
32.1.9 nat 1to1nat commit	148
32.1.10 nat 1to1nat add	148
32.1.11 nat 1to1nat modify	148
32.1.12 nat 1to1nat delete	149
32.1.13 nat 1to1nat logtrap	149
32.1.14 nat 1to1nat state	149
32.1.15 nat masq commit	149
32.1.16 nat masq add	149
32.1.17 nat masq modify	150
32.1.18 nat masq delete	150
32.1.19 nat masq logtrap	150
32.1.20 nat masq ipsec-exempt	150
32.1.21 nat masq state	150
32.1.22 nat masq if add	151
32.1.23 nat masq if delete	151
32.1.24 nat doublenat commit	151
32.1.25 nat doublenat add	151
32.1.26 nat doublenat modify	151
32.1.27 nat doublenat delete	151
32.1.28 nat doublenat logtrap	152
32.1.29 nat doublenat state	152
32.1.30 nat doublenat if add	152
32.1.31 nat doublenat if delete	152
32.2 show	152
32.2.1 show nat dnat global	152
32.2.2 show nat dnat rules	153
32.2.3 show nat dnat if	153
32.2.4 show nat dnat logtrap	153
32.2.5 show nat masq global	153
32.2.6 show nat masq rules	153
32.2.7 show nat masq logtrap	153
32.2.8 show nat masq if	153
32.2.9 show nat 1to1nat global	153
32.2.10 show nat 1to1nat rules	154
32.2.11 show nat 1to1nat logtrap	154
32.2.12 show nat doublenat global	154
32.2.13 show nat doublenat rules	154
32.2.14 show nat doublenat logtrap	154
32.2.15 show nat doublenat if	154
33 Network Time Protocol (NTP)	155
33.1 ntp	155
33.1.1 ntp client operation	155
33.1.2 ntp client operating-mode	155
33.1.3 ntp server operation	155
33.1.4 ntp server operating-mode	155
33.1.5 ntp server localclock-stratum	155
33.1.6 ntp peers add	155
33.1.7 ntp peers delete	156
33.2 show	156
33.2.1 show ntp client-status	156
33.2.2 show ntp server-status	156
34 Packet Filter	157
34.1 packet-filter	157
34.1.1 packet-filter I3 commit	157
34.1.2 packet-filter I3 defaultpolicy	157
34.1.3 packet-filter I3 checksum-validation	157
34.1.4 packet-filter I3 addrule	157

34.1.5	packet-filter l3 modifyrule	158
34.1.6	packet-filter l3 delrule	158
34.1.7	packet-filter l3 enablerule	158
34.1.8	packet-filter l3 disablerule	159
34.1.9	packet-filter l3 logmode	159
34.1.10	packet-filter l3 addif	159
34.1.11	packet-filter l3 delif	159
34.1.12	packet-filter l3 enableif	159
34.1.13	packet-filter l3 disableif	160
34.1.14	packet-filter l2 commit	160
34.1.15	packet-filter l2 defaultpolicy	160
34.1.16	packet-filter l2 fcs-validation	160
34.1.17	packet-filter l2 rule add	160
34.1.18	packet-filter l2 rule modify	162
34.1.19	packet-filter l2 rule delete	163
34.1.20	packet-filter l2 rule enable	163
34.1.21	packet-filter l2 rule disable	164
34.1.22	packet-filter l2 if add	164
34.1.23	packet-filter l2 if delete	164
34.1.24	packet-filter l2 if enable	164
34.1.25	packet-filter l2 if disable	164
34.2	clear	165
34.2.1	clear fw-state-table	165
34.3	show	165
34.3.1	show packet-filter l3 global	165
34.3.2	show packet-filter l3 maxrules	165
34.3.3	show packet-filter l3 defaultpolicy	165
34.3.4	show packet-filter l3 ruletable	165
34.3.5	show packet-filter l3 iftable	165
34.3.6	show packet-filter l3 pending	165
34.3.7	show packet-filter l2 global	165
34.3.8	show packet-filter l2 rule	166
34.3.9	show packet-filter l2 if	166
35	Protocol	167
35.1	protocol	167
35.1.1	protocol add	167
35.1.2	protocol modify	167
35.1.3	protocol delete	168
35.2	show	168
35.2.1	show protocol list	168
36	Port Monitor	169
36.1	link-flap	169
36.1.1	link-flap operation	169
36.2	show	169
36.2.1	show link-flap operation	169
37	Password Management	170
37.1	passwords	170
37.1.1	passwords min-length	170
37.1.2	passwords max-login-attempts	170
37.1.3	passwords min-uppercase-chars	170
37.1.4	passwords min-lowercase-chars	170
37.1.5	passwords min-numeric-chars	170
37.1.6	passwords min-special-chars	170
37.1.7	passwords login-attempt-period	171
37.2	show	171
37.2.1	show passwords	171
38	Radius	172
38.1	radius	172
38.1.1	radius server attribute 4	172

38.1.2 radius server auth add	172
38.1.3 radius server auth delete	172
38.1.4 radius server auth modify	172
38.1.5 radius server retransmit	173
38.1.6 radius server timeout	173
38.2 show	173
38.2.1 show radius global	173
38.2.2 show radius auth servers	173
38.2.3 show radius auth statistics	173
38.3 clear	173
38.3.1 clear radius	174
39 Remote Authentication	175
39.1 ldap	175
39.1.1 ldap operation	175
39.1.2 ldap cache-timeout	175
39.1.3 ldap flush-user-cache	175
39.1.4 ldap role-policy	175
39.1.5 ldap basedn	175
39.1.6 ldap search-attr	175
39.1.7 ldap bind-user	176
39.1.8 ldap bind-passwd	176
39.1.9 ldap default-domain	176
39.1.10 ldap client server add	176
39.1.11 ldap client server delete	176
39.1.12 ldap client server enable	176
39.1.13 ldap client server disable	177
39.1.14 ldap client server modify	177
39.1.15 ldap mapping add	177
39.1.16 ldap mapping delete	177
39.1.17 ldap mapping enable	177
39.1.18 ldap mapping disable	178
39.2 show	178
39.2.1 show ldap global	178
39.2.2 show ldap client server	178
39.2.3 show ldap mapping	178
39.3 copy	178
39.3.1 copy ldapcacert remote	178
39.3.2 copy ldapcacert envm	178
40 Remote Monitoring (RMON)	180
40.1 show	180
40.1.1 show rmon statistics	180
41 Script File	181
41.1 script	181
41.1.1 script apply	181
41.1.2 script validate	181
41.1.3 script list system	181
41.1.4 script list envm	181
41.1.5 script delete	181
41.2 copy	181
41.2.1 copy script envm	181
41.2.2 copy script remote	182
41.2.3 copy script nvm	182
41.3 show	182
41.3.1 show script envm	182
41.3.2 show script system	182
42 Selftest	183
42.1 selftest	183
42.1.1 selftest action	183
42.1.2 selftest ramtest	183

42.1.3	selftest system-monitor	183
42.1.4	selftest boot-default-on-error	183
42.2	show	184
42.2.1	show selftest action	184
42.2.2	show selftest settings	184
43	Small Form-factor Pluggable (SFP)	185
43.1	show	185
43.1.1	show sfp	185
44	Signal Contact	186
44.1	signal-contact	186
44.1.1	signal-contact mode	186
44.1.2	signal-contact monitor link-failure	186
44.1.3	signal-contact monitor envm-not-in-sync	186
44.1.4	signal-contact monitor envm-removal	186
44.1.5	signal-contact monitor temperature	187
44.1.6	signal-contact monitor power-supply	187
44.1.7	signal-contact state	187
44.1.8	signal-contact trap	187
44.2	signal-contact	188
44.2.1	signal-contact link-alarm	188
44.3	show	188
44.3.1	show signal-contact	188
45	Simple Network Management Protocol (SNMP)	189
45.1	snmp	189
45.1.1	snmp access version v1	189
45.1.2	snmp access version v2	189
45.1.3	snmp access version v3	189
45.1.4	snmp access port	189
45.2	show	189
45.2.1	show snmp access	190
46	SNMP Community	191
46.1	snmp	191
46.1.1	snmp community ro	191
46.1.2	snmp community rw	191
46.2	show	191
46.2.1	show snmp community	191
47	SNMP Logging	192
47.1	logging	192
47.1.1	logging snmp-request get operation	192
47.1.2	logging snmp-request get severity	192
47.1.3	logging snmp-request set operation	192
47.1.4	logging snmp-request set severity	193
47.2	show	193
47.2.1	show logging snmp	193
48	Secure Shell (SSH)	194
48.1	ssh	194
48.1.1	ssh server	194
48.1.2	ssh timeout	194
48.1.3	ssh port	194
48.1.4	ssh max-sessions	194
48.1.5	ssh key rsa	194
48.1.6	ssh key fingerprint-type	194
48.2	copy	195
48.2.1	copy sshkey remote	195

48.2.2	copy sshkey envm	195
48.3	show	195
48.3.1	show ssh	195
49	Static Multicast Routing	196
49.1	ip	196
49.1.1	ip mcast operation	196
49.1.2	ip static-mcast operation	196
49.1.3	ip static-mcast mgroup add	196
49.1.4	ip static-mcast mgroup modify	196
49.1.5	ip static-mcast mgroup delete	197
49.1.6	ip static-mcast mgroup enable	197
49.1.7	ip static-mcast mgroup disable	197
49.1.8	ip static-mcast mroute add	197
49.1.9	ip static-mcast mroute modify	198
49.1.10	ip static-mcast mroute delete	198
49.1.11	ip static-mcast mroute enable	198
49.1.12	ip static-mcast mroute disable	198
49.2	ip	198
49.2.1	ip static-mcast operation	199
49.3	show	199
49.3.1	show ip mcast global	199
49.3.2	show ip static-mcast global	199
49.3.3	show ip static-mcast interface	199
49.3.4	show ip static-mcast mgroup	199
49.3.5	show ip static-mcast mroute	199
50	Storm Control	200
50.1	storm-control	200
50.1.1	storm-control flow-control	200
50.2	storm-control	200
50.2.1	storm-control flow-control	200
50.2.2	storm-control ingress unit	200
50.2.3	storm-control ingress unicast operation	200
50.2.4	storm-control ingress unicast threshold	201
50.2.5	storm-control ingress multicast operation	201
50.2.6	storm-control ingress multicast threshold	201
50.2.7	storm-control ingress broadcast operation	201
50.2.8	storm-control ingress broadcast threshold	201
50.3	show	201
50.3.1	show storm-control flow-control	202
50.3.2	show storm-control ingress	202
51	System	203
51.1	system	203
51.1.1	system name	203
51.1.2	system location	203
51.1.3	system contact	203
51.1.4	system pre-login-banner operation	203
51.1.5	system pre-login-banner text	203
51.1.6	system resources operation	204
51.2	temperature	204
51.2.1	temperature upper-limit	204
51.2.2	temperature lower-limit	204
51.3	hardware	204
51.3.1	hardware runtime-bypass	204
51.3.2	hardware systemoff-bypass	204
51.4	show	205
51.4.1	show eventlog	205
51.4.2	show system info	205
51.4.3	show system pre-login-banner	205
51.4.4	show system flash-status	205
51.4.5	show system temperature limits	205

51.4.6	show system temperature extremes	205
51.4.7	show system temperature histogram	205
51.4.8	show system temperature counters	205
51.4.9	show system resources	206
51.4.10	show hardware runtime-bypass	206
51.4.11	show hardware systemoff-bypass	206
52	Tracking	207
52.1	track	207
52.1.1	track add	207
52.1.2	track delete	207
52.1.3	track enable	207
52.1.4	track disable	207
52.1.5	track trap	207
52.1.6	track description	208
52.1.7	track modify interface	208
52.1.8	track modify ping	208
52.1.9	track modify logical	209
52.2	show	209
52.2.1	show track overview	209
52.2.2	show track interface	209
52.2.3	show track ping	209
52.2.4	show track logical	209
52.2.5	show track application	209
53	L3 Relay	210
53.1	ip	210
53.1.1	ip udp-helper operation	210
53.1.2	ip udp-helper server add	210
53.1.3	ip udp-helper server delete	210
53.1.4	ip udp-helper server enable	210
53.1.5	ip udp-helper server disable	210
53.1.6	ip udp-helper maxhopcount	211
53.1.7	ip udp-helper minwaittime	211
53.1.8	ip udp-helper cidoptmode	211
53.2	ip	211
53.2.1	ip udp-helper server add	211
53.2.2	ip udp-helper server delete	211
53.2.3	ip udp-helper server enable	211
53.2.4	ip udp-helper server disable	212
53.3	show	212
53.3.1	show ip udp-helper status	212
53.3.2	show ip udp-helper global	212
53.3.3	show ip udp-helper interface	212
53.3.4	show ip udp-helper statistics	212
53.4	clear	212
53.4.1	clear ip udp-helper	212
54	Traps	213
54.1	snmp	213
54.1.1	snmp trap operation	213
54.1.2	snmp trap mode	213
54.1.3	snmp trap delete	213
54.1.4	snmp trap add	213
54.2	show	213
54.2.1	show snmp traps	214
55	Unicast Routing	215
55.1	routing	215
55.1.1	routing add	215
55.1.2	routing delete	215
55.2	ip	215
55.2.1	ip routing	215

55.2.2	ip proxy-arp max-delay	215
55.3	show	215
55.3.1	show ip global	216
55.4	show	216
55.4.1	show ip interface	216
55.4.2	show ip statistics	216
55.5	ip	216
55.5.1	ip routing	216
55.5.2	ip proxy-arp operation	216
55.5.3	ip address secondary	217
55.5.4	ip address primary	217
55.5.5	ip mtu	217
55.5.6	ip icmp redirects	217
55.6	ip	217
55.6.1	ip route add	218
55.6.2	ip route modify	218
55.6.3	ip route delete	218
55.6.4	ip route distance	218
55.6.5	ip route track add	218
55.6.6	ip route track delete	218
55.6.7	ip default-route add	219
55.6.8	ip default-route modify	219
55.6.9	ip default-route delete	219
55.6.10	ip default-route track add	219
55.6.11	ip default-route track delete	219
55.6.12	ip loopback add	219
55.6.13	ip loopback delete	220
55.6.14	ip icmp redirects	220
55.6.15	ip icmp echo-reply	220
55.6.16	ip icmp rate-limit interval	220
55.6.17	ip icmp rate-limit burst-size	220
55.7	show	220
55.7.1	show ip route all	220
55.7.2	show ip route local	221
55.7.3	show ip route static	221
55.7.4	show ip route entry	221
55.7.5	show ip route tracking	221
55.7.6	show ip entry	221
56	Users	222
56.1	users	222
56.1.1	users add	222
56.1.2	users delete	222
56.1.3	users enable	222
56.1.4	users disable	222
56.1.5	users password	222
56.1.6	users snmpv3 authentication	222
56.1.7	users snmpv3 encryption	223
56.1.8	users access-role	223
56.1.9	users lock-status	223
56.1.10	users password-policy-check	223
56.2	show	223
56.2.1	show users	223
57	Virtual LAN (VLAN)	224
57.1	name	224
57.1.1	name	224
57.2	vlan	224
57.2.1	vlan add	224
57.2.2	vlan delete	224
57.3	vlan	224
57.3.1	vlan acceptframe	224
57.3.2	vlan ingressfilter	224
57.3.3	vlan priority	225

57.3.4	vlan pvid	225
57.3.5	vlan tagging	225
57.3.6	vlan participation include	225
57.3.7	vlan participation exclude	225
57.3.8	vlan participation auto	225
57.4	show	226
57.4.1	show vlan id	226
57.4.2	show vlan brief	226
57.4.3	show vlan port	226
57.4.4	show vlan member current	226
57.4.5	show vlan member static	226
57.5	network	226
57.5.1	network management vlan	226
57.5.2	network management priority dot1p	226
57.5.3	network management priority ip-dscp	227
58	Virtual Private Network (VPN)	228
58.1	ipsec	228
58.1.1	ipsec certificate delete	228
58.1.2	ipsec certificate upload passphrase	228
58.1.3	ipsec connection add	228
58.1.4	ipsec connection modify	228
58.1.5	ipsec connection status	231
58.1.6	ipsec connection delete	231
58.1.7	ipsec traffic-selector	231
58.2	show	232
58.2.1	show ipsec general	232
58.2.2	show ipsec connections summary	232
58.2.3	show ipsec connections access	232
58.2.4	show ipsec connections certificates	233
58.2.5	show ipsec connections key-exchange	233
58.2.6	show ipsec connections data-exchange	233
58.2.7	show ipsec connections status	233
58.2.8	show ipsec connections tunnels	233
58.2.9	show ipsec traffic-selectors	233
58.2.10	show ipsec certificate summary	233
58.2.11	show ipsec certificate details	233
A	Further support	235
B	Readers' Comments	236

Safety instructions



WARNING

UNCONTROLLED MACHINE ACTIONS

To avoid uncontrolled machine actions caused by data loss, configure all the data transmission devices individually.

Before you start any machine which is controlled via data transmission, be sure to complete the configuration of all data transmission devices.

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



WARNING

UNWANTED APPLICATION BEHAVIOR

Configuration of the Ethernet devices shall be done by an Ethernet expert.

Before you start any application based on an AFS and/or AFF network, be sure to complete the configuration of all Ethernet devices correctly.

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

First login (Password change)

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

Perform the following steps:

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

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

For further information see: hirschmann-support.belden.com.

About this Manual

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

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

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

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

The Industrial HiVision Network Management software provides you with additional options for smooth configuration and monitoring:

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

1 Access Control List (ACL)

1.1 mac

Set MAC parameters.

1.1.1 mac acl add

Create a new MAC ACL

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `mac acl add <P-1> <P-2>`

Parameter	Value	Meaning
P-1	1..10100	MAC ACL ID
P-2	string	Enter an ACL name, alphanumeric ASCII character string with 1 to 32 characters.

1.1.2 mac acl delete

Delete an existing MAC ACL.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `mac acl delete <P-1>`

Parameter	Value	Meaning
P-1	1..10100	MAC ACL ID

1.1.3 mac acl assign

Assign a MAC ACL to a VLAN.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `mac acl assign <P-1> vlan <P-2> <P-3> <P-4>`

vlan: Specify a VLAN

Parameter	Value	Meaning
P-1	1..10100	MAC ACL ID
P-2	0..4095	Enter a VLAN ID in the given range.
P-3	in	Incoming traffic
P-4	1..4294967295	Sequence

1.1.4 mac acl deassign

Deassign a MAC ACL from a VLAN.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `mac acl deassign <P-1> vlan <P-2> <P-3> <P-4>`

vlan: Specify a VLAN

Parameter	Value	Meaning
P-1	1..10100	MAC ACL ID
P-2	0..4095	Enter a VLAN ID in the given range.
P-3	in	Incoming traffic
P-4	1..4294967295	Sequence

1.1.5 mac acl counter reset

Reset the counter for one or all MAC ACL rules.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `mac acl counter reset [<P-1>] [<P-2>]`

Parameter	Value	Meaning
P-1	1..10100	MAC ACL ID
P-2	1..239	MAC ACL Rule ID

1.1.6 mac acl trapflag

Change the trap flag.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mac acl trapflag <P-1>

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

1.1.7 mac acl rule add

Add a rule to an existing MAC ACL.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mac acl rule add <P-1> <P-2> permit src <P-3> <P-4> dst <P-5> <P-6> [etype <P-7>] [vlan <P-8>] [cos <P-9>] [log] deny src <P-10> <P-11> dst <P-12> <P-13> [etype <P-14>] [vlan <P-15>] [cos <P-16>] [log]

permit: Add a permit rule.

src: Specify the src MAC address/mask.

dst: Specify the dst MAC address/mask.

[etype]: Ethertype

[vlan]: Specify a VLAN to match.

[cos]: Specify a COS to match.

[log]: Enable Logging

deny: Add a deny rule.

src: Specify the src MAC address/mask.

dst: Specify the dst MAC address/mask.

[etype]: Ethertype

[vlan]: Specify a VLAN to match.

[cos]: Specify a COS to match.

[log]: Enable Logging

Parameter	Value	Meaning
P-1	1..10100	MAC ACL ID
P-2	1..239	MAC ACL Rule ID
P-3	any	Enter any as a shortcut for the MAC address 00:00:00:00:00:00.
	aa:bb:cc:dd:ee:ff	Enter the MAC address in hexadecimal format.
P-4	any	Enter any as a shortcut for the MAC address 00:00:00:00:00:00.
	aa:bb:cc:dd:ee:ff	Enter the MAC mask in hexadecimal format. The 'Don't care bits' are represented by binary 0's and 'Do care bits' are represented by binary 1's..
P-5	any	Enter any as a shortcut for the MAC address 00:00:00:00:00:00.
	aa:bb:cc:dd:ee:ff	Enter the MAC address in hexadecimal format.
P-6	any	Enter any as a shortcut for the MAC address 00:00:00:00:00:00.
	aa:bb:cc:dd:ee:ff	Enter the MAC mask in hexadecimal format. The 'Don't care bits' are represented by binary 0's and 'Do care bits' are represented by binary 1's..
P-7	0x0600-0xffff	Ethertype value
	appletalk	Appletalk
	arp	ARP
	ibmsna	IBM SNA
	ipv4	IPv4
	ipv6	IPv6
	ipx-old	IPX (old)
	mplsmcast	MPLS Multicast
	mplsucast	MPLS Unicast
	netbios	NetBIOS
	novell	Novell
	pppoe-disc	PPPoE Discovery Stage
	rarp	RARP
	pppoe-sess	PPPoE Session Stage
	ipx-new	IPX (new)
	powerlink	POWERLINK
	profinet	PROFINET
	ethercat	EtherCAT
P-8	0..4095	Enter a VLAN ID in the given range.
P-9	1..7	Enter a COS in the given range.

Access Control List (ACL)

1.2 ip

Parameter	Value	Meaning
P-10	any	Enter any as a shortcut for the MAC address 00:00:00:00:00:00.
	aa:bb:cc:dd:ee:ff	Enter the MAC address in hexadecimal format.
P-11	any	Enter any as a shortcut for the MAC address 00:00:00:00:00:00.
	aa:bb:cc:dd:ee:ff	Enter the MAC mask in hexadecimal format. The 'Don't care bits' are represented by binary 0's and 'Do care bits' are represented by binary 1's..
P-12	any	Enter any as a shortcut for the MAC address 00:00:00:00:00:00.
	aa:bb:cc:dd:ee:ff	Enter the MAC address in hexadecimal format.
P-13	any	Enter any as a shortcut for the MAC address 00:00:00:00:00:00.
	aa:bb:cc:dd:ee:ff	Enter the MAC mask in hexadecimal format. The 'Don't care bits' are represented by binary 0's and 'Do care bits' are represented by binary 1's..
P-14	0x0600-0xffff	Ethertype value
	appletalk	Appletalk
	arp	ARP
	ibmsna	IBM SNA
	ipv4	IPv4
	ipv6	IPv6
	ipx-old	IPX (old)
	mplsmcast	MPLS Multicast
	mplsucast	MPLS Unicast
	netbios	NetBIOS
	novell	Novell
	pppoe-disc	PPPoE Discovery Stage
	rarp	RARP
	pppoe-sess	PPPoE Session Stage
	ipx-new	IPX (new)
	powerlink	POWERLINK
	profinet	PROFINET
	ethercat	EtherCAT
P-15	0..4095	Enter a VLAN ID in the given range.
P-16	1..7	Enter a COS in the given range.

1.1.8 mac acl rule delete

Remove a rule from a MAC ACL.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: mac acl rule delete <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..10100	MAC ACL ID
P-2	1..239	MAC ACL Rule ID

1.2 ip

Set IP parameters.

1.2.1 ip acl add

Create a new IP ACL.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip acl add <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..10100	IP ACL ID
P-2	string	Enter an ACL name, alphanumeric ASCII character string with 1 to 32 characters.

1.2.2 ip acl delete

Delete an existing IP ACL.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: ip acl delete <P-1>

Parameter	Value	Meaning
P-1	1..10100	IP ACL ID

1.2.3 ip acl assign

Assign an IP ACL to a VLAN.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip acl assign <P-1> vlan <P-2> <P-3> <P-4>
vlan: Specify a VLAN.

Parameter	Value	Meaning
P-1	1..10100	IP ACL ID
P-2	vlan	Specify VLAN
P-3	0..4095	Enter a VLAN ID in the given range.
P-4	in	Incoming traffic
P-5	1..4294967295	Sequence

1.2.4 ip acl deassign

Remove an IP ACL from a VLAN.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip acl deassign <P-1> vlan <P-2> <P-3> <P-4>
vlan: Specify a VLAN.

Parameter	Value	Meaning
P-1	1..10100	IP ACL ID
P-2	vlan	Specify VLAN
P-3	0..4095	Enter a VLAN ID in the given range.
P-4	in	Incoming traffic
P-5	1..4294967295	Sequence

1.2.5 ip acl counter reset

Reset the counter for one or all IP ACL rules.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip acl counter reset [<P-1>] [<P-2>]

Parameter	Value	Meaning
P-1	1..10100	IP ACL ID
P-2	1..239	IP ACL Rule ID

1.2.6 ip acl trapflag

Change a trap flag.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip acl trapflag <P-1>

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

1.2.7 ip acl rule add

Add a rule to an existing IP ACL.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip acl rule add <P-1> <P-2> permit src <P-3> <P-4> [sport <P-5>] dst <P-6> <P-7> [dport <P-8>] [proto <P-9>] [fragments] [log] [dscp <P-10>] [mirror <P-11>] [redirect <P-12>] [rate-limit <P-13> <P-14> <P-15>] [tos <P-16> <P-17>] [mirror <P-18>] [redirect <P-19>] [rate-limit <P-20> <P-21> <P-22>] [precedence <P-23>] [mirror <P-24>] [redirect <P-25>] [rate-limit <P-26> <P-27> <P-28>] deny src <P-29> <P-30> [sport <P-31>] dst <P-32> <P-33> [dport <P-34>] [proto <P-35>] [fragments] [log] [dscp <P-36>] [tos <P-37> <P-38>] [precedence <P-39>]
permit: Add a permit rule to an existing IP ACL.
src: Specify the source IP/mask.
[sport]: Specify the source L4 port.

Access Control List (ACL)

1.2 ip

dst: Specify the destination IP/mask.
[dport]: Specify the destination L4 port.
[proto]: Specify the protocol.
[fragments]: Match non-initial fragments
[log]: Enable Logging
[dscp]: Specify the DSCP.
[mirror]: Specify the mirror port.
[redirect]: Specify the redirect port.
[rate-limit]: Specify the rate limit and burst size.
[tos]: Specify the TOS.
[mirror]: Specify a mirror port.
[redirect]: Specify the redirect port.
[rate-limit]: Specify the rate limit and burst size.
[precedence]: Specify the IP precedence.
[mirror]: Specify the mirror port.
[redirect]: Specify the redirect port.
[rate-limit]: Specify the rate limit and burst size.
deny: Add a deny rule to an existing IP ACL.
src: Specify the source IP/mask.
[sport]: Specify the source L4 port.
dst: Specify the destination IP/mask.
[dport]: Specify the destination L4 port.
[proto]: Specify a protocol.
[fragments]: Match non-initial fragments
[log]: Enable Logging
[dscp]: Specify the DSCP.
[tos]: Specify the TOS.
[precedence]: Specify the IP precedence.

Parameter	Value	Meaning
P-1	1..10100	IP ACL ID
P-2	1..239	IP ACL Rule ID
P-3	any	Enter 'any' to match any ip address.
	a.b.c.d	Enter the IP address to match.
P-4	any	Enter 'any' to match any ip mask.
	a.b.c.d	Enter an IP mask to match. The 'Don't care bits' are represented by binary 1's and 'Do care bits' are represented by binary 0's..
P-5	domain	Domain
	echo	Echo
	ftp	FTP
	ftpdata	FTP Data
	http	HTTP
	https	HTTPS
	smtp	SMTP
	snmp	SNMP
	telnet	Telnet
	ssh	SSH
	fttp	TFTP
	www	WWW
	1-65535	Port number
P-6	any	Enter 'any' to match any ip address.
	a.b.c.d	Enter the IP address to match.
P-7	any	Enter 'any' to match any ip mask.
	a.b.c.d	Enter an IP mask to match. The 'Don't care bits' are represented by binary 1's and 'Do care bits' are represented by binary 0's..

Parameter	Value	Meaning
P-8	domain	Domain
	echo	Echo
	ftp	FTP
	ftpdata	FTP Data
	http	HTTP
	https	HTTPS
	smtp	SMTP
	snmp	SNMP
	telnet	Telnet
	ssh	SSH
	tftp	TFTP
	www	WWW
P-9	1-65535	Port number
	1-255	Enter a protocol number.
	icmp	Match the ICMP protocol.
	igmp	Match the IGMP protocol
	ip	Match the IPinIP tunnel.
	tcp	Match the TCP protocol.
P-10	udp	Match the UDP protocol.
	1..63	DSCP
P-11	slot/port	Enter a single interface in slot/port format.
P-12	slot/port	Enter a single interface in slot/port format.
P-13	0..10000000	Committed rate value, specified in kbps or pps
P-14	0..128	Committed burst size value, specified in kbytes or pps
P-15	pps	Packets per second.
	kbps	kbytes per second.
P-16	1..31	Specify the IP TOS bits to match.
P-17	1..31	Specify the IP TOS bits that are of interest.
P-18	slot/port	Enter a single interface in slot/port format.
P-19	slot/port	Enter a single interface in slot/port format.
P-20	0..10000000	Committed rate value, specified in kbps or pps
P-21	0..128	Committed burst size value, specified in kbytes or pps
P-22	pps	Packets per second.
	kbps	kbytes per second.
P-23	1..7	IP Precedence
P-24	slot/port	Enter a single interface in slot/port format.
P-25	slot/port	Enter a single interface in slot/port format.
P-26	0..10000000	Committed rate value, specified in kbps or pps
P-27	0..128	Committed burst size value, specified in kbytes or pps
P-28	pps	Packets per second.
	kbps	kbytes per second.
P-29	any	Enter 'any' to match any ip address.
	a.b.c.d	Enter the IP address to match.
P-30	any	Enter 'any' to match any ip mask.
	a.b.c.d	Enter an IP mask to match. The 'Don't care bits' are represented by binary 1's and 'Do care bits' are represented by binary 0's..
P-31	domain	Domain
	echo	Echo
	ftp	FTP
	ftpdata	FTP Data
	http	HTTP
	https	HTTPS
	smtp	SMTP
	snmp	SNMP
	telnet	Telnet
	ssh	SSH
	tftp	TFTP
	www	WWW
P-32	1-65535	Port number
	any	Enter 'any' to match any ip address.
	a.b.c.d	Enter the IP address to match.
P-33	any	Enter 'any' to match any ip mask.
	a.b.c.d	Enter an IP mask to match. The 'Don't care bits' are represented by binary 1's and 'Do care bits' are represented by binary 0's..

Access Control List (ACL)

1.3 show

Parameter	Value	Meaning
P-34	domain	Domain
	echo	Echo
	ftp	FTP
	ftpdata	FTP Data
	http	HTTP
	https	HTTPS
	smtp	SMTP
	snmp	SNMP
	telnet	Telnet
	ssh	SSH
	tftp	TFTP
	www	WWW
P-35	1-65535	Port number
	1-255	Enter a protocol number.
	icmp	Match the ICMP protocol.
	igmp	Match the IGMP protocol.
	ip	Match the IPinIP tunnel.
	tcp	Match the TCP protocol.
	udp	Match the UDP protocol.
P-36	1..63	DSCP
P-37	1..31	Specify the IP TOS bits to match.
P-38	1..31	Specify the IP TOS bits to match.
P-39	1..7	IP Precedence

1.2.8 ip acl rule delete

Delete a rule from an IP ACL.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: `ip acl rule delete <P-1> <P-2>`

Parameter	Value	Meaning
P-1	1..10100	IP ACL ID
P-2	1..239	IP ACL Rule ID

1.3 show

Display device options and settings.

1.3.1 show access-list trapflag

Display the trap flag status.

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

1.3.2 show access-list mac rules

Display the rules of a specific MAC ACL.

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

Parameter	Value	Meaning
P-1	1..10100	MAC ACL ID
P-2	1..239	MAC ACL Rule ID

1.3.3 show access-list mac lists

Display an overview of the existing MAC ACLs.

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

Parameter	Value	Meaning
P-1	1..10100	MAC ACL ID

1.3.4 show access-list mac counters

Display the counters of a specific MAC ACL.

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

Parameter	Value	Meaning
P-1	1..10100	MAC ACL ID
P-2	1..239	MAC ACL Rule ID

1.3.5 show access-list mac assignment

Display the assignments of the existing MAC ACLs.

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

Parameter	Value	Meaning
P-1	1..10100	MAC ACL ID

1.3.6 show access-list ip rules

Display the rules of a specific IP ACL.

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

Parameter	Value	Meaning
P-1	1..10100	IP ACL ID
P-2	1..239	IP ACL Rule ID

1.3.7 show access-list ip lists

Display an overview of the existing IP ACLs.

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

Parameter	Value	Meaning
P-1	1..10100	IP ACL ID

1.3.8 show access-list ip counters

Display the counters of a specific IP ACL.

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

Parameter	Value	Meaning
P-1	1..10100	IP ACL ID
P-2	1..239	IP ACL Rule ID

1.3.9 show access-list ip assignment

Display the assignments of the existing IP ACLs.

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

Parameter	Value	Meaning
P-1	1..10100	IP ACL ID

2 Application Lists

2.1 appllists

Configure an application list.

2.1.1 appllists set-authlist

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

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

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

2.1.2 appllists enable

Activate a login application list.

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

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

2.1.3 appllists disable

Deactivate a login application list.

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

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

2.2 show

Display device options and settings.

2.2.1 show appllists

Display the ordered methods for application lists.

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

3 Asset

3.1 asset

Asset configuration.

3.1.1 asset add

Add an asset configuration to the asset table.

- **Mode:** Global Config Mode
- **Privilege Level:** Operator
- **Format:** asset add <P-1> name <P-2> [description <P-3>] [type <P-4>] [manufacturer <P-5>] [model <P-6>] [general-location <P-7>] [specific-location <P-8>] [tag <P-9>] [ip-address <P-10>] [mac-address <P-11>] tag <P-12> [ip-address <P-13>] [mac-address <P-14>]

name: Specify the Asset Name

[description]: Specify the Asset Description

[type]: Specify the Asset Type

[manufacturer]: Specify the Asset Manufacturer

[model]: Specify the Asset Model

[general-location]: Specify the Asset General Location

[specific-location]: Specify the Asset Specific Location

[tag]: Specify the Asset Tag

[ip-address]: Specify the IPv4 Address of asset/CIDR/'any'

[mac-address]: Specify the MAC address/'any'

tag: Specify the Asset Tag

[ip-address]: Specify the IPv4 Address/CIDR/'any'

[mac-address]: Specify the MAC address/'any'

Parameter	Value	Meaning
P-1	1..50	Asset Index
P-2	string	Asset name
P-3	string	Asset description
P-4	computer	Computer Asset Type
	controller	Controller Asset Type
	device	Device Asset Type
	network	Network Asset Type
	network-Equipment	Network Equipment Asset Type
	broadcast	Broadcast Asset Type
	multicast	Multicast Asset Type
P-5	string	Asset Manufacturer
P-6	string	Asset Model
P-7	string	Asset General Location
P-8	string	Asset Specific Location
P-9	string	Asset Tag
P-10	any	Any address
	a.b.c.d	IP Address
	a.b.c.d/n	CIDR mask
	!a.b.c.d	Everything BUT this address
	!a.b.c.d/n	Everything BUT this CIDR mask
P-11	any	Enter any as a shortcut for the MAC address 00:00:00:00:00:00.
	aa:bb:cc:dd:ee:ff	Enter the MAC address in hexadecimal format.
P-12	string	Asset Tag (internal or external)
P-13	any	any Any address
	a.b.c.d	IP Address
	a.b.c.d/n	CIDR mask
	!a.b.c.d	Everything BUT this address
	!a.b.c.d/n	Everything BUT this CIDR mask
P-14	any	Enter any as a shortcut for the MAC address 00:00:00:00:00:00.
	aa:bb:cc:dd:ee:ff	Enter the MAC address in hexadecimal format.

3.1.2 asset modify

Modifies an asset configuration present in the asset table.

- ▶ **Mode:** Global Config Mode
 - ▶ **Privilege Level:** Operator
 - ▶ **Format:** asset modify <P-1> [name <P-2>] [description <P-3>] [type <P-4>]
[manufacturer <P-5>] [model <P-6>] [general-location <P-7>] [specific-location <P-8>] [tag <P-9>] [ip-address <P-10>] [mac-address <P-11>] [tag <P-12>] [ip-address <P-13>] [mac-address <P-14>]
- [name]: Specify the Asset Name
[description]: Specify the Asset Description
[type]: Specify the Asset Type
[manufacturer]: Specify the Asset Manufacturer
[model]: Specify the Asset Model
[general-location]: Specify the Asset General Location
[specific-location]: Specify the Asset Specific Location
[tag]: Specify the Asset Tag
[ip-address]: Specify the IPv4 Address of asset/CIDR/'any'
[mac-address]: Specify the MAC address/'any'
[tag]: Specify the Asset Tag
[ip-address]: Specify the IPv4 Address/CIDR/'any'
[mac-address]: Specify the MAC address/'any'

Parameter	Value	Meaning
P-1	1..50	Asset Index
P-2	string	Asset name
P-3	string	Asset description
P-4	computer	Computer Asset Type
	controller	Controller Asset Type
	device	Device Asset Type
	network	Network Asset Type
	network-Equipment	Network Equipment Asset Type
	broadcast	Broadcast Asset Type
	multicast	Multicast Asset Type
P-5	string	Asset Manufacturer
P-6	string	Asset Model
P-7	string	Asset General Location
P-8	string	Asset Specific Location
P-9	string	Asset Tag
P-10	any	any Any address
	a.b.c.d	IP Address
	a.b.c.d/n	CIDR mask
	!a.b.c.d	Everything BUT this address
	!a.b.c.d/n	Everything BUT this CIDR mask
P-11	any	Enter any as a shortcut for the MAC address 00:00:00:00:00:00.
	aa:bb:cc:dd:ee:ff	Enter the MAC address in hexadecimal format.
P-12	string	Asset Tag (internal or external)
P-13	any	any Any address
	a.b.c.d	IP Address
	a.b.c.d/n	CIDR mask
	!a.b.c.d	Everything BUT this address
	!a.b.c.d/n	Everything BUT this CIDR mask
P-14	any	Enter any as a shortcut for the MAC address 00:00:00:00:00:00.
	aa:bb:cc:dd:ee:ff	Enter the MAC address in hexadecimal format.

3.1.3 asset delete

Delete an asset configuration present in the asset table.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** asset delete <P-1>

Parameter	Value	Meaning
P-1	1..50	Asset Index

3.2 show

Display device options and settings.

3.2.1 show asset list

Display list for all the configured assets.

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

4 Authentication Lists

4.1 authlists

Configure an authentication list.

4.1.1 authlists add

Create a new login authentication list.

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

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

4.1.2 authlists delete

Delete an existing login authentication list.

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

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

4.1.3 authlists set-policy

Set the policies of a login authentication list.

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

Parameter	Value	Meaning
P-1	string	<authlist_name> Name of an authentication list.
P-2	reject	Authentication is rejected / not allowed
	local	Authentication by local user DB
	radius	Authentication by RADIUS server
	ldap	Authentication by remote server
P-3	reject	Authentication is rejected / not allowed
	local	Authentication by local user DB
	radius	Authentication by RADIUS server
	ldap	Authentication by remote server
P-4	reject	Authentication is rejected / not allowed
	local	Authentication by local user DB
	radius	Authentication by RADIUS server
	ldap	Authentication by remote server
P-5	reject	Authentication is rejected / not allowed
	local	Authentication by local user DB
	radius	Authentication by RADIUS server
	ldap	Authentication by remote server
P-6	reject	Authentication is rejected / not allowed
	local	Authentication by local user DB
	radius	Authentication by RADIUS server
	ldap	Authentication by remote server

4.1.4 authlists enable

Activate a login authentication list.

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

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

4.1.5 authlists disable

Deactivate a login authentication list.

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

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

4.2 show

Display device options and settings.

4.2.1 show authlists

Display the ordered methods for authentication lists.

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

5 Class Of Service

5.1 classofservice

Class of service configuration.

5.1.1 classofservice dot1p-mapping

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

► Mode: Global Config Mode

► Privilege Level: Operator

► Format: classofservice dot1p-mapping <P-1> <P-2> <P-3>

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

5.2 show

Display device options and settings.

5.2.1 show classofservice dot1p-mapping

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

► Mode: Command is in all modes available.

► Privilege Level: Guest

► Format: show classofservice dot1p-mapping

6 Command Line Interface (CLI)

6.1 cli

Set the CLI preferences.

6.1.1 cli serial-timeout

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

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

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

6.1.2 cli prompt

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

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

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

6.1.3 cli numlines

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

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

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

6.1.4 cli banner operation

Enable or disable the CLI login banner.

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

■ no cli banner operation

Disable the option

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

6.1.5 cli banner text

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

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

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

6.2 show

Display device options and settings.

6.2.1 show cli global

Display the CLI preferences.

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

6.2.2 show cli command-tree

Display a list of every command.

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

6.3 logging

Logging configuration.

6.3.1 logging cli-command

Enable or disable the CLI command logging.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging cli-command

■ no logging cli-command

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no logging cli-command

6.4 show

Display device options and settings.

6.4.1 show logging cli-command

Display the CLI command logging preferences.

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

7 Clock

7.1 clock

Configure local and DST clock settings.

7.1.1 clock set

Edit current local time.

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

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

7.1.2 clock timezone offset

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

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

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

7.1.3 clock timezone zone

Edit the timezone acronym (max. 4 characters).

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

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

7.1.4 clock summer-time mode

Configure summer-time mode parameters.

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

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

7.1.5 clock summer-time recurring start

Edit the starting date and time for daylight saving time.

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

Parameter	Value	Meaning
P-1	none	
	first	Week
	second	Week
	third	Week
	fourth	Week
	last	Week

Parameter	Value	Meaning
P-2	none	
	sun	Sunday
	mon	Monday
	tue	Tuesday
	wed	Wednesday
	thu	Thursday
	fri	Friday
P-3	sat	Saturday
	none	
	jan	January
	feb	February
	mar	March
	apr	April
	may	May
	jun	June
	jul	July
	aug	August
	sep	September
	oct	October
P-4	nov	November
	dec	December
P-4	string	<hh:mm> Time in hh:mm format (00:00-23:59) at which the device sets the clock forward to summer time.

7.1.6 clock summer-time recurring end

Edit the ending date and time for daylight saving time.

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

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

7.1.7 clock summer-time zone

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

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

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

7.2 show

Display device options and settings.

7.2.1 show clock

Display the current time information.

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

8 Configuration

8.1 save

Save the configuration to the specified destination.

8.1.1 save profile

Save the configuration to the specific profile.

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

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

8.2 config

Configure the configuration saving settings.

8.2.1 config watchdog admin-state

Enable or disable the configuration undo feature.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: config watchdog admin-state

■ no config watchdog admin-state

Disable the option

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: no config watchdog admin-state

8.2.2 config watchdog timeout

Configure the configuration undo timeout (unit: seconds).

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

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

8.2.3 config encryption password set

Set the configuration file password.

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

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

8.2.4 config encryption password clear

Clear the configuration file password.

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

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

8.2.5 config envm choose-active

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

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

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

8.2.6 config envm log-device

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

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

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

8.2.7 config envm auto-update

Allow automatic firmware updates with this memory device.

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

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

■ no config envm auto-update

Disable the option

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

8.2.8 config envm config-save

Allow the configuration to be saved to this memory device.

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

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

■ no config envm config-save

Disable the option

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

8.2.9 config envm load-priority

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

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

Parameter	Value	Meaning
P-1	sd	SD-Card
	usb	USB Storage Device
P-2	disable	Config will not be loaded at all
	first	Config will be loaded first. If successful, no other config will be tried.
	second	Config will be loaded if first one does not succeed.

8.2.10 config profile select

Select a configuration profile to be the active configuration.

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

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

8.2.11 config profile delete

Delete a specific configuration profile.

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

num: Select the index of a profile to delete.

profile: Select the name of a profile to delete.

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

8.2.12 config fingerprint verify nvm profile

Select the name of a profile to be verified.

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

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

8.2.13 config fingerprint verify nvm num

Select the index number of a profile to be verified.

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

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

8.2.14 config fingerprint verify envm profile

Select the name of a profile to be verified.

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

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

8.2.15 config fingerprint verify envm num

Select the index number of a profile to be verified.

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

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

8.3 copy

Copy different kinds of items.

8.3.1 copy sysinfo system envm

Copy the system information to external non-volatile memory.

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

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

8.3.2 copy sysinfoall system envm

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

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

8.3.3 copy firmware envm

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

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: `copy firmware envm <P-1> system`
system: Copy a firmware image to the device from external non-volatile memory.

Parameter	Value	Meaning
P-1	string	Filename.

8.3.4 copy firmware remote

Copy a firmware image to the device from a server.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: `copy firmware remote <P-1> system`
system: Copy a firmware image to the device from a file server.

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

8.3.5 copy config running-config nvm

Copy the running-config to non-volatile memory.

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

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

8.3.6 copy config running-config remote

Copy the running-config to a file server.

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

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

8.3.7 copy config nvm

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

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: `copy config nvm [profile <P-1>] running-config remote <P-2>`
[profile]: Load a configuration from a specific profile name.

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

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

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

8.3.8 copy config envm

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

► Mode: Privileged Exec Mode

► Privilege Level: Administrator

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

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

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

Parameter	Value	Meaning
P-1	string	Filename.

8.3.9 copy config remote

Copy a configuration file to the device from a server.

► Mode: Privileged Exec Mode

► Privilege Level: Administrator

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

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

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

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

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

8.4 clear

Clear several items.

8.4.1 clear config

Clear the running configuration.

► Mode: Privileged Exec Mode

► Privilege Level: Administrator

► Format: clear config

8.4.2 clear factory

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

► Mode: Privileged Exec Mode

► Privilege Level: Administrator

► Format: clear factory

8.4.3 clear sfp-white-list

Clear the SFP WhiteList.

► Mode: Privileged Exec Mode

► Privilege Level: Operator

► Format: clear sfp-white-list

8.5 show

Display device options and settings.

8.5.1 show running-config

Display the currently running configuration.

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

8.5.2 show running-config xml

Display the currently running configuration (XML file).

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Administrator
- ▶ Format: show running-config xml

8.6 show

Display device options and settings.

8.6.1 show config envm settings

Display the settings of the external non-volatile memory.

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

8.6.2 show config envm properties

Display the properties of the external non-volatile memory.

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

8.6.3 show config envm active

Display the active external non-volatile memory.

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

8.6.4 show config watchdog

Display the Auto Configuration Undo settings.

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

8.6.5 show config encryption

Display the settings for configuration encryption.

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

8.6.6 show config profiles

Display the configuration profiles.

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

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

8.6.7 show config status

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

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

8.7 swap

Swap software images.

8.7.1 swap firmware system backup

Swap the main and backup images.

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

9 Device Monitoring

9.1 device-status

Configure various device conditions to be monitored.

9.1.1 device-status monitor link-failure

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

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

■ no device-status monitor link-failure

Disable the option

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

9.1.2 device-status monitor temperature

Enable or disable monitoring of the device temperature.

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

■ no device-status monitor temperature

Disable the option

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

9.1.3 device-status monitor envm-removal

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

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

■ no device-status monitor envm-removal

Disable the option

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

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

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

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

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

Disable the option

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

9.1.5 device-status monitor power-supply

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

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

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

■ no device-status monitor power-supply

Disable the option

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

9.1.6 device-status trap

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

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

■ no device-status trap

Disable the option

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

9.2 device-status

Configure various device conditions to be monitored.

9.2.1 device-status link-alarm

Configure the monitor settings of the port link.

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

■ no device-status link-alarm

Disable the option

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

9.3 show

Display device options and settings.

9.3.1 show device-status monitor

Display the device monitoring configurations.

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

9.3.2 show device-status state

Display the current state of the device.

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

9.3.3 show device-status trap

Display the device trap information and configurations.

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

9.3.4 show device-status events

Display occurred device status events.

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

9.3.5 show device-status link-alarm

Display the monitor configurations of the network ports.

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

9.3.6 show device-status all

Display the configurable device status settings.

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

10 Device Security

10.1 security-status

Configure the security status settings.

10.1.1 security-status monitor pwd-change

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

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

■ no security-status monitor pwd-change

Disable the option

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

10.1.2 security-status monitor pwd-min-length

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

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

■ no security-status monitor pwd-min-length

Disable the option

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

10.1.3 security-status monitor pwd-policy-config

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

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

■ no security-status monitor pwd-policy-config

Disable the option

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

10.1.4 security-status monitor pwd-policy-inactive

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

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

■ no security-status monitor pwd-policy-inactive

Disable the option

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

10.1.5 security-status monitor http-enabled

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

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

■ no security-status monitor http-enabled

Disable the option

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

10.1.6 security-status monitor snmp-unsecure

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

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

■ no security-status monitor snmp-unsecure

Disable the option

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

10.1.7 security-status monitor sysmon-enabled

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

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

■ no security-status monitor sysmon-enabled

Disable the option

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

10.1.8 security-status monitor extnvm-upd-enabled

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

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

■ no security-status monitor extnvm-upd-enabled

Disable the option

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

10.1.9 security-status monitor no-link-enabled

Sets the monitoring of no link detection.

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

■ no security-status monitor no-link-enabled

Disable the option

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

10.1.10 security-status monitor hidisc-enabled

Sets the monitoring of HiDiscovery.

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

■ no security-status monitor hidisc-enabled

Disable the option

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

10.1.11 security-status monitor extnvm-load-unsecure

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

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

■ no security-status monitor extnvm-load-unsecure

Disable the option

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

10.1.12 security-status monitor https-certificate

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

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

■ no security-status monitor https-certificate

Disable the option

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

10.1.13 security-status trap

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

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

■ no security-status trap

Disable the option

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

10.2 security-status

Configure the security status interface settings.

10.2.1 security-status no-link

Configure the monitoring of the specific ports.

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

■ no security-status no-link

Disable the option

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

10.3 show

Display device options and settings.

10.3.1 show security-status monitor

Display the security status monitoring settings.

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

10.3.2 show security-status state

Display the current security status.

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

10.3.3 show security-status no-link

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

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

10.3.4 show security-status trap

Display the security status trap information and settings.

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

10.3.5 show security-status events

Display the occurred security status events.

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

10.3.6 show security-status all

Display the security status settings.

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

11 Dynamic Host Configuration Protocol (DHCP)

11.1 dhcp-server

Modify DHCP Server parameters.

11.1.1 dhcp-server operation

Enable or disable the DHCP server on this port.

- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: dhcp-server operation

■ no dhcp-server operation

Disable the option

- Mode: Interface Range Mode
- Privilege Level: Operator
- Format: no dhcp-server operation

■ dhcp-server pool add

Add a pool

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: dhcp-server pool add <P-1> dynamic <P-2> <P-3> interface <P-4> static <P-5> interface <P-6>

dynamic: Add a pool with one or more IP addresses.

interface: Interface mode.

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

interface: Interface mode.

Parameter	Value	Meaning
P-1	1..128	Pool ID.
P-2	A.B.C.D	IP address
P-3	A.B.C.D	IP address
P-4	slot no./port no.	
P-5	A.B.C.D	IP address
P-6	slot no./port no.	

■ dhcp-server pool modify

Modify the dynamic address pool

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: dhcp-server pool modify <P-1> first-ip <P-2> last-ip <P-3> mode interface <P-4> mac <P-5> leasetime <P-6> option gateway <P-7> netmask <P-8> dns <P-9> hostname <P-10>

first-ip: Modify the first IP.

last-ip: Modify the last IP.

mode: Pool mode settings.

interface: Interface mode.

mac: MAC mode.

leasetime: Enter the leasetime in seconds.

option: Configuration option.

gateway: Default gateway.

netmask: Option netmask.

dns: Option dns.

hostname: Option hostname.

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

Parameter	Value	Meaning
P-4	slot no./port no.	
P-5	any	Enter any as a shortcut for the MAC address 00:00:00:00:00:00.
	aa:bb:cc:dd:ee:ff	Enter the MAC address in hexadecimal format.
P-6	infinite	Infinite leasetime.
	60..220752000	Leasetime in seconds.
P-7	A.B.C.D	IP address.
P-8	A.B.C.D	IP address.
P-9	A.B.C.D	IP address.
P-10	string	Enter a user-defined text, max. 64 characters.

■ dhcp-server pool mode

Pool enable.

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

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

no dhcp-server pool mode

Disable the option

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

■ dhcp-server pool delete

Pool delete.

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

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

11.2 show

Display device options and settings.

11.2.1 show dhcp-server operation

Display the DHCP Server global information.

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

11.2.2 show dhcp-server pool

Display the DHCP Server pool entries.

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

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

11.2.3 show dhcp-server interface

Display the DHCP server information per interface.

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

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

11.2.4 show dhcp-server lease

Display the DHCP server lease entries.

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

12 Domain Name System (DNS)

12.1 dns

Set DNS parameters.

12.1.1 dns caching-server adminstate

Enable or disable the DNS Caching Server.

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

■ no dns caching-server adminstate

Disable the option

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

12.1.2 dns caching-server flush

Flush the DNS cache.

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

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

12.1.3 dns client adminstate

Enable or disable DNS Client.

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

■ no dns client adminstate

Disable the option

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

12.1.4 dns client cache adminstate

Enable or disable DNS client cache.

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

■ no dns client cache adminstate

Disable the option

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

12.1.5 dns client servers add

Add a new DNS server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dns client servers add <P-1> ip <P-2>
ip: Enter the DNS server address.

Parameter	Value	Meaning
P-1	1..4	DNS Client servers index.
P-2	A.B.C.D	IP address.

12.1.6 dns client servers delete

Delete a DNS server.

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

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

12.1.7 dns client servers modify

Modify a DNS server entry.

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

ip: Change the DNS server address.

status: Change the status of this DNS server.

operation: Change the status of this DNS server.

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

12.1.8 dns client servers enable

Activate a DNS server entry.

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

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

12.1.9 dns client servers disable

Deactivate a DNS server entry.

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

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

12.1.10 dns client timeout

Set the timeout before retransmitting a request to the server.

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

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

12.1.11 dns client retry

Set the number of times the request is retransmitted.

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

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

12.2 show

Display device options and settings.

12.2.1 show dns caching-server info

Display the DNS Caching Server information.

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

12.2.2 show dns client hosts

Display the DNS Client hosts table.

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

12.2.3 show dns client info

Display the DNS Client related information.

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

12.2.4 show dns client servers

Display the DNS Client servers.

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

13 DoS Mitigation

13.1 dos

Manage DoS Mitigation

13.1.1 dos tcp-null

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

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

■ no dos tcp-null

Disable the option

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

13.1.2 dos tcp-xmas

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

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

■ no dos tcp-xmas

Disable the option

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

13.1.3 dos tcp-syn-fin

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

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

■ no dos tcp-syn-fin

Disable the option

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

13.1.4 dos tcp-min-header

Enables TCP minimal header size check.

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

■ no dos tcp-min-header

Disable the option

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

13.1.5 dos icmp-fragmented

Enables fragmented ICMP protection.

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

■ no dos icmp-fragmented

Disable the option

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

13.1.6 dos icmp payload-check

Enables ICMP max payload size protection for IPv4 and IPv6.

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

■ no dos icmp payload-check

Disable the option

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

13.1.7 dos icmp payload-size

Configures maximum ICMP payload size (default: 512).

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

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

13.1.8 dos ip-land

Enables LAND attack protection - source IP equals destination IP.

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

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

13.1.9 dos ip-src-route

Enables Drop IP source route - Discard packets with Strict/Loose Source Routing Option set.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dos ip-src-route

■ no dos ip-src-route

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no dos ip-src-route

13.1.10 dos tcp-offset

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

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

■ **no dos tcp-offset**

Disable the option

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

13.1.11 dos tcp-syn

Enables TCP source port smaller than 1024 protection.

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

■ **no dos tcp-syn**

Disable the option

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

13.1.12 dos l4-port

Enables UDP or TCP source port equals destination port check.

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

■ **no dos l4-port**

Disable the option

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

13.1.13 dos l2-frame-forwarding

Enables L2 802.3 frame forwarding.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dos l2-frame-forwarding

■ **no dos l2-frame-forwarding**

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no dos l2-frame-forwarding

13.2 show

Display device options and settings.

13.2.1 show dos

Display the DoS Mitigation parameters.

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

14 Deep Packet Inspection (DPI)

14.1 dpi

Creation and configuration of DPI profiles.

14.1.1 dpi modbus commit

Writes all changes made in the DPI MODBUS profiles to the enforcer.

- **Mode:** Global Config Mode
- **Privilege Level:** Operator
- **Format:** dpi modbus commit

14.1.2 dpi modbus addprofile

Adds a profile to the DPI MODBUS profile table.

- **Mode:** Global Config Mode
- **Privilege Level:** Operator
- **Format:** dpi modbus addprofile <P-1> [description <P-2>] [function-type <P-3>] [function-code-list <P-4>] [unit-identifier-list <P-5>] [sanity-check <P-6>] [exception <P-7>] [reset <P-8>]

[description]: Profile description/name for the DPI MODBUS profile.

[function-type]: Function type of corresponding function codes.

[function-code-list]: Function code list. A function code has the syntax 'val'. Function codes are separated by a comma. When more than one value for an function code is specified the values are separated by the pipe symbol ('|').

[unit-identifier-list]: Unit identifier list. A unit identifier has the syntax 'val'. To specify no options, the value 'none' must be given. Unit identifiers are separated by a comma.

[sanity-check]: Sanity check including format and specification.

[exception]: Device exception message.

[reset]: Reset connection message.

Parameter	Value	Meaning
P-1	1..32	Profile index 1 - 32
P-2	string	Profile description/name
P-3	readonly	Read only function codes for function code list
	readwrite	Read write function codes for function code list
	programming	Programming function codes for function code list
	all	All possible function codes for function code list (allow any function code)
	advanced	Keeps the function code list from the previous selection and makes it editable by the user

Parameter	Value	Meaning
P-4	1..255	Function codes 1 - 255
	1 0-65535	Function code read coils, coil address range 0 - 65535
	2 0-65535	Function code read discrete inputs, input address range 0 - 65535
	3 0-65535	Function code read holding registers, register address range 0 - 65535
	4 0-65535	Function code read input registers, register address range 0 - 65535
	5 0-65535	Function code write single coil, coil address range 0 - 65535
	6 0-65535	Function code write single register, register address range 0 - 65535
	7	Function code read exception status
	8	Function code diagnostic
	11	Function code get com event counter
	12	Function code get comm event log
	13	Function code program (584/984)
	14	Function code poll (584/984)
	15 0-65535	Function code write multiple coils, coil address range 0 - 65535
	16 0-65535	Function code write multiple registers, register address range 0 - 65535
	17	Function code report slave id
	20	Function code read file record
	21	Function code write file record
	22 0-65535	Function code mask write register, register address range 0 - 65535
	23 0-65535 0-65535	Function code read/write multiple registers, read address range 0 - 65535, write address range 0 - 65535
	24 0-65535	Function code read fifo queue, pointer address range 0 - 65535
	40	Function code program (concept)
	42	Function code concept symbol table
	43	Function code encapsulated interface transport
	48	Function code advantech co. ltd. - management functions
	66	Function code scan data inc. - expanded read holding registers
	67	Function code scan data inc. - expanded write holding registers
	90	Function code unity programming/ofs
	100	Function code scattered register read
	125	Function code schneider electric - firmware replacement
	126	Function code schneider electric - program
P-5	0..255	Unit identifier 0 - 255
	none	No unit identifier 'none'
P-6	yes	True
	no	False
P-7	yes	True
	no	False
P-8	yes	True
	no	False

14.1.3 dpi modbus modifyprofile

Modifies a profile in the DPI MODBUS profile table.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** dpi modbus modifyprofile <P-1> [description <P-2>] [function-type <P-3>] [function-code-list <P-4>] [unit-identifier-list <P-5>] [sanity-check <P-6>] [exception <P-7>] [reset <P-8>]

[description]: Profile description/name for the DPI MODBUS profile.

[function-type]: Function type of corresponding function codes.

[function-code-list]: Function code list. A function code has the syntax 'val'. Function codes are separated by a comma. When more than one value for an function code is specified the values are separated by the pipe symbol '|').

[unit-identifier-list]: Unit identifier list. A unit identifier has the syntax 'val'. To specify no options, the value 'none' must be given. Unit identifiers are separated by a comma.

[sanity-check]: Sanity check including format and specification.

[exception]: Device exception message.

[reset]: Reset connection message.

Parameter	Value	Meaning
P-1	1..32	Profile index 1 - 32
P-2	string	Profile description/name

Parameter	Value	Meaning
P-3	readonly	Read only function codes for function code list
	readwrite	Read write function codes for function code list
	programming	Programming function codes for function code list
	all	All possible function codes for function code list (allow any function code)
	advanced	Keeps the function code list from the previous selection and makes it editable by the user
P-4	1..255	Function codes 1 - 255
	1 0-65535	Function code read coils, coil address range 0 - 65535
	2 0-65535	Function code read discrete inputs, input address range 0 - 65535
	3 0-65535	Function code read holding registers, register address range 0 - 65535
	4 0-65535	Function code read input registers, register address range 0 - 65535
	5 0-65535	Function code write single coil, coil address range 0 - 65535
	6 0-65535	Function code write single register, register address range 0 - 65535
	7	Function code read exception status
	8	Function code diagnostic
	11	Function code get com event counter
	12	Function code get comm event log
	13	Function code program (584/984)
	14	Function code poll (584/984)
	15 0-65535	Function code write multiple coils, coil address range 0 - 65535
	16 0-65535	Function code write multiple registers, register address range 0 - 65535
	17	Function code report slave id
	20	Function code read file record
	21	Function code write file record
	22 0-65535	Function code mask write register, register address range 0 - 65535
	23 0-65535 0-65535	Function code read/write multiple registers, read address range 0 - 65535, write address range 0 - 65535
	24 0-65535	Function code read fifo queue, pointer address range 0 - 65535
	40	Function code program (concept)
	42	Function code concept symbol table
	43	Function code encapsulated interface transport
	48	Function code advantech co. ltd. - management functions
	66	Function code scan data inc. - expanded read holding registers
	67	Function code scan data inc. - expanded write holding registers
	90	Function code unity programming/ofs
	100	Function code scattered register read
	125	Function code schneider electric - firmware replacement
	126	Function code schneider electric - program
P-5	0..255	Unit identifier 0 - 255
	none	No unit identifier 'none'
P-6	yes	True
	no	False
P-7	yes	True
	no	False
P-8	yes	True
	no	False

14.1.4 dpi modbus copyprofile

Copies a profile to another DPI MODBUS profile.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi modbus copyprofile <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..32	Profile source index 1 - 32
P-2	1..32	Profile destination index 1 - 32

14.1.5 dpi modbus delprofile

Deletes a profile from the DPI MODBUS profile table. You cannot delete an active profile or if an enforcer mappings to it.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi modbus delprofile <P-1>

Parameter	Value	Meaning
P-1	1..32	Profile index 1 - 32

14.1.6 dpi modbus enableprofile

Enables a profile in the DPI MODBUS profile table. A profile can only be activated when all required parameters are set. After activation modifications no longer possible.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: `dpi modbus enableprofile <P-1>`

Parameter	Value	Meaning
P-1	1..32	Profile index 1 - 32

14.1.7 dpi modbus disableprofile

Disables a profile in the DPI MODBUS profile table. You cannot inactivate a profile if an active enforcer mappings to it.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: `dpi modbus disableprofile <P-1>`

Parameter	Value	Meaning
P-1	1..32	Profile index 1 - 32

14.1.8 dpi opc commit

Writes all changes made in the DPI OPC profiles to the enforcer.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: `dpi opc commit`

14.1.9 dpi opc addprofile

Adds a profile to the DPI OPC profile table.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: `dpi opc addprofile <P-1> [description <P-2>] [sanity-check <P-3>] [fragment-check <P-4>] [timeout-connect <P-5>]`

[description]: Profile description/name for the DPI OPC profile.

[sanity-check]: Sanity check including format and specification.

[fragment-check]: Fragment check.

[timeout-connect]: Timeout at connect.

Parameter	Value	Meaning
P-1	1..32	Profile index 1 - 32
P-2	string	Profile description/name
P-3	yes	True
	no	False
P-4	yes	True
	no	False
P-5	0..300	Timeout in seconds 0 - 300

14.1.10 dpi opc modifyprofile

Modifies a profile in the DPI OPC profile table.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: `dpi opc modifyprofile <P-1> [description <P-2>] [sanity-check <P-3>] [fragment-check <P-4>] [timeout-connect <P-5>]`

[description]: Profile description/name for the DPI OPC profile.

[sanity-check]: Sanity check including format and specification.

[fragment-check]: Fragment check.

[timeout-connect]: Timeout at connect.

Parameter	Value	Meaning
P-1	1..32	Profile index 1 - 32
P-2	string	Profile description/name
P-3	yes	True
	no	False

Parameter	Value	Meaning
P-4	yes	True
	no	False
P-5	0..300	Timeout in seconds 0 - 300

14.1.11 dpi opc copyprofile

Copies a profile to another DPI OPC profile.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi opc copyprofile <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..32	Profile source index 1 - 32
P-2	1..32	Profile destination index 1 - 32

14.1.12 dpi opc delprofile

Deletes a profile from the DPI OPC profile table. You cannot delete an active profile or if an enforcer mappings to it.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi opc delprofile <P-1>

Parameter	Value	Meaning
P-1	1..32	Profile index 1 - 32

14.1.13 dpi opc enableprofile

Enables a profile in the DPI OPC profile table. A profile can only be activated when all required parameters are set. After activation modifications no longer possible.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi opc enableprofile <P-1>

Parameter	Value	Meaning
P-1	1..32	Profile index 1 - 32

14.1.14 dpi opc disableprofile

Disables a profile in the DPI OPC profile table. You cannot inactivate a profile if an active enforcer mappings to it.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi opc disableprofile <P-1>

Parameter	Value	Meaning
P-1	1..32	Profile index 1 - 32

14.1.15 dpi iec104 commit

Writes all changes made in the DPI IEC104 profiles to the enforcer.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi iec104 commit

14.1.16 dpi iec104 add

Adds a profile to the DPI IEC104 profile table.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi iec104 add <P-1> [description <P-2>] [function-type <P-3>] [adv-type-id-list <P-4>] [transmission-size <P-5>] [originator-addr-list <P-6>] [common-addr-list <P-7>] [sanity-check <P-8>] [reset <P-9>] [debug <P-10>] [common-addr-size <P-11>] [io-addr-size <P-12>] [allow-101 <P-13>]

[description]: Description/name for the DPI IEC104 profile.

[function-type]: Function type.

[adv-type-id-list]: Advanced type ID list.

[transmission-size]: Set cause of transmission size.

[originator-addr-list]: Originator address list (Configurable when cause of transmission size is 2).

[common-addr-list]: Common address list (For common address size 1, range is 0-255 and for common address size 2, range is 0-65535).

[sanity-check]: Sanity check including format and specification.
[reset]: Reset connection message.
[debug]: Debug output in reset message.
[common-addr-size]: Set common address size.
[io-addr-size]: Set IO address size.
[allow-101]: Allow IEC101 type IDs.

Parameter	Value	Meaning
P-1	1..32	Profile index 1 - 32
P-2	string	Profile description/name
P-3	readonly	Read only type IDs for type ID list.
	readwrite	Read write type IDs for type ID list.
	common	Common type IDs for type ID list.
	any	All possible type IDs for type ID list (allow any type ID).
	advanced	Lets the user specify customized type IDs for type ID list.

Parameter	Value	Meaning
P-4	1..255	Comma separated type ID e.g 1,2,3.
	1	Single point information m-sp-na-1
	2	Single point information with time tag m-sp-ta-1
	3	Double point information m-dp-na-1
	4	Double point information with time tag m-dp-ta-1
	5	Step position information m-st-na-1
	6	Step position information with time tag m-st-ta-1
	7	Bit string of 32 bit m-bo-na-1
	8	Bit string of 32 bit with time tag m-bo-ta-1
	9	Measured value, normalized value m-me-na-1
	10	Measured value, normalized value with time tag m-me-ta-1
	11	Measured value, scaled value m-me-nb-1
	12	Measured value, scaled value with time tag m-me-tb-1
	13	Measured value, short floating point value m-me-nc-1
	14	Measured value, short floating point value with time tag m-me-tc-1
	15	Integrated totals m-it-na-1
	16	Integrated totals with time tag m-it-ta-1
	17	Event of protection equipment with time tag m-ep-ta-1
	18	Packed start events of protection equipment with time tag m-ep-tb-1
	19	Packed output circuit information of protection equipment with time tag m-ep-tc-1
	20	Packed single-point information with status change detection m-ps-na-1
	21	Measured value, normalized value without quality descriptor m-me-nd-1
	30	Single point information with time tag cp56time2a m-sp-tb-1
	31	Double point information with time tag cp56time2a m-dp-tb-1
	32	Step position information with time tag cp56time2a m-st-tb-1
	33	Bit string of 32 bit with time tag cp56time2a m-bo-tb-1
	34	Measured value, normalized value with time tag cp56time2a m-me-td-1
	35	Measured value, scaled value with time tag cp56time2a m-me-te-1
	36	Measured value, short floating point value with time tag cp56time2a m-me-tf-1
	37	Integrated totals with time tag cp56time2a m-it-tb-1
	38	Event of protection equipment with time tag cp56time2a m-ep-td-1
	39	Packed start events of protection equipment with time tag cp56time2a m-ep-te-1
	40	Packed output circuit information of protection equipment with time tag cp56time2a m-ep-tf-1
	45	Single command c-sc-na-1
	46	Double command c-dc-na-1
	47	Regulating step command c-rc-na-1
	48	Setpoint command, normalized value c-se-na-1
	49	Setpoint command, scaled value c-se-nb-1
	50	Setpoint command, short floating point value c-se-nc-1
	51	Bit string 32 bit c-bo-na-1
	58	Single command with time tag cp56time2a c-sc-ta-1
	59	Double command with time tag cp56time2a c-dc-ta-1
	60	Regulating step command with time tag cp56time2a c-rc-ta-1
	61	Setpoint command, normalized value with time tag cp56time2a c-se-ta-1
	62	Setpoint command, scaled value with time tag cp56time2a c-se-tb-1
	63	Setpoint command, short floating point value with time tag cp56time2a c-se-tc-1
	64	Bit string 32 bit with time tag cp56time2a c-bo-ta-1
	70	End of initialization m-ei-na-1
	100	(General-) Interrogation command c-ic-na-1
	101	Counter interrogation command c-ci-na-1
	102	Read command c-rd-na-1
	103	Clock synchronization command c-cs-na-1
	104	(IEC 101) Test command c-ts-nb-1
	105	Reset process command c-rp-nc-1
	106	(IEC 101) Delay acquisition command c-cd-na-1
	107	Test command with time tag cp56time2a c-ts-ta-1
	110	Parameter of measured value, normalized value p-me-na-1
	111	Parameter of measured value, scaled value p-me-nb-1
	112	Parameter of measured value, short floating point value p-me-nc-1

Parameter	Value	Meaning
	113	Parameter activation p-ac-na-1
	120	File ready f-fr-na-1
	121	Section ready f-sr-na-1
	122	Call directory, select file, call file, call section f-sc-na-1
	123	Last section, last segment f-ls-na-1
	124	Ack file, Ack section f-af-na-1
	125	Segment f-sg-na-1
	126	f-dr-ta-1
	127	QueryLog - Request archive file f-sc-nb-1
	128..135	Reserved for routing of messages
	..	Type ID from 136-255 and undefined type IDs are reserved for special use
P-5	1..2	Specify the cause-of-transmission size.
P-6	0..255	Set originator address.
	0..255	Set list of originator address with comma seperated e.g 1,5.
	0..255	Set range of originator address e.g 5-10.
	0..255	Set list and range of originator address e.g 1,5-10,120-255.
P-7	0..255/65535	Set common address.
	0..255/65535	Set list of common address with comma seperated e.g 1,5.
	0..255/65535	Set range of common address e.g 5-10.
	0..255/65535	Set list and range of common address e.g 1,5-10,120-300.
P-8	enable	Enable the option.
	disable	Disable the option.
P-9	enable	Enable the option.
	disable	Disable the option.
P-10	enable	Enable the option.
	disable	Disable the option.
P-11	1..2	Specify the common address size.
P-12	1..3	Specify the IO address size.
P-13	enable	Enable the option.
	disable	Disable the option.

14.1.17 dpi iec104 modify

Modifies a profile in the DPI IEC104 profile table.

► Mode: Global Config Mode

► Privilege Level: Operator

► Format: dpi iec104 modify <P-1> [description <P-2>] [function-type <P-3>] [adv-type-id-list <P-4>] [transmission-size <P-5>] [originator-addr-list <P-6>] [common-addr-list <P-7>] [sanity-check <P-8>] [reset <P-9>] [debug <P-10>] [common-addr-size <P-11>] [io-addr-size <P-12>] [allow-101 <P-13>]

[description]: Description/name for the DPI IEC104 profile.

[function-type]: Function type.

[adv-type-id-list]: Advanced type ID list.

[transmission-size]: Set cause of transmission size.

[originator-addr-list]: Originator address list (Configurable when cause of transmission size is 2).

[common-addr-list]: Common address list (For common address size 1, range is 0-255 and for common address size 2, range is 0-65535).

[sanity-check]: Sanity check including format and specification.

[reset]: Reset connection message.

[debug]: Debug output in reset message.

[common-addr-size]: Set Common Address Size.

[io-addr-size]: Set IO address size.

[allow-101]: Allow IEC101 type IDs.

Parameter	Value	Meaning
P-1	1..32	Profile index 1 - 32
P-2	string	Profile description/name
P-3	readonly	Read only type IDs for type ID list.
	readwrite	Read write type IDs for type ID list.
	common	Common type IDs for type ID list.
	any	All possible type IDs for type ID list (allow any type ID).
	advanced	Lets the user specify customized type IDs for type ID list.

Parameter	Value	Meaning
P-4	1..255	Comma separated type ID e.g 1,2,3.
	1	Single point information m-sp-na-1
	2	Single point information with time tag m-sp-ta-1
	3	Double point information m-dp-na-1
	4	Double point information with time tag m-dp-ta-1
	5	Step position information m-st-na-1
	6	Step position information with time tag m-st-ta-1
	7	Bit string of 32 bit m-bo-na-1
	8	Bit string of 32 bit with time tag m-bo-ta-1
	9	Measured value, normalized value m-me-na-1
	10	Measured value, normalized value with time tag m-me-ta-1
	11	Measured value, scaled value m-me-nb-1
	12	Measured value, scaled value with time tag m-me-tb-1
	13	Measured value, short floating point value m-me-nc-1
	14	Measured value, short floating point value with time tag m-me-tc-1
	15	Integrated totals m-it-na-1
	16	Integrated totals with time tag m-it-ta-1
	17	Event of protection equipment with time tag m-ep-ta-1
	18	Packed start events of protection equipment with time tag m-ep-tb-1
	19	Packed output circuit information of protection equipment with time tag m-ep-tc-1
	20	Packed single-point information with status change detection m-ps-na-1
	21	Measured value, normalized value without quality descriptor m-me-nd-1
	30	Single point information with time tag cp56time2a m-sp-tb-1
	31	Double point information with time tag cp56time2a m-dp-tb-1
	32	Step position information with time tag cp56time2a m-st-tb-1
	33	Bit string of 32 bit with time tag cp56time2a m-bo-tb-1
	34	Measured value, normalized value with time tag cp56time2a m-me-td-1
	35	Measured value, scaled value with time tag cp56time2a m-me-te-1
	36	Measured value, short floating point value with time tag cp56time2a m-me-tf-1
	37	Integrated totals with time tag cp56time2a m-it-tb-1
	38	Event of protection equipment with time tag cp56time2a m-ep-td-1
	39	Packed start events of protection equipment with time tag cp56time2a m-ep-te-1
	40	Packed output circuit information of protection equipment with time tag cp56time2a m-ep-tf-1
	45	Single command c-sc-na-1
	46	Double command c-dc-na-1
	47	Regulating step command c-rc-na-1
	48	Setpoint command, normalized value c-se-na-1
	49	Setpoint command, scaled value c-se-nb-1
	50	Setpoint command, short floating point value c-se-nc-1
	51	Bit string 32 bit c-bo-na-1
	58	Single command with time tag cp56time2a c-sc-ta-1
	59	Double command with time tag cp56time2a c-dc-ta-1
	60	Regulating step command with time tag cp56time2a c-rc-ta-1
	61	Setpoint command, normalized value with time tag cp56time2a c-se-ta-1
	62	Setpoint command, scaled value with time tag cp56time2a c-se-tb-1
	63	Setpoint command, short floating point value with time tag cp56time2a c-se-tc-1
	64	Bit string 32 bit with time tag cp56time2a c-bo-ta-1
	70	End of initialization m-ei-na-1
	100	(General-) Interrogation command c-ic-na-1
	101	Counter interrogation command c-ci-na-1
	102	Read command c-rd-na-1
	103	Clock synchronization command c-cs-na-1
	104	(IEC 101) Test command c-ts-nb-1
	105	Reset process command c-rp-nc-1
	106	(IEC 101) Delay acquisition command c-cd-na-1
	107	Test command with time tag cp56time2a c-ts-ta-1
	110	Parameter of measured value, normalized value p-me-na-1
	111	Parameter of measured value, scaled value p-me-nb-1
	112	Parameter of measured value, short floating point value p-me-nc-1
	113	Parameter activation p-ac-na-1
	120	File ready f-fr-na-1
	121	Section ready f-sr-na-1
	122	Call directory, select file, call file, call section f-sc-na-1

Parameter	Value	Meaning
	123	Last section, last segment f-ls-na-1
	124	Ack file, Ack section f-af-na-1
	125	Segment f-sg-na-1
	126	f-dr-ta-1
	127	QueryLog - Request archive file f-sc-nb-1
	128..135	Reserved for routing of messages
	..	Type ID from 136-255 and undefined type IDs are reserved for special use
P-5	1..2	Specify the cause-of-transmission size.
P-6	0..255	Set originator address.
	0..255	Set list of originator address with comma seperated e.g 1,5.
	0..255	Set range of originator address e.g 5-10.
	0..255	Set list and range of originator address e.g 1,5-10,120-255.
P-7	0..255/65535	Set common address.
	0..255/65535	Set list of common address with comma seperated e.g 1,5.
	0..255/65535	Set range of common address e.g 5-10.
	0..255/65535	Set list and range of common address e.g 1,5-10,120-300.
P-8	enable	Enable the option.
	disable	Disable the option.
P-9	enable	Enable the option.
	disable	Disable the option.
P-10	enable	Enable the option.
	disable	Disable the option.
P-11	1..2	Specify the common address size.
P-12	1..3	Specify the IO address size.
P-13	enable	Enable the option.
	disable	Disable the option.

14.1.18 dpi iec104 delete

Deletes a profile from the DPI IEC104 profile table. You cannot delete an active profile or if an enforcer maps to it.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi iec104 delete <P-1>

Parameter	Value	Meaning
P-1	1..32	Profile index 1 - 32

14.1.19 dpi iec104 enable

Enables a profile in the DPI IEC104 profile table. A profile can only be activated when all required parameters are set. After activation no modifications are possible.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi iec104 enable <P-1>

Parameter	Value	Meaning
P-1	1..32	Profile index 1 - 32

14.1.20 dpi iec104 disable

Disables a profile in the DPI IEC104 profile table. You cannot deactivate a profile if an active enforcer maps to it.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi iec104 disable <P-1>

Parameter	Value	Meaning
P-1	1..32	Profile index 1 - 32

14.1.21 dpi iec104 copy

Copies a profile to another DPI IEC104 profile.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi iec104 copy <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..32	Profile source index 1 - 32
P-2	1..32	Profile destination index 1 - 32

14.1.22 dpi dnp3 profile add

Adds a profile to the DPI DNP3 profile table.

► **Mode:** Global Config Mode

► **Privilege Level:** Operator

► **Format:** `dpi dnp3 profile add <P-1> [description <P-2>] [function-code-list <P-3>] [default-object-list <P-4>] [sanity-check <P-5>] [crc-check <P-6>] [outstation-packets-check <P-7>] [reset-tcp-check <P-8>]`

[description]: Profile description/name for the DPI DNP3 profile.

[function-code-list]: Function code list. A function code has the syntax 'val'. Function codes are separated by a comma.

[default-object-list]: Object entries to be included from Default white list.

[sanity-check]: Sanity check including format and specification.

[crc-check]: CRC verification for DNP3 data link layer frames.

[outstation-packets-check]: Check the DNP3 data packets originating at an outstation.

[reset-tcp-check]: Reset the TCP connection in case of a protocol violation or if the plausibility check leads to errors.

Parameter	Value	Meaning
P-1	1..32	DNP3 profile index.
P-2	string	Profile description/name for the DNP3 profile.
P-3	0..255	Function codes for the DNP3 profile.
	0	Confirm
	1	Read
	2	Write
	3	Select
	4	Operate
	5	Direct Operate
	6	Direct Operate-No Response Required
	7	Freeze
	8	Freeze-No Response Required
	9	Freeze Clear
	10	Freeze Clear-No Response Required
	11	Freeze At Time
	12	Freeze At Time-No Response Required
	13	Cold Restart
	14	Warm Restart
	15	Initialize Data
	16	Initialize Application
	17	Start Application
	18	Stop Application
	19	Save Configuration
	20	Enable Unsolicited Messages
	21	Disable Unsolicited Messages
	22	Assign Class
	23	Delay Measurement
	24	Record Current Time
	25	Open File
	26	Close File
	27	Delete File
	28	Get File Information
	29	Authenticate File
	30	Abort File Transfer
	31	Activate Configuration
	32	Authenticate Request
	33	Authenticate Request-No Acknowledgement
P-4	129	Response
	130	Unsolicited Response
	131	Authentication Response
P-5	1..317	Comma separated index values e.g 1,2,3.
	1..317	Comma separated index and range of index values e.g 1-10,120-300.
	none	'none' to exclude all default object list entries.
	all	'all' to include all default object list entries.
P-8	enable	Enable the option.
	disable	Disable the option.

Parameter	Value	Meaning
P-6	enable	Enable the option.
	disable	Disable the option.
P-7	enable	Enable the option.
	disable	Disable the option.
P-8	enable	Enable the option.
	disable	Disable the option.

14.1.23 dpi dnp3 profile modify

Modifies a profile to the DPI DNP3 profile table.

► **Mode:** Global Config Mode

► **Privilege Level:** Operator

► **Format:** dpi dnp3 profile modify <P-1> [description <P-2>] [function-code-list <P-3>] [default-object-list <P-4>] [sanity-check <P-5>] [crc-check <P-6>] [outstation-packets-check <P-7>] [reset-tcp-check <P-8>]

[description]: Profile description/name for the DPI DNP3 profile.

[function-code-list]: Function code list. A function code has the syntax 'val'. Function codes are separated by a comma.

[default-object-list]: Object entries to be included from Default white list.

[sanity-check]: Sanity check including format and specification.

[crc-check]: CRC verification for DNP3 data link layer frames.

[outstation-packets-check]: Check the DNP3 data packets originating at an outstation.

[reset-tcp-check]: Reset the TCP connection in case of a protocol violation or if the plausibility check leads to errors.

Parameter	Value	Meaning
P-1	1..32	DNP3 profile index.
P-2	string	Profile description/name for the DNP3 profile.

Parameter	Value	Meaning
P-3	0..255	Function codes for the DNP3 profile.
	0	Confirm
	1	Read
	2	Write
	3	Select
	4	Operate
	5	Direct Operate
	6	Direct Operate-No Response Required
	7	Freeze
	8	Freeze-No Response Required
	9	Freeze Clear
	10	Freeze Clear-No Response Required
	11	Freeze At Time
	12	Freeze At Time-No Response Required
	13	Cold Restart
	14	Warm Restart
	15	Initialize Data
	16	Initialize Application
	17	Start Application
	18	Stop Application
	19	Save Configuration
	20	Enable Unsolicited Messages
	21	Disable Unsolicited Messages
	22	Assign Class
	23	Delay Measurement
	24	Record Current Time
	25	Open File
	26	Close File
	27	Delete File
	28	Get File Information
	29	Authenticate File
	30	Abort File Transfer
	31	Activate Configuration
	32	Authenticate Request
	33	Authenticate Request-No Acknowledgement
P-4	129	Response
	130	Unsolicited Response
	131	Authentication Response
P-4	1..317	Comma separated index values e.g 1,2,3.
	1..317	Comma separated index and range of index values e.g 1-10,120-300.
	none	'none' to exclude all default object list entries.
	all	'all' to include all default object list entries.
P-5	enable	Enable the option.
	disable	Disable the option.
P-6	enable	Enable the option.
	disable	Disable the option.
P-7	enable	Enable the option.
	disable	Disable the option.
P-8	enable	Enable the option.
	disable	Disable the option.

14.1.24 dpi dnp3 profile delete

Deletes a profile from the DPI DNP3 profile table. You cannot delete an active profile or if an enforcer mappings to it.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi dnp3 profile delete <P-1>

Parameter	Value	Meaning
P-1	1..32	DNP3 profile index.

14.1.25 dpi dnp3 profile enable

Enables a profile in the DPI DNP3 profile table. A profile can only be activated when all required parameters are set. After activation modifications no longer possible.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi dnp3 profile enable <P-1>

Parameter	Value	Meaning
P-1	1..32	DNP3 profile index.

14.1.26 dpi dnp3 profile disable

Disables a profile in the DPI DNP3 profile table. You cannot inactivate a profile if an active enforcer mappings to it.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi dnp3 profile disable <P-1>

Parameter	Value	Meaning
P-1	1..32	DNP3 profile index.

14.1.27 dpi dnp3 profile commit

Writes all changes made in the DPI DNP3 profiles to the enforcer.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi dnp3 profile commit

14.1.28 dpi dnp3 profile copy

Copies a profile to another DPI DNP3 profile.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi dnp3 profile copy <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..32	Source index of DPI DNP3 profile.
P-2	1..32	Destination index of DPI DNP3 profile.

14.1.29 dpi dnp3 object add

Adds an object to a DPI DNP3 rule.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi dnp3 object <P-1> add <P-2> object-type <P-3> group-number <P-4> variation-number <P-5> function-code <P-6> [function-name <P-7>] [function-length <P-8>] [qualifier-code-list <P-9>]

object-type: Object type for DPI DNP3 object.

group-number: Group number for DNP3 object ranging 0-255.

variation-number: Variation number could either be any integer between 0-255 or a range from 0-255.

function-code: Function code for DNP3 object.

[function-name]: Function name for DNP3 object.

[function-length]: Function length for DNP3 Object.

[qualifier-code-list]: Qualifier code list, hexadecimal numbers separated by a comma(e.g numbers ranging between 0x00 to 0xFF).

Parameter	Value	Meaning
P-1	1..32	DNP3 profile index.
P-2	1..256	DNP3 Object index.
P-3	request	Request
	response	Response
P-4	0..255	Group number for DNP3 object.
P-5	string	Variation Number for DNP3 object.
P-6	0..255	Function code for DNP3 object.
P-7	string	Function Name for DNP3 object.
P-8	string	Function Length for DNP3 object.
P-9	string	Qualifier code list, hexadecimal numbers separated by a comma(e.g numbers ranging between 0x00 to 0xFF).

14.1.30 dpi dnp3 object delete

Deletes an object from a DPI DNP3 rule.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `dpi dnp3 object <P-1> delete <P-2>`

Parameter	Value	Meaning
P-1	1..32	DNP3 profile index.
P-2	1..256	DNP3 Object index.

14.1.31 dpi amp profile add

Adds a profile to the DPI AMP profile table.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `dpi amp profile add <P-1> [description <P-2>] [protocol <P-3>] [message-type <P-4>] [address-class <P-5>] [device-class <P-6>] [memory-address <P-7>] [data-word <P-8>] [task-code <P-9>] [task-code-data <P-10>] [error-check-characters <P-11>] [block-check-characters <P-12>] [debug <P-13>] [tcp-reset <P-14>] [sanity-check <P-15>]`

[description]: Specify the description/name for the DPI AMP profile. The description consists of an alphanumeric ASCII character string with 0..32 characters

[protocol]: Specify the protocol type for the DPI AMP profile.

[message-type]: Specify the value for the message type which specifies the type of data in the message data area and also specifies if the message is a command or a response. The allowed message types are 02,03,04,05,06,07,08,09,FF,any.

[address-class]: Specify the particular type of the memory to be accessed, (total number of hexadecimal values can be specified upto 205).

[device-class]: Specify the value for the device class, (total number of hexadecimal values can be specified upto 205).

[memory-address]: Specify the beginning address of the memory to be read or written, (total number of hexadecimal values can be specified upto 205).

[data-word]: Specify the value for the data words to be read from the remote device, (total number of hexadecimal values can be specified upto 205).

[task-code]: Specify the value for the task code.

[task-code-data]: Specify the hexadecimal value 0..F in the field task code data. The maximum task code data length is up to 72 bytes

[error-check-characters]: Enable/disable the checking for the NITP error check characters (ECC) of the packets.

[block-check-characters]: Enable/disable the checking for the CAMP block check characters (BCC) of the AMP packets.

[debug]: Enable/disable the debugging in the DPI AMP profile, (if it is enabled then the reset connection message will contain the debug information).

[tcp-reset]: Enable/disable the resetting of the TCP connection, (if it is enabled then the TCP reset connection message will be sent in case a packet is dropped).

[sanity-check]: Enable/disable the sanity check including format and specification of all the AMP packets.

Parameter	Value	Meaning
P-1	1..32	Profile index
P-2	string	Profile description/name
P-3	camp	CAMP protocol
	nitp	NITP protocol
	any	The device applies the rule to every data packet without evaluating the protocol.
P-4	any	The device applies the rule to every data packet without evaluating the message type.
	02-09,FF	Enter message type with hexadecimal values separated by a comma, for example, 02,03,FF.
P-5	any	The device applies the rule to every data packet without evaluating the address class.
	0000-FFFF	Enter address class range with hexadecimal values connected by a hyphen, for example, 0004-000A.
	0000-FFFF	Enter address class with hexadecimal values separated by a comma, for example, 0001,0003,FFFF.
	0000-FFFF	Enter combination of address class and address class range, for example, 0001,0003,0004-000A

Parameter	Value	Meaning
P-6	any	The device applies the rule to every data packet without evaluating the device class.
	0000-FFFF	Enter device class range with hexadecimal values connected by a hyphen, for example, 0004-000A.
	0000-FFFF	Enter device class with hexadecimal values separated by a comma, for example, 0001,0003,FFFF.
	0000-FFFF	Enter combination of device class and device class range, for example, 0001,0003,0004-000A.
P-7	any	The device applies the rule to every data packet without evaluating the memory address.
	0000-FFFF	Enter memory address range with hexadecimal values connected by a hyphen, for example, 0004-000A.
	0000-FFFF	Enter memory address with hexadecimal values separated by a comma, for example, 0001,0003,FFFF.
	0000-FFFF	Enter combination of memory address and memory address range, for example, 0001,0003,0004-000A.
P-8	any	The device applies the rule to every data packet without evaluating the data word.
	0000-FFFF	Enter data word range with hexadecimal values connected by a hyphen, for example, 0004-000A.
	0000-FFFF	Enter data word with hexadecimal values separated by a comma, for example, 0001,0003,FFFF.
	0000-FFFF	Enter combination of data word and data word range, for example, 0001,0003,0004-000A.
P-9	any	The device applies all the available task codes.
	00-FF	Enter task code with hexadecimal values separated by a comma, for example, 01,03,FF.
P-10	<data>	Enter the task code data in hexadecimal value 0..F, the task code data length is upto 72 bytes.
P-11	enable	Enable the option.
	disable	Disable the option.
P-12	enable	Enable the option.
	disable	Disable the option.
P-13	enable	Enable the option.
	disable	Disable the option.
P-14	enable	Enable the option.
	disable	Disable the option.
P-15	enable	Enable the option.
	disable	Disable the option.

14.1.32 dpi amp profile copy

Copies a profile to another DPI AMP profile.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi amp profile copy <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..32	Profile source index
P-2	1..32	Profile destination index

14.1.33 dpi amp profile delete

Deletes a profile from the DPI AMP profile table. You cannot delete an active profile or if an enforcer mapped to it.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi amp profile delete <P-1>

Parameter	Value	Meaning
P-1	1..32	Profile index

14.1.34 dpi amp profile disable

Disables a profile in the DPI AMP profile table. You cannot deactivate a profile if an active enforcer mapped to it.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi amp profile disable <P-1>

Parameter	Value	Meaning
P-1	1..32	Profile index

14.1.35 dpi amp profile enable

Enables a profile in the DPI AMP profile table. A profile can only be activated when all required parameters are set. After activation no modifications are possible.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi amp profile enable <P-1>

Parameter	Value	Meaning
P-1	1..32	Profile index

14.1.36 dpi amp profile modify

Modifies a profile in the DPI AMP profile table.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi amp profile modify <P-1> [description <P-2>] [protocol <P-3>] [message-type <P-4>] [address-class <P-5>] [device-class <P-6>] [memory-address <P-7>] [data-word <P-8>] [task-code <P-9>] [task-code-data <P-10>] [error-check-characters <P-11>] [block-check-characters <P-12>] [debug <P-13>] [tcp-reset <P-14>] [sanity-check <P-15>]

[description]: Specify the description/name for the DPI AMP profile. The description consists of an alphanumeric ASCII character string with 0..32 characters.

[protocol]: Specify the protocol type for the DPI AMP profile.

[message-type]: Specify the value for the message type which specifies the type of data in the message data area and also specifies if the message is a command or a response. The allowed message types are 02,03,04,05,06,07,08,09,FF,any.

[address-class]: Specify the particular type of the memory to be accessed, (total number of hexadecimal values can be specified upto 205).

[device-class]: Specify the value for the device class, (total number of hexadecimal values can be specified upto 205).

[memory-address]: Specify the beginning address of the memory to be read or written, (total number of hexadecimal values can be specified upto 205).

[data-word]: Specify the value for the data words to be read from the remote device, (total number of hexadecimal values can be specified upto 205).

[task-code]: Specify the value for the task code.

[task-code-data]: Specify the hexadecimal value 0..F in the field task code data. The maximum task code data length is up to 72 bytes.

[error-check-characters]: Enable/disable the checking for the NITP error check characters (ECC) of the packets.

[block-check-characters]: Enable/disable the checking for the CAMP block check characters (BCC) of the AMP packets.

[debug]: Enable/disable the debugging in the DPI AMP profile, (if it is enabled then the reset connection message will contain the debug information).

[tcp-reset]: Enable/disable the resetting of the TCP connection, (if it is enabled then the TCP reset connection message will be sent in case a packet is dropped).

[sanity-check]: Enable/disable the sanity check including format and specification of all the AMP packets.

Parameter	Value	Meaning
P-1	1..32	Profile index
P-2	string	Profile description/name
P-3	camp	CAMP protocol
	nitp	NITP protocol
	any	The device applies the rule to every data packet without evaluating the protocol.
P-4	any	The device applies the rule to every data packet without evaluating the message type.
	02-09,FF	Enter message type with hexadecimal values separated by a comma, for example, 02,03,FF.
P-5	any	The device applies the rule to every data packet without evaluating the address class.
	0000-FFFF	Enter address class range with hexadecimal values connected by a hyphen, for example, 0004-000A.
	0000-FFFF	Enter address class with hexadecimal values separated by a comma, for example, 0001,0003,FFFF.
	0000-FFFF	Enter combination of address class and address class range, for example, 0001,0003,0004-000A

Parameter	Value	Meaning
P-6	any	The device applies the rule to every data packet without evaluating the device class.
	0000-FFFF	Enter device class range with hexadecimal values connected by a hyphen, for example, 0004-000A.
	0000-FFFF	Enter device class with hexadecimal values separated by a comma, for example, 0001,0003,FFFF.
	0000-FFFF	Enter combination of device class and device class range, for example, 0001,0003,0004-000A.
P-7	any	The device applies the rule to every data packet without evaluating the memory address.
	0000-FFFF	Enter memory address range with hexadecimal values connected by a hyphen, for example, 0004-000A.
	0000-FFFF	Enter memory address with hexadecimal values separated by a comma, for example, 0001,0003,FFFF.
	0000-FFFF	Enter combination of memory address and memory address range, for example, 0001,0003,0004-000A.
P-8	any	The device applies the rule to every data packet without evaluating the data word.
	0000-FFFF	Enter data word range with hexadecimal values connected by a hyphen, for example, 0004-000A.
	0000-FFFF	Enter data word with hexadecimal values separated by a comma, for example, 0001,0003,FFFF.
	0000-FFFF	Enter combination of data word and data word range, for example, 0001,0003,0004-000A.
P-9	any	The device applies all the available task codes.
	00-FF	Enter task code with hexadecimal values separated by a comma, for example, 01,03,FF.
P-10	<data>	Enter the task code data in hexadecimal value 0..F, the task code data length is upto 72 bytes.
P-11	enable	Enable the option.
	disable	Disable the option.
P-12	enable	Enable the option.
	disable	Disable the option.
P-13	enable	Enable the option.
	disable	Disable the option.
P-14	enable	Enable the option.
	disable	Disable the option.
P-15	enable	Enable the option.
	disable	Disable the option.

14.1.37 dpi amp commit

Writes all changes made in the DPI AMP profiles to the enforcer.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi amp commit

14.1.38 dpi amp task-code add

Add a value for the task code.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi amp task-code add <P-1> [description <P-2>] [mode <P-3>]

[description]: Specify the description for the task code. The description consists of an alphanumeric ASCII character string with 0..32 characters.

[mode]: Specify the value for the task code mode (i.e. config or non-config).

Parameter	Value	Meaning
P-1	00-FF	Enter task code with hexadecimal value. The range is from 00 to FF.
P-2	string	Enter the description for the task code.
P-3	config	Specify the value config for the task code.
	non-config	Specify the value non-config for the task code.

14.1.39 dpi amp task-code delete

Delete a value for the task code.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi amp task-code delete <P-1>

Parameter	Value	Meaning
P-1	00-FF	Enter task code with hexadecimal value. The range is from 00 to FF.

14.1.40 dpi amp task-code modify

Modify a value for the task code.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi amp task-code modify <P-1> [description <P-2>] [mode <P-3>]
 [description]: Specify the description for the task code. The description consists of an alphanumeric ASCII character string with 0..32 characters.
 [mode]: Specify the value for the task code mode (i.e. config or non-config).

Parameter	Value	Meaning
P-1	00-FF	Enter task code with hexadecimal value. The range is from 00 to FF.
P-2	string	Enter the description for the task code.
P-3	config	Specify the value config for the task code.
	non-config	Specify the value non-config for the task code.

14.1.41 dpi amp protect-mode

Enable/disable the program and mode protect.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi amp protect-mode <P-1>

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

14.1.42 dpi enip profile add

Adds a profile to the DPI ENIP profile table.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi enip profile add <P-1> [description <P-2>] [function-type <P-3>]
 [default-list <P-4>] [wildcard-list <P-5>] [sanity-check <P-6>] [debug <P-7>]
 [allow-emb-pccc <P-8>] [reset-tcp-check <P-9>]
 [description]: Profile description/name for the DPI ENIP profile.
 [function-type]: Function type for the DPI ENIP profile.
 [default-list]: Object entries to be included from Default object list.
 [wildcard-list]: Wildcard service codes included for all class objects.
 [sanity-check]: Sanity check including format and specification.
 [debug]: Debug output in reset message.
 [allow-emb-pccc]: Allow embedded PCCC option enables the filtering of PCCC protocol traffic embedded in CIP messages through firewall.
 [reset-tcp-check]: Reset the TCP connection in case of a protocol violation or if the plausibility check discovers any error.

Parameter	Value	Meaning
P-1	1..32	Profile index
P-2	string	Profile description/name
P-3	readonly	CIP services that are data read commands are permitted.
	readwrite	CIP services that are data read or data write commands are permitted
	any	All CIP services are permitted.
	advanced	Lets the user add as many custom CIP objects as needed to one firewall rule.
P-4	1..347	Comma separated index values e.g. 1,2,3.
	1..347	Comma separated index and range of index values e.g. 1-10,120-300.
	none	'none' to exclude all default object list entries.
	all	'all' to include all default object list entries.
P-5	string	Service code list, hexadecimal numbers separated by a comma (e.g. numbers ranging between 0x00 to 0x7F).

Parameter	Value	Meaning
P-6	enable	Enable the option.
	disable	Disable the option.
P-7	enable	Enable the option.
	disable	Disable the option.
P-8	enable	Enable the option.
	disable	Disable the option.
P-9	enable	Enable the option.
	disable	Disable the option.

14.1.43 dpi enip profile modify

Modifies a profile in the DPI ENIP profile table.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** dpi enip profile modify <P-1> [description <P-2>] [function-type <P-3>] [default-list <P-4>] [wildcard-list <P-5>] [sanity-check <P-6>] [debug <P-7>] [allow-emb-pccc <P-8>] [reset-tcp-check <P-9>]

[description]: Profile description/name for the DPI ENIP profile.

[function-type]: Function type for the DPI ENIP profile.

[default-list]: Object entries to be included from Default object list.

[wildcard-list]: Wildcard service codes included for all class objects.

[sanity-check]: Sanity check including format and specification.

[debug]: Debug output in reset message.

[allow-emb-pccc]: Allow embedded PCCC enables the filtering of PCCC protocol traffic embedded in CIP messages through firewall.

[reset-tcp-check]: Reset the TCP connection in case of a protocol violation or if the plausibility check discovers any error.

Parameter	Value	Meaning
P-1	1..32	Profile index
P-2	string	Profile description/name
P-3	readonly	CIP services that are data read commands are permitted.
	readwrite	CIP services that are data read or data write commands are permitted
	any	All CIP services are permitted.
	advanced	Lets the user add as many custom CIP objects as needed to one firewall rule.
P-4	1..347	Comma separated index values e.g. 1,2,3.
	1..347	Comma separated index and range of index values e.g. 1-10,120-300.
	none	'none' to exclude all default object list entries.
	all	'all' to include all default object list entries.
P-5	string	Service code list, hexadecimal numbers separated by a comma (e.g. numbers ranging between 0x00 to 0x7F).
P-6	enable	Enable the option.
	disable	Disable the option.
P-7	enable	Enable the option.
	disable	Disable the option.
P-8	enable	Enable the option.
	disable	Disable the option.
P-9	enable	Enable the option.
	disable	Disable the option.

14.1.44 dpi enip profile delete

Deletes a profile from the DPI ENIP profile table. You cannot delete an active profile or if any mapping is added to the enforcer.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** dpi enip profile delete <P-1>

Parameter	Value	Meaning
P-1	1..32	Profile index

14.1.45 dpi enip profile enable

Enables a profile in the DPI ENIP profile table. A profile can only be activated when all required parameters are set. After activation modifications are no longer possible.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi enip profile enable <P-1>

Parameter	Value	Meaning
P-1	1..32	Profile index

14.1.46 dpi enip profile disable

Disables a profile in the DPI ENIP profile table. You cannot disable a profile if an active enforcer mapping to it exists.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi enip profile disable <P-1>

Parameter	Value	Meaning
P-1	1..32	Profile index

14.1.47 dpi enip profile commit

Writes all changes made in the DPI ENIP profiles to the enforcer.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi enip profile commit

14.1.48 dpi enip profile copy

Copies a profile to new DPI ENIP profile.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi enip profile copy <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..32	Profile source index
P-2	1..32	Profile destination index

14.1.49 dpi enip object add

DPI ENIP Object settings. Adds an object to a DPI ENIP rule.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi enip object add <P-1> <P-2> <P-3> [description <P-4>]
[description]: Description of the CIP object.

Parameter	Value	Meaning
P-1	1..32	Profile index.
P-2	0x0..0xFFFFFFFF	Class ID is a hexadecimal number (e.g. number ranging between 0x00 to 0xFFFFFFFF).
P-3	string	Service code list, hexadecimal numbers separated by a comma (e.g. numbers ranging between 0x00 to 0x7F).
P-4	string	Object description/name for the CIP Object.

14.1.50 dpi enip object modify

Modifies an object in a DPI ENIP object.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi enip object modify <P-1> <P-2> <P-3> [description <P-4>]
[description]: Description/name of the CIP object.

Parameter	Value	Meaning
P-1	1..32	Profile index.
P-2	0x0..0xFFFFFFFF	Class ID is a hexadecimal number (e.g. number ranging between 0x00 to 0xFFFFFFFF).
P-3	string	Service code list, hexadecimal numbers separated by a comma (e.g. numbers ranging between 0x00 to 0x7F).
P-4	string	Object description/name for the CIP Object.

14.1.51 dpi enip object delete

Deletes an object from a DPI ENIP rule.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `dpi enip object delete <P-1> <P-2>`

Parameter	Value	Meaning
P-1	1..32	Profile index.
P-2	0x0..0xFFFFFFFF	Class ID is a hexadecimal number (e.g. number ranging between 0x00 to 0xFFFFFFFF).

14.1.52 dpi goose add

Adds a profile to the DPI GOOSE profile table.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `dpi goose add <P-1> [description <P-2>] [sanity-check <P-3>] [stsq-check <P-4>]`

[description]: Profile description/name for the DPI GOOSE profile.

[sanity-check]: Sanity check including format and specification.

[stsq-check]: Status and Sequence check.

Parameter	Value	Meaning
P-1	1..32	Profile index
P-2	string	Profile description/name
P-3	enable	Enable the option.
	disable	Disable the option.
P-4	enable	Enable the option.
	disable	Disable the option.

14.1.53 dpi goose modify

Modifies a profile in the DPI GOOSE profile table.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `dpi goose modify <P-1> [description <P-2>] [sanity-check <P-3>] [stsq-check <P-4>]`

[description]: Profile description/name for the DPI GOOSE profile.

[sanity-check]: Sanity check including format and specification.

[stsq-check]: Status and Sequence check.

Parameter	Value	Meaning
P-1	1..32	Profile index
P-2	string	Profile description/name
P-3	enable	Enable the option.
	disable	Disable the option.
P-4	enable	Enable the option.
	disable	Disable the option.

14.1.54 dpi goose delete

Deletes a profile from the DPI GOOSE profile table. You cannot delete an active profile or if any mapping is added to the enforcer.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `dpi goose delete <P-1>`

Parameter	Value	Meaning
P-1	1..32	Profile index

14.1.55 dpi goose enable

Enables a profile in the DPI GOOSE profile table. A profile can only be activated when all required parameters are set. After activation modifications are no longer possible.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `dpi goose enable <P-1>`

Parameter	Value	Meaning
P-1	1..32	Profile index

14.1.56 dpi goose disable

Disables a profile in the DPI GOOSE profile table. You cannot disable a profile if an active enforcer mapping to it exists.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi goose disable <P-1>

Parameter	Value	Meaning
P-1	1..32	Profile index

14.1.57 dpi goose commit

Writes all changes made in the DPI GOOSE profiles to the enforcer.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi goose commit

14.1.58 dpi goose copy

Copies a profile to new DPI GOOSE profile.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: dpi goose copy <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..32	Profile source index
P-2	1..32	Profile destination index

14.2 show

Display device options and settings.

14.2.1 show dpi modbus profiletable

Display the DPI MODBUS profile table.

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

14.2.2 show dpi modbus pending

Display whether uncommitted changes for DPI MODBUS enforcer exist.

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

14.2.3 show dpi opc profiletable

Display the DPI OPC profile table.

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

14.2.4 show dpi opc pending

Display whether uncommitted changes for DPI OPC enforcer exist.

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

14.2.5 show dpi iec104 profiletable

Display the DPI IEC104 profile table.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show dpi iec104 profiletable

14.2.6 show dpi iec104 pending

Display whether uncommitted changes for DPI IEC104 enforcer exist.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: `show dpi iec104 pending`

14.2.7 show dpi dnp3 profiletable

Display the DPI DNP3 profile table.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: `show dpi dnp3 profiletable`

14.2.8 show dpi dnp3 pending

Display whether uncommitted changes for DPI DNP3 enforcer exist.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: `show dpi dnp3 pending`

14.2.9 show dpi dnp3 objectlist

Display the DPI DNP3 object list for a profile.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: `show dpi dnp3 objectlist <P-1> [<P-2>]`

Parameter	Value	Meaning
P-1	1..32	DNP3 profile index.
P-2	1..256	DNP3 Object index.

14.2.10 show dpi amp global

Display the AMP global information and settings.

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

14.2.11 show dpi amp profiletable

Display the DPI AMP profile table.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: `show dpi amp profiletable`

14.2.12 show dpi amp taskcodetable

Display the DPI AMP task code table.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: `show dpi amp taskcodetable`

14.2.13 show dpi enip profiletable

Display the DPI ENIP profile table.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: `show dpi enip profiletable`

14.2.14 show dpi enip pending

Display whether uncommitted changes for DPI ENIP enforcer exist.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: `show dpi enip pending`

14.2.15 show dpi enip objectlist

Display the DPI ENIP object list for a profile.

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

Parameter	Value	Meaning
P-1	1..32	Profile index

14.2.16 show dpi goose profiletable

Display the DPI GOOSE profile table.

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

14.2.17 show dpi goose pending

Display whether uncommitted changes for DPI GOOSE enforcer exist.

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

15 Filtering Database (FDB)

15.1 mac-filter

15.1.1 mac-filter

Static MAC filter configuration.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: mac-filter <P-1> <P-2>

Parameter	Value	Meaning
P-1	aa:bb:cc:dd:ee:ff	MAC address.
P-2	1..4042	Enter the VLAN ID.

■ no mac-filter

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no mac-filter <P-1> <P-2>

15.2 bridge

Bridge configuration.

15.2.1 bridge aging-time

Aging time configuration.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: bridge aging-time <P-1>

Parameter	Value	Meaning
P-1	10..500000	Enter a number in the given range.

15.3 show

Display device options and settings.

15.3.1 show mac-filter-table static

Display the MAC address filter table.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show mac-filter-table static

15.4 show

Display device options and settings.

15.4.1 show bridge aging-time

Address aging time.

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

15.5 show

Display device options and settings.

15.5.1 show mac-addr-table

Display the MAC address table.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: `show mac-addr-table [<P-1>]`

Parameter	Value	Meaning
P-1	a:b:c:d:e:f	Enter a MAC address.
	1..4042	Enter a VLAN ID.

15.6 clear

Clear several items.

15.6.1 clear mac-addr-table

Clears the MAC address table.

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

16 Firewall Learning Mode (FLM)

16.1 flm

Configure the firewall learning mode.

16.1.1 flm operation

Enable/disable the firewall learning mode.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: flm operation <P-1>

Parameter	Value	Meaning
P-1	enable	Enable the firewall learning mode.
	disable	Disable the firewall learning mode.

■ no flm operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no flm operation <P-1>

16.1.2 flm action

Set the action for the firewall learning mode.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: flm action <P-1>

Parameter	Value	Meaning
P-1	start	Start a learning phase.
	stop	Stop a learning phase.
	continue	Continue the previous learning phase.
	clear	Clear the learned data.

16.1.3 flm interface add

Add an interface to the firewall learning mode.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: flm interface add <P-1>

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

16.1.4 flm interface delete

Delete an interface from the firewall learning mode.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: flm interface delete <P-1>

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

16.2 show

Display device options and settings.

16.2.1 show flm global

Display the information and settings for the firewall learning mode.

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

16.2.2 show flm interface

Display the interfaces selected for the firewall learning mode.

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

17 HiDiscovery

17.1 network

Configure the inband and outband connectivity.

17.1.1 network hidiscovery operation

Enable/disable the HiDiscovery protocol on this device.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: network hidiscovery operation <P-1>

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

■ no network hidiscovery operation

Disable the option

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

17.1.2 network hidiscovery mode

Set the access level for HiDiscovery.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: network hidiscovery mode <P-1>

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

17.1.3 network hidiscovery blinking

Enable/disable the HiDiscovery blinking sequence on this device. This preference is not saved in configuration

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: network hidiscovery blinking

■ no network hidiscovery blinking

Disable the option

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: no network hidiscovery blinking

17.2 show

Display device options and settings.

17.2.1 show network hidiscovery

Display the HiDiscovery settings.

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

18 Hypertext Transfer Protocol (HTTP)

18.1 http

Set HTTP parameters.

18.1.1 http port

Set the HTTP port number.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: http port <P-1>

Parameter	Value	Meaning
P-1	1..65535	Port number of the HTTP server (default: 80).

18.1.2 http server

Enable or disable the HTTP server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: http server

■ no http server

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no http server

18.2 show

Display device options and settings.

18.2.1 show http

Display the HTTP server information.

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

19 HTTP Secure (HTTPS)

19.1 https

Set HTTPS parameters.

19.1.1 https server

Enable or disable the HTTPS server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: https server

■ no https server

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no https server

19.1.2 https port

Set the HTTPS port number.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: https port <P-1>

Parameter	Value	Meaning
P-1	1..65535	Port number of the web server (default: 443).

19.1.3 https fingerprint-type

Configure fingerprint type.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: https fingerprint-type <P-1>

Parameter	Value	Meaning
P-1	sha1	Configure sha1 fingerprint
	sha256	Configure sha256 fingerprint

19.1.4 https certificate

Generate/Delete HTTPS X509/PEM certificate.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: https certificate <P-1>

Parameter	Value	Meaning
P-1	generate	Generates the item
	delete	Deletes the item

19.2 copy

Copy different kinds of items.

19.2.1 copy httpscert remote

Copy X509/PEM certificate from a server to the specified destination.

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

nvm: Copy HTTPS certificate (PEM) from a server to the device.

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

19.2.2 copy httpscert envm

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

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

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

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

19.3 show

Display device options and settings.

19.3.1 show https

Display the HTTPS server information.

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

20 IGMP Querier

20.1 ip

Set IP parameters.

20.1.1 ip igmp-querier operation

Enable or disable IGMP querier globally on the system.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip igmp-querier operation

■ no ip igmp-querier operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip igmp-querier operation

20.1.2 ip igmp-querier interval

Sets the IGMP querier query interval time.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip igmp-querier interval <P-1>

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

20.1.3 ip igmp-querier response-interval

Sets the IGMP querier response interval.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip igmp-querier response-interval <P-1>

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

20.1.4 ip igmp-querier last-member-interval

Sets the IGMP query last member interval.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip igmp-querier last-member-interval <P-1>

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

20.1.5 ip igmp-querier robustness

Sets the IGMP querier robustness.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip igmp-querier robustness <P-1>

Parameter	Value	Meaning
P-1	2..10	Enter a number in the given range

20.2 ip

IP interface commands.

20.2.1 ip igmp-querier operation

Enable or disable IGMP querier instance.

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

■ no ip igmp-querier operation

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip igmp-querier operation

20.2.2 ip igmp-querier version

Sets the IGMP version (default:3).

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

Parameter	Value	Meaning
P-1	2..3	Enter igmp version.

20.3 show

Display device options and settings.

20.3.1 show ip igmp-querier global

Display the general IGMP querier information.

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

20.3.2 show ip igmp-querier interface

Display the interface specific information.

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

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

21 Interface

21.1 shutdown

21.1.1 shutdown

Enable or disable the interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: shutdown

■ **no shutdown**

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no shutdown

21.2 auto-negotiate

21.2.1 auto-negotiate

Enable or disable automatic negotiation on the interface. The cable crossing settings have no effect if auto-negotiation is enabled. In this case cable crossing is always set to auto. Cable crossing is set to the value chosen by the user if auto-negotiation is disabled.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: auto-negotiate

■ **no auto-negotiate**

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no auto-negotiate

21.3 auto-power-down

21.3.1 auto-power-down

Set the auto-power-down mode on the interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: auto-power-down <P-1>

Parameter	Value	Meaning
P-1	auto-power-save	The port goes in a low power mode.
	no-power-save	The port does not use the automatic power save mode.

21.4 cable-crossing

21.4.1 cable-crossing

Cable crossing settings on the interface. The cable crossing settings have no effect if auto-negotiation is enabled. In this case cable crossing is always set to auto. Cable crossing is set to the value chosen by the user if auto-negotiation is disabled.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: cable-crossing <P-1>

Parameter	Value	Meaning
P-1	mdi	The port does not use the crossover mode.
	mdix	The port uses the crossover mode.
	auto-mdix	The port uses the auto crossover mode.

21.5 linktraps

21.5.1 linktraps

Enable/disable link up/down traps on the interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: linktraps

■ no linktraps

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no linktraps

21.6 speed

21.6.1 speed

Sets the speed and duplex setting for the interface.

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

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

21.7 name

21.7.1 name

Set or remove a descriptive name for the interface.

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

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

21.8 power-state

21.8.1 power-state

Enable or disable the power state on the interface. The interface power state settings have no effect if the interface admin state is enabled.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: power-state

■ no power-state

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no power-state

21.9 mac-filter

21.9.1 mac-filter

static mac filter configuration

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: mac-filter <P-1> <P-2>

Parameter	Value	Meaning
P-1	aa:bb:cc:dd:ee:ff	MAC address.
P-2	1..4042	Enter the VLAN ID.

■ no mac-filter

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no mac-filter <P-1> <P-2>

21.10 dhcp-client

21.10.1 dhcp-client

Enable/disable the DHCP client on the interface.

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

■ no dhcp-client

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no dhcp-client

21.11 show

Display device options and settings.

21.11.1 show port

Display the interface parameters.

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

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

22 Interface Statistics

22.1 utilization

Configure the interface utilization parameters.

22.1.1 utilization control-interval

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

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

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

22.1.2 utilization alarm-threshold lower

Lower threshold value

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: utilization alarm-threshold lower <P-1>

Parameter	Value	Meaning
P-1	0..10000	Add alarm threshold lower value for monitoring bandwidth utilization in hundredths of a percent.

22.1.3 utilization alarm-threshold upper

Upper threshold value

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: utilization alarm-threshold upper <P-1>

Parameter	Value	Meaning
P-1	0..10000	Add alarm threshold upper value for monitoring bandwidth utilization in hundredths of a percent.

22.2 clear

Clear several items.

22.2.1 clear port-statistics

Clear all statistics counter.

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

22.3 show

Display device options and settings.

22.3.1 show interface counters

Display the interface counters.

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

22.3.2 show interface statistics

Display the summary interface statistics.

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

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

22.3.3 show interface ether-stats

Display the detailed interface statistics.

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

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

23 Intern

23.1 help

Display the help text for various special keys.

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

23.2 logout

Exit this session.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** any
- ▶ **Format:** logout

23.3 history

Display a list of previously run commands.

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

23.4 vlan

Enter VLAN database mode.

23.4.1 vlan database

Enter VLAN database mode.

- ▶ **Mode:** Privileged Exec Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** vlan database

23.5 exit

Exit from vlan mode.

- ▶ **Mode:** VLAN Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** exit

23.6 end

Exit to exec mode.

- ▶ **Mode:** Interface Range Mode
- ▶ **Privilege Level:** Operator
- ▶ **Format:** end

23.7 serviceshell

Enter system mode.

23.7.1 serviceshell start

Start serviceshell prompt

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: `serviceshell start`

23.7.2 serviceshell deactivate

Disable the service shell access permanently (Cannot be undone).

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: `serviceshell deactivate`

23.8 traceroute

Trace route to a specified host.

23.9 traceroute

Trace route to a specified host.

23.9.1 traceroute source

Source address for traceroute command.

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

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

23.10 reboot

Reset the device (cold start).

- ▶ Mode: All Privileged Modes
- ▶ Privilege Level: any
- ▶ Format: `reboot`

23.11 ping

Send ICMP echo packets to a specified IP address.

23.11.1 ping count

Number of retries.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: `ping <P-1> count <P-2>`

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

Parameter	Value	Meaning
P-2	1..255	Enter a number in the given range.

23.12 ping

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

23.12.1 ping source

Source address for ping command.

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

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

23.13 show

Display device options and settings.

23.13.1 show serviceshell

Display the service shell access.

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

24 Intrusion Detection System (IDS)

24.1 ids

Configure the Intrusion Detection System feature.

24.1.1 ids operation

Enable/disable Intrusion Detection System feature.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: `ids operation`

■ **no ids operation**

Disable the option

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

24.1.2 ids user

Assign/Remove an existing admininstrator privilege user for Intrusion Detection System feature.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: `ids user <P-1>`

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).

■ **no ids user**

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: `no ids user`

24.2 show

Display device options and settings.

24.2.1 show ids global

Display the information and settings for the intrusion detection system.

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

25 Open Shortest Path First (OSPF)

25.1 ip

Set IP parameters.

25.1.1 ip ospf area

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

► **Mode:** Global Config Mode

► **Privilege Level:** Operator

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

range: Configure the range for the area. You summarize the networks within this range into a single routing domain.

add: Create an area.

modify: Modify the parameters of an existing area.

delete: Delete a specific area.

add: Create a new area.

delete: Delete an existing area.

stub: Configure the preferences for a stub area. You shield stub areas from external route advertisements, but the area receives advertisements from networks that belong to other areas of the same autonomous system.

add: Create a stub area. The command also allows you to convert an existing area to a stub area.

modify: Modify the stub area parameters.

summarylsa: Configure the summary LSA mode for a stub area. When enabled, the router both summarizes and propagates summary LSAs.

default-cost: Set the default cost for the stub area.

delete: Remove a stub area. After removal, the area receives external route advertisements.

virtual-link: Configure a virtual link. You use the virtual link to connect the router to the backbone area (0.0.0.0) through a non-backbone area or to connect two parts of a partitioned backbone area (0.0.0.0) through a non-backbone area.

add: Add a virtual neighbor.

delete: Delete a virtual neighbor.

modify: Modify the parameters of a virtual neighbor.

authentication: Configure the authentication type. The device authenticates the OSPF protocol exchanges in the OSPF packet header which includes an authentication type field.

type: Configure the authentication type. Authentication types are 0 for null authentication, 1 for simple password authentication, and 2 for cryptographic authentication.

key: Configure the authentication key.

key-id: Configure the authentication key-id for md5 authentication. This field identifies the algorithm and secret key used to create the message digest appended to the OSPF packet.

hello-interval: Configure the OSPF hello-interval for the virtual link, in seconds. The hello timer controls the time interval between sending two consecutive hello packets. Set this value to the same hello-interval value of the virtual neighbors.

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

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

retransmit-interval: Configure the OSPF retransmit-interval for the virtual link, in seconds. The retransmit interval is the time between two consecutive link-state advertisement transmissions. Link-state advertisements contain such information as database descriptions and link-state request packets for adjacencies belonging to virtual link.

nssa: Configure a NSSA(Not-So-Stubby-Area).

add: Add a NSSA.

delete: Delete a NSSA.

modify: Modify the parameters of a NSSA.

translator: Configure the NSSA translator related parameters.

role: Configure the NSSA translator role.

stability-interval: Configure the translator stability interval for the NSSA, in seconds.

summary: Configure the import summary for the specified NSSA.

no-redistribute: Configure route redistribution for the specified NSSA.

default-info: Configure the nssa default information origination parameters.

originate: Configuration whether a Type-7 LSA should be originated into the NSSA.

[metric]: Configure the metric for the NSSA.

[metric-type]: Configure the metric type for default information.

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	summary-link	Configure summary links LSDB type optional mode.
	nssa-external-link	Configure nssa external link LSDB type optional mode.
P-3	A.B.C.D	IPv4 address.
P-4	A.B.C.D	IPv4 netmask address.
P-5	summary-link	Configure summary links LSDB type optional mode.
	nssa-external-link	Configure nssa external link LSDB type optional mode.
P-6	A.B.C.D	IPv4 address.
P-7	A.B.C.D	IPv4 netmask address.
P-8	advertise	Set as advertise.
	do-not-advertise	Set as do-not-advertise.
P-9	summary-link	Configure summary links LSDB type optional mode.
	nssa-external-link	Configure nssa external link LSDB type optional mode.
P-10	A.B.C.D	IPv4 address.
P-11	A.B.C.D	IPv4 netmask address.
P-12	0	Configure the TOS (0 is for Normal Service).
P-13	0	Configure the TOS (0 is for Normal Service).
P-14	no-area-summary	Disable the router from sending area link state advertisement summaries.
	send-area-summary	Enable the router to send area link state advertisement summaries. The router floods LSAs within the area using multicast. Every topology change starts a new flood of LSAs.
P-15	0..16777215	Configure the default cost.
P-16	0	Configure the TOS (0 is for Normal Service).
P-17	A.B.C.D	IP address.
P-18	A.B.C.D	IP address.
P-19	A.B.C.D	IP address.
P-20	none	Configure the authentication type as none (Key and key ID is not required).
	simple	Configure the authentication type as simple (Key ID is not required).
	md5	Configure the authentication type as md5 for the interface.
P-21	string	<key> Configure the authentication key.
P-22	0..255	Enter a number in the given range.
P-23	1..65535	Enter a number between 1 and 65535
P-24	1..65535	Enter a number between 1 and 65535
P-25	0..3600	Enter a number in the given range.
P-26	0..3600	Enter a number in the given range.
P-27	import-nssa	Configure the area as NSSA only.
P-28	import-external	Change the area to support external LSAs also.
P-29	always	Configure the NSSA translator role as always. When used as a border router, the router translates LSAs regardless of the translator states of the other NSSA border routers.
	candidate	Configure the NSSA translator role as a candidate. When used as a border router, the router participates in the translator election process. The router maintains a list of reachable NSSA border routers.
P-30	0..65535	Enter a number between 0 and 65535
P-31	1..16777214	Configure the metric value.
P-32	ospf-metric	Set the metric type as ospf Metric.
	comparable-cost	Set the metric type as comparable cost.
	non-comparable	Set the metric type as non-comparable.

■ no ip ospf area

Disable the option

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

25.1.2 ip ospf trapflags all

Set all trapflags at once.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip ospf trapflags all <P-1>

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

■ no ip ospf trapflags all

Disable the option

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

25.1.3 ip ospf operation

Enable or disable the OSPF admin mode. When enabled, the device initiates the OSPF process if the OSPF function is active on at least one interface.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip ospf operation

■ no ip ospf operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip ospf operation

25.1.4 ip ospf 1583compatability

Enable or disable the 1583compatibility for calculating routes external to the autonomous system. When enabled, the router is compatible with the preference rules defined in RFC1583, section 16.4.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip ospf 1583compatability

■ no ip ospf 1583compatability

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip ospf 1583compatability

25.1.5 ip ospf default-metric

Configure the default metric for re-distributed routes, when OSPF redistributes routes from other protocols.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip ospf default-metric <P-1>

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

■ no ip ospf default-metric

Disable the option

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

25.1.6 ip ospf router-id

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

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

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

25.1.7 ip ospf external-lsdb-limit

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

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

Parameter	Value	Meaning
P-1	-1.2147483647	Configure the external lsdb limit.

25.1.8 ip ospf exit-overflow

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

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

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

25.1.9 ip ospf maximum-path

Configure the maximum number of paths that OSPF reports.

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

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

25.1.10 ip ospf spf-delay

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

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

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

25.1.11 ip ospf spf-holdtime

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

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

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

25.1.12 ip ospf auto-cost

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

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

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

25.1.13 ip ospf distance intra

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

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

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

25.1.14 ip ospf distance inter

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

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

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

25.1.15 ip ospf distance external

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

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

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

25.1.16 ip ospf re-distribute

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

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

[metric]: Configure the OSPF route re-distribution metric parameters.

[metric-type]: Configure the OSPF route redistribution metric-type.

[tag]: Configure the OSPF route redistribution tag parameters.

[subnets]: Allow the router to redistribute subnets into OSPF.

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

■ no ip ospf re-distribute

Disable the option

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

25.1.17 ip ospf distribute-list

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

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

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

■ no ip ospf distribute-list

Disable the option

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

25.1.18 ip ospf default-info originate

Originate the OSPF default information.

- ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: ip ospf default-info originate [always] [metric <P-1>] [metric-type <P-2>]
- [always]: Always advertise the 0.0.0.0/0.0.0.0 route information.
[metric]: Configure the metric for default information.
[metric-type]: Configure the metric type for default information.

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

■ no ip ospf default-info originate

Disable the option

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

25.2 ip

IP interface commands.

25.2.1 ip ospf operation

Enable or disable OSPF on port.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip ospf operation

■ no ip ospf operation

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip ospf operation

25.2.2 ip ospf area-id

Configure the area ID that uniquely identifies the area to which the interface is connected.

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

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

25.2.3 ip ospf link-type

Configure the OSPF link type.

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

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

25.2.4 ip ospf priority

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

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

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

25.2.5 ip ospf transmit-delay

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

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

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

25.2.6 ip ospf retransmit-interval

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

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

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

25.2.7 ip ospf hello-interval

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

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

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

25.2.8 ip ospf dead-interval

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

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

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

25.2.9 ip ospf cost

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

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

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

25.2.10 ip ospf mtu-ignore

Enable/Disable OSPF MTU mismatch on interface.

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

■ no ip ospf mtu-ignore

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip ospf mtu-ignore

25.2.11 ip ospf authentication type

Configure authentication type.

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

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

25.2.12 ip ospf authentication key

Configure authentication key.

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

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

25.2.13 ip ospf authentication key-id

Configure authentication key-id for md5 authentication.

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

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

25.3 show

Display device options and settings.

25.3.1 show ip ospf global

Display the OSPF global configurations.

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

25.3.2 show ip ospf area

Display the OSPF area related information.

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

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

25.3.3 show ip ospf stub

Display the OSPF stub area related information.

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

25.3.4 show ip ospf database internal

Display the internal LSA database information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show ip ospf database internal

25.3.5 show ip ospf database external

Display the external LSA database information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show ip ospf database external

25.3.6 show ip ospf range

Display the OSPF area range information.

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

25.3.7 show ip ospf interface

Display the OSPF interface related information.

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

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

25.3.8 show ip ospf virtual-link

Display the OSPF virtual-link related information.

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

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

25.3.9 show ip ospf virtual-neighbor

Display the OSPF Virtual-link neighbor information

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show ip ospf virtual-neighbor

25.3.10 show ip ospf neighbor

Display the OSPF neighbor related information.

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

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

25.3.11 show ip ospf statistics

Display the OSPF statistics.

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

25.3.12 show ip ospf re-distribute

Display the OSPF re-distribute related information

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show ip ospf re-distribute <P-1>

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

25.3.13 show ip ospf nssa

Display the OSPF NSSA related information.

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

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

25.3.14 show ip ospf route

Display the OSPF routes.

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

26 Virtual Router Redundancy Protocol (VRRP)

26.1 ip

Set IP parameters.

26.1.1 ip vrrp operation

Enables or disables VRRP globally on the device.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip vrrp operation

■ no ip vrrp operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip vrrp operation

26.1.2 ip vrrp trap auth-failure

Enable or disable the sending of a trap if this router detects an authentication failure on any of its VRRP interfaces.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip vrrp trap auth-failure

■ no ip vrrp trap auth-failure

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip vrrp trap auth-failure

26.1.3 ip vrrp trap new-master

Enable or disable the sending of a trap if this router becomes new master for any of its VRRP interfaces.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip vrrp trap new-master

■ no ip vrrp trap new-master

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip vrrp trap new-master

26.2 ip

IP interface commands.

26.2.1 ip vrrp add

Create a new VRRP instance.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip vrrp add <P-1> [priority <P-2>] [interval <P-3>] [preempt <P-4>] [master-candidate <P-5>] [proxy-arp <P-6>]
[priority]: Priority of the virtual router default 100
[interval]: Advertisement Interval in seconds .. default 1
[preempt]: Enables or disables preempt mode ... default enabled

[master-candidate]: Master Candidate Address default 0.0.0.0

[proxy-arp]: Enables or disables proxy ARP on the virtual interface....default disabled

Parameter	Value	Meaning
P-1	1..255	Enter a virtual router ID.
P-2	1..254	Enter a priority value.
P-3	1..255	Enter a number in the given range.
P-4	enable	Enable the option.
	disable	Disable the option.
P-5	A.B.C.D	IP address.
P-6	enable	Enable the option.
	disable	Disable the option.

26.2.2 ip vrrp modify

Modify parameters of a VRRP instance.

► Mode: Interface Range Mode

► Privilege Level: Operator

► Format: ip vrrp modify <P-1> [priority <P-2>] [interval <P-3>] [preempt <P-4>]
[master-candidate <P-5>] [proxy-arp <P-6>]

[priority]: Priority of the virtual router

[interval]: Advertisement Interval in seconds

[preempt]: Enables or disables preemption mode

[master-candidate]: The IP Address that shows as Master IP Address when this Virtual Router becomes Master

[proxy-arp]: Enables or disables proxy ARP on the virtual interface when the state changes to master

Parameter	Value	Meaning
P-1	1..255	Enter a virtual router ID.
P-2	1..254	Enter a priority value.
P-3	1..255	Enter a number in the given range.
P-4	enable	Enable the option.
	disable	Disable the option.
P-5	A.B.C.D	IP address.
P-6	enable	Enable the option.
	disable	Disable the option.

26.2.3 ip vrrp delete

Delete a VRRP instance.

► Mode: Interface Range Mode

► Privilege Level: Operator

► Format: ip vrrp delete <P-1>

Parameter	Value	Meaning
P-1	1..255	Enter a virtual router ID.

26.2.4 ip vrrp enable

Enable a VRRP instance.

► Mode: Interface Range Mode

► Privilege Level: Operator

► Format: ip vrrp enable <P-1>

Parameter	Value	Meaning
P-1	1..255	Enter a virtual router ID.

26.2.5 ip vrrp disable

Disable a VRRP instance.

► Mode: Interface Range Mode

► Privilege Level: Operator

► Format: ip vrrp disable <P-1>

Parameter	Value	Meaning
P-1	1..255	Enter a virtual router ID.

26.2.6 ip vrrp virtual-address add

Add a virtual address.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip vrrp virtual-address add <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..255	Enter a virtual router ID.
P-2	A.B.C.D	IP address.

26.2.7 ip vrrp virtual-address delete

Delete a virtual address.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip vrrp virtual-address delete <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..255	Enter a virtual router ID.
P-2	A.B.C.D	IP address.

26.2.8 ip vrrp track add

Add a tracking object to the vrrp instance.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip vrrp track add <P-1> <P-2> [decrement <P-3>]
[decrement]: Configure the decrement value. Default is 20

Parameter	Value	Meaning
P-1	1..255	Enter a virtual router ID.
P-2	string	Track instance.
P-3	1..253	Enter the decrement value. The priority will be decremented by the configured value

26.2.9 ip vrrp track modify

Modify a tracking object to the vrrp instance.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip vrrp track modify <P-1> <P-2> decrement <P-3>
decrement: Configure the decrement value. Default is 20

Parameter	Value	Meaning
P-1	1..255	Enter a virtual router ID.
P-2	string	Track instance.
P-3	1..253	Enter the decrement value. The priority will be decremented by the configured value

26.2.10 ip vrrp track delete

Delete a tracking object to the vrrp instance.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip vrrp track delete <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..255	Enter a virtual router ID.
P-2	string	Track instance.

26.3 show

Display device options and settings.

26.3.1 show ip vrrp interface

Display the parameters of one VRRP instances.

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

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	1..255	Enter a virtual router ID.

26.3.2 show ip vrrp global

Display the global VRRP parameters.

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

27 Address Resolution Protocol (IP ARP)

27.1 ip

Set IP parameters.

27.1.1 ip arp add

Add a static arp entry.

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

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	aa:bb:cc:dd:ee:ff	MAC address.

27.1.2 ip arp delete

Delete a static arp entry.

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

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

27.1.3 ip arp enable

Enable a static arp entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip arp enable <P-1>

Parameter	Value	Meaning
P-1	a.b.c.d	IP address.

27.1.4 ip arp disable

Disable a static arp entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip arp disable <P-1>

Parameter	Value	Meaning
P-1	a.b.c.d	IP address.

27.1.5 ip arp timeout

Configure ARP entry age-out time (in seconds).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip arp timeout <P-1>

Parameter	Value	Meaning
P-1	15..21600	Enter the arp response time.

27.1.6 ip arp response-time

Configure ARP request response timeout (in seconds).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip arp response-time <P-1>

Parameter	Value	Meaning
P-1	1..10	Enter the arp response time.

27.1.7 ip arp retries

Configure ARP count of maximum requests for retries.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip arp retries <P-1>

Parameter	Value	Meaning
P-1	0..10	Enter the arp max retries.

27.2 show

Display device options and settings.

27.2.1 show ip arp info

Display the ARP summary information.

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

27.2.2 show ip arp table

Display the ARP cache entries.

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

27.2.3 show ip arp static

Display the static ARP entries.

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

27.2.4 show ip arp entry

Display the ARP cache entry.

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

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

27.3 clear

Clear several items.

27.3.1 clear ip arp-cache

Clear the router's ARP table (cache).

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: clear ip arp-cache [gateway]
[gateway]: Also clear gateway ARP entries.

28 Internet Protocol Version 4 (IPv4)

28.1 network

Configure the inband and outband connectivity.

28.1.1 network parms

Set network address, netmask and gateway

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: network parms <P-1> <P-2> [<P-3>]

Parameter	Value	Meaning
P-1	A.B.C.D	IPv4 address.
P-2	A.B.C.D	IPv4 netmask address.
P-3	A.B.C.D	IPv4 gateway address.

28.2 clear

Clear several items.

28.2.1 clear arp-table-switch

Clear the agent's ARP table (cache).

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: clear arp-table-switch

28.3 show

Display device options and settings.

28.3.1 show network parms

Display the network settings.

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

28.4 show

Display device options and settings.

28.4.1 show arp

Display the ARP table.

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

29 Link Layer Discovery Protocol (LLDP)

29.1 lldp

Configure of Link Layer Discovery Protocol.

29.1.1 lldp operation

Enable or disable the LLDP operational state.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp operation

■ no lldp operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no lldp operation

29.1.2 lldp config chassis admin-state

Enable or disable the LLDP operational state.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp config chassis admin-state <P-1>

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

29.1.3 lldp config chassis notification-interval

Enter the LLDP notification interval in seconds.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp config chassis notification-interval <P-1>

Parameter	Value	Meaning
P-1	5..3600	Enter a number in the given range.

29.1.4 lldp config chassis re-init-delay

Enter the LLDP re-initialization delay in seconds.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp config chassis re-init-delay <P-1>

Parameter	Value	Meaning
P-1	1..10	Enter a number in the given range.

29.1.5 lldp config chassis tx-delay

Enter the LLDP transmit delay in seconds (tx-delay smaller than (0.25 × tx-interval))

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp config chassis tx-delay <P-1>

Parameter	Value	Meaning
P-1	1..8192	Enter a number in the given range (tx-delay smaller than (0.25 × tx-interval))

29.1.6 lldp config chassis tx-hold-multiplier

Enter the LLDP transmit hold multiplier.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp config chassis tx-hold-multiplier <P-1>

Parameter	Value	Meaning
P-1	2..10	Enter a number in the given range.

29.1.7 lldp config chassis tx-interval

Enter the LLDP transmit interval in seconds.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp config chassis tx-interval <P-1>

Parameter	Value	Meaning
P-1	5..32768	Enter a number in the given range.

29.2 show

Display device options and settings.

29.2.1 show lldp global

Display the LLDP global configurations.

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

29.2.2 show lldp port

Display the port specific LLDP configurations.

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

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

29.2.3 show lldp remote-data

Remote information collected with LLDP.

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

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

29.3 lldp

Configure of Link Layer Discovery Protocol on a port.

29.3.1 lldp admin-state

Configure how the interface processes LLDP frames.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp admin-state <P-1>

Parameter	Value	Meaning
P-1	tx-only	Interface will only transmit LLDP frames. Received frames are not processed.
	rx-only	Interface will only receive LLDP frames. Frames are not transmitted.
	tx-and-rx	Interface will transmit and receive LLDP frames. This is the default setting.
	disable	Interface will neither transmit nor process received LLDP frames.

29.3.2 lldp fdb-mode

Configure the LLDP FDB mode for this interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp fdb-mode <P-1>

Parameter	Value	Meaning
P-1	lldp-only	Collected remote data will be based on received LLDP frames only.
	mac-only	Collected remote data will be based on the switch's FDB entries only.
	both	Collected remote data will be based on received LLDP frames as well as on the switch's FDB entries.
	auto-detect	As long as no LLDP frames are received, the collected remote data will be based on the switch's FDB entries only. After the first LLDP frame is received, the remote data will be based on received LLDP frames only. This is the default setting.

29.3.3 lldp max-neighbors

Enter the LLDP max neighbors for interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp max-neighbors <P-1>

Parameter	Value	Meaning
P-1	1..50	Enter a number in the given range.

29.3.4 lldp notification

Enable or disable the LLDP notification operation for interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp notification

■ no lldp notification

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no lldp notification

29.3.5 lldp tlv mac-phy-config-state

Enable or disable mac-phy-config-state TLV transmission.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp tlv mac-phy-config-state <P-1>

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

■ no lldp tlv mac-phy-config-state

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no lldp tlv mac-phy-config-state <P-1>

29.3.6 lldp tlv max-frame-size

Enable or disable max-frame-size TLV transmission.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp tlv max-frame-size <P-1>

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

■ no lldp tlv max-frame-size

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no lldp tlv max-frame-size <P-1>

29.3.7 lldp tlv mgmt-addr

Enable or disable mgmt-addr TLV transmission.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp tlv mgmt-addr

■ no lldp tlv mgmt-addr

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no lldp tlv mgmt-addr

29.3.8 lldp tlv port-desc

Enable or disable port description TLV transmission.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp tlv port-desc <P-1>

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

■ no lldp tlv port-desc

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no lldp tlv port-desc <P-1>

29.3.9 lldp tlv port-vlan

Enable or disable port-vlan TLV transmission.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp tlv port-vlan

■ no lldp tlv port-vlan

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no lldp tlv port-vlan

29.3.10 lldp tlv protocol

Enable or disable protocol TLV transmission.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp tlv protocol

■ no lldp tlv protocol

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no lldp tlv protocol

29.3.11 lldp tlv sys-cap

Enable or disable system capabilities TLV transmission.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp tlv sys-cap <P-1>

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

■ no lldp tlv sys-cap

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no lldp tlv sys-cap <P-1>

29.3.12 lldp tlv sys-desc

Enable or disable system description TLV transmission.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp tlv sys-desc <P-1>

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

■ no lldp tlv sys-desc

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no lldp tlv sys-desc <P-1>

29.3.13 lldp tlv sys-name

Enable or disable system name TLV transmission.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp tlv sys-name <P-1>

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

■ no lldp tlv sys-name

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no lldp tlv sys-name <P-1>

29.3.14 lldp tlv vlan-name

Enable or disable vlan name TLV transmission.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp tlv vlan-name

■ no lldp tlv vlan-name

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no lldp tlv vlan-name

29.3.15 lldp tlv protocol-based-vlan

Enable or disable protocol-based vlan TLV transmission.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: lldp tlv protocol-based-vlan

■ **no lldp tlv protocol-based-vlan**

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no lldp tlv protocol-based-vlan

30 Logging

30.1 logging

Logging configuration.

30.1.1 logging audit-trail

Add a comment for the audit trail.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: logging audit-trail <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 80 characters.

30.1.2 logging buffered severity

Configure the minimum severity level to be logged to the high priority buffer.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: logging buffered severity <P-1>

Parameter	Value	Meaning
P-1	emergency	System is unusable. System failure has occurred.
	alert	Action must be taken immediately. Unrecoverable failure of a component. System failure likely.
	critical	Recoverable failure of a component that may lead to system failure.
	error	Error conditions. Recoverable failure of a component.
	warning	Minor failure, e.g. misconfiguration of a component.
	notice	Normal but significant conditions.
	informational	Informational messages.
	debug	Debug-level messages.
	0	Same as emergency
	1	Same as alert
	2	Same as critical
	3	Same as error
	4	Same as warning
	5	Same as notice
	6	Same as informational
	7	Same as debug

30.1.3 logging host add

Add a new logging host.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: logging host add <P-1> addr <P-2> [transport <P-3>] [port <P-4>] [severity <P-5>] [type <P-6>]

addr: Enter the IP address of the server.

[transport]: Configure the type of transport used for syslog server transmission.

[port]: Enter the port used for syslog server transmission.

[severity]: Configure the minimum severity level to be sent to this syslog server.

[type]: Configure the type of log messages to be sent to the syslog server.

Parameter	Value	Meaning
P-1	1..8	Syslog server entry index
P-2	A.B.C.D	IP address.
P-3	udp	The UDP-based transmission.
	tls	The TLS-based transmission.
P-4	1..65535	Port number to be used

Parameter	Value	Meaning
P-5	emergency	System is unusable. System failure has occurred.
	alert	Action must be taken immediately. Unrecoverable failure of a component. System failure likely.
	critical	Recoverable failure of a component that may lead to system failure.
	error	Error conditions. Recoverable failure of a component.
	warning	Minor failure, e.g. misconfiguration of a component.
	notice	Normal but significant conditions.
	informational	Informational messages.
	debug	Debug-level messages.
	0	Same as emergency
	1	Same as alert
	2	Same as critical
	3	Same as error
	4	Same as warning
P-6	systemlog	the system event log entries
	audittrail	the audit trail log entries

30.1.4 logging host delete

Delete a logging host.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: logging host delete <P-1>

Parameter	Value	Meaning
P-1	1..8	Syslog server entry index

30.1.5 logging host enable

Enable a logging host.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: logging host enable <P-1>

Parameter	Value	Meaning
P-1	1..8	Syslog server entry index

30.1.6 logging host disable

Disable a logging host.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: logging host disable <P-1>

Parameter	Value	Meaning
P-1	1..8	Syslog server entry index

30.1.7 logging host modify

Modify an existing logging host.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: logging host modify <P-1> [addr <P-2>] [transport <P-3>] [port <P-4>] [severity <P-5>] [type <P-6>]

[addr]: Enter the IP address of the server.

[transport]: Configure the type of transport used for syslog server transmission.

[port]: Enter the port used for syslog server transmission.

[severity]: Configure the minimum severity level to be sent to this syslog server.

[type]: Configure the type of log messages to be sent to the syslog server.

Parameter	Value	Meaning
P-1	1..8	Syslog server entry index
P-2	A.B.C.D	IP address.
P-3	udp	The UDP-based transmission.
	tls	The TLS-based transmission.
P-4	1..65535	Port number to be used

Parameter	Value	Meaning
P-5	emergency	System is unusable. System failure has occurred.
	alert	Action must be taken immediately. Unrecoverable failure of a component. System failure likely.
	critical	Recoverable failure of a component that may lead to system failure.
	error	Error conditions. Recoverable failure of a component.
	warning	Minor failure, e.g. misconfiguration of a component.
	notice	Normal but significant conditions.
	informational	Informational messages.
	debug	Debug-level messages.
	0	Same as emergency
	1	Same as alert
	2	Same as critical
	3	Same as error
	4	Same as warning
	5	Same as notice
P-6	systemlog	the system event log entries
	audittrail	the audit trail log entries

30.1.8 logging syslog operation

Enable or disable the syslog client.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging syslog operation

■ no logging syslog operation

Disable the option

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

30.1.9 logging current-console operation

Enable or disable logging messages to the current remote console.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging current-console operation

■ no logging current-console operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no logging current-console operation

30.1.10 logging current-console severity

Configure the minimum severity level to be sent to the current remote console.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging current-console severity <P-1>

Parameter	Value	Meaning
P-1	emergency	System is unusable. System failure has occurred.
	alert	Action must be taken immediately. Unrecoverable failure of a component. System failure likely.
	critical	Recoverable failure of a component that may lead to system failure.
	error	Error conditions. Recoverable failure of a component.
	warning	Minor failure, e.g. misconfiguration of a component.
	notice	Normal but significant conditions.
	informational	Informational messages.
	debug	Debug-level messages.
	0	Same as emergency
	1	Same as alert
	2	Same as critical
	3	Same as error
	4	Same as warning
	5	Same as notice
	6	Same as informational
	7	Same as debug

30.1.11 logging console operation

Enable or disable logging to the local V.24 console.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging console operation

■ no logging console operation

Disable the option

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

30.1.12 logging console severity

Configure the minimum severity level to be logged to the V.24 console.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging console severity <P-1>

Parameter	Value	Meaning
P-1	emergency	System is unusable. System failure has occurred.
	alert	Action must be taken immediately. Unrecoverable failure of a component. System failure likely.
	critical	Recoverable failure of a component that may lead to system failure.
	error	Error conditions. Recoverable failure of a component.
	warning	Minor failure, e.g. misconfiguration of a component.
	notice	Normal but significant conditions.
	informational	Informational messages.
	debug	Debug-level messages.
	0	Same as emergency
	1	Same as alert
	2	Same as critical
	3	Same as error
	4	Same as warning
	5	Same as notice
	6	Same as informational
	7	Same as debug

30.1.13 logging persistent operation

Enable or disable persistent logging. This feature is only available when an ENVM is connected to the device. The logging information is saved on the selected ENVM.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging persistent operation

■ no logging persistent operation

Disable the option

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

30.1.14 logging persistent numfiles

Enter the maximum number of log files.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging persistent numfiles <P-1>

Parameter	Value	Meaning
P-1	0..25	number of logfiles

30.1.15 logging persistent filesize

Enter the maximum size of a log file.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging persistent filesize <P-1>

Parameter	Value	Meaning
P-1	0..4096	Maximum persistent logfile size on the non-volatile memory in kBytes

30.1.16 logging persistent severity-level

Configure the minimum severity level to be logged into files.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging persistent severity-level <P-1>

Parameter	Value	Meaning
P-1	emergency	System is unusable. System failure has occurred.
	alert	Action must be taken immediately. Unrecoverable failure of a component. System failure likely.
	critical	Recoverable failure of a component that may lead to system failure.
	error	Error conditions. Recoverable failure of a component.
	warning	Minor failure, e.g. misconfiguration of a component.
	notice	Normal but significant conditions.
	informational	Informational messages.
	debug	Debug-level messages.
	0	Same as emergency
	1	Same as alert
	2	Same as critical
	3	Same as error
	4	Same as warning
	5	Same as notice
	6	Same as informational
	7	Same as debug

30.2 show

Display device options and settings.

30.2.1 show logging buffered

Display the buffered (in-memory) log entries.

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

Parameter	Value	Meaning
P-1	string	<filter> Enter a comma separated list of severity ranges, numbers or enum strings are allowed. Example: 0-1,informational-debug

30.2.2 show logging traplogs

Display the trap log entries.

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

30.2.3 show logging console

Display the console logging configurations.

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

30.2.4 show logging persistent

Display the persistent logging configurations.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show logging persistent [logfiles]
[logfiles]: List the persistent log files.

30.2.5 show logging syslog

Display the current syslog operational setting.

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

30.2.6 show logging host

Display a list of logging hosts currently configured.

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

30.3 copy

Copy different kinds of items.

30.3.1 copy eventlog buffered envm

Copy a buffered log from the device to external non-volatile memory.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: copy eventlog buffered envm <P-1>

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

30.3.2 copy eventlog buffered remote

Copy a buffered log from the device to a file server.

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

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

30.3.3 copy eventlog persistent

Copy the persistent logs from the device to an envm or a file server.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: copy eventlog persistent <P-1> envm <P-2> remote <P-3>
envm: Copy the persistent log from the device to external non-volatile memory.

remote: Copy the persistent logs from the device to a file server.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 32 characters.
P-2	string	Enter a user-defined text, max. 32 characters.
P-3	string	Enter a user-defined text, max. 128 characters.

30.3.4 copy traplog system envm

Copy the traplog from the device to external non-volatile memory.

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

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

30.3.5 copy traplog system remote

Copy the traplog from the device to a file server

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

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

30.3.6 copy audittrail system envm

Copy the audit trail from the device to external non-volatile memory.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator, Auditor
- ▶ Format: copy audittrail system envm <P-1>

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

30.3.7 copy audittrail system remote

Copy the audit trail from the device to a file server.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator, Auditor
- ▶ Format: copy audittrail system remote <P-1>

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

30.4 clear

Clear several items.

30.4.1 clear logging buffered

Clear buffered log from memory.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: clear logging buffered

30.4.2 clear logging persistent

Clear persistent log from memory.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: clear logging persistent

30.4.3 clear eventlog

Clear the event log entries from memory.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: clear eventlog

31 Management Access

31.1 network

Configure the inband and outband connectivity.

31.1.1 network management access web timeout

Set the web interface idle timeout.

- Mode: Privileged Exec Mode
- Privilege Level: Administrator
- Format: network management access web timeout <P-1>

Parameter	Value	Meaning
P-1	0..160	Idle timeout of a session in minutes (default: 5).

31.1.2 network management access add

Add a new entry with index.

- Mode: Privileged Exec Mode
- Privilege Level: Administrator
- Format: network management access add <P-1> [interface <P-2>] [ip <P-3>] [mask <P-4>] [http <P-5>] [https <P-6>] [snmp <P-7>] [ssh <P-8>]

[interface]: Configure interface index on which management access should be restricted or allowed.

[ip]: Configure IP address which should have access to management.

[mask]: Configure network mask to allow a subnet for management access.

[http]: Configure if HTTP is allowed to have management access.

[https]: Configure if HTTPS is allowed to have management access.

[snmp]: Configure if SNMP is allowed to have management access.

[ssh]: Configure if SSH is allowed to have management access.

Parameter	Value	Meaning
P-1	1..16	Pool entry index.
P-2	slot no./port no.	
P-3	A.B.C.D	IP address.
P-4	0..32	Prefix length netmask.
P-5	enable	Enable the option.
	disable	Disable the option.
P-6	enable	Enable the option.
	disable	Disable the option.
P-7	enable	Enable the option.
	disable	Disable the option.
P-8	enable	Enable the option.
	disable	Disable the option.

31.1.3 network management access delete

Delete an entry with index.

- Mode: Privileged Exec Mode
- Privilege Level: Administrator
- Format: network management access delete <P-1>

Parameter	Value	Meaning
P-1	1..16	Pool entry index.

31.1.4 network management access modify

Modify an entry with index.

- Mode: Privileged Exec Mode
- Privilege Level: Administrator
- Format: network management access modify <P-1> interface <P-2> ip <P-3> mask <P-4> http <P-5> https <P-6> snmp <P-7> ssh <P-8>

[interface]: Configure interface index on which management access should be restricted or allowed.

ip: Configure ip-address which should have access to management.

mask: Configure network mask to allow a subnet for management access.

http: Configure if HTTP is allowed to have management access.
 https: Configure if HTTPS is allowed to have management access.
 snmp: Configure if SNMP is allowed to have management access.
 [ssh]: Configure if SSH is allowed to have management access.

Parameter	Value	Meaning
P-1	1..16	Pool entry index.
P-2	slot no./port no.	
P-3	A.B.C.D	IP address.
P-4	0..32	Prefix length netmask.
P-5	enable	Enable the option.
	disable	Disable the option.
P-6	enable	Enable the option.
	disable	Disable the option.
P-7	enable	Enable the option.
	disable	Disable the option.
P-8	enable	Enable the option.
	disable	Disable the option.

31.1.5 network management access operation

Enable/Disable operation for RMA.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: network management access operation

■ no network management access operation

Disable the option

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no network management access operation

31.1.6 network management access status

Activate/Deactivate an entry.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: network management access status <P-1>

Parameter	Value	Meaning
P-1	1..16	Pool entry index.

■ no network management access status

Disable the option

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no network management access status <P-1>

31.2 show

Display device options and settings.

31.2.1 show network management access global

Display the global restricted management access preferences.

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

31.2.2 show network management access rules

Display the restricted management access rules.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show network management access rules [<P-1>]

Parameter	Value	Meaning
P-1	1..16	Pool entry index.

32 Network Address Translation (NAT)

32.1 nat

Manage NAT rules

32.1.1 nat dnat commit

Commit pending changes for DNAT (commits all NAT changes).

► Mode: Global Config Mode

► Privilege Level: Operator

► Format: nat dnat commit

32.1.2 nat dnat add

Add rule to DNAT

► Mode: Global Config Mode

► Privilege Level: Operator

► Format: nat dnat add <P-1> [cfg <P-2> <P-3> <P-4> <P-5> <P-6> <P-7> <P-8> [<P-9>]]

[cfg]: Configure the rule immediately

Parameter	Value	Meaning
P-1	1..255	DNAT rule number
P-2	a.b.c.d	Source IP address
	a.b.c.d/n	CIDR mask
	!a.b.c.d	!<a.b.c.d> Everything BUT this address
	!a.b.c.d/n	!<a.b.c.d/n> Everything BUT this CIDR mask
	any	any Any
P-3	number	number UDP/TCP Source Port
	nu-nu	nu-nu Port Range
	nu,nu-nu	nu,nu-nu List of ports (or port ranges)
	any	any Any port (or protocol without a port)
P-4	a.b.c.d	Destination IP address
	a.b.c.d/n	CIDR mask
	!a.b.c.d	!<a.b.c.d> Everything BUT this address
	!a.b.c.d/n	!<a.b.c.d/n> Everything BUT this CIDR mask
	any	any Any
P-5	number	number of the UDP/TCP Destination Port
	nu-nu	nu-nu Port Range
	number,number	nu,nu-nu List of ports (or port ranges)
	any	any Any port (or protocol without a port)
P-6	a.b.c.d	New destination IP address
P-7	number	number of the UDP/TCP New Destination Port
	any	any Any port (or protocol without a port)
P-8	icmp	Internet Control Message Protocol
	igmp	Internet Group Management Protocol
	ipip	IP-within-IP Encapsulation Protocol
	tcp	Transmission Control Protocol
	udp	User Datagram Protocol
	esp	Encapsulating Security Protocol
	ah	Authentication Header
	any	Any of the above
P-9	string	Rule description/name

32.1.3 nat dnat modify

Configure single DNAT rule

► Mode: Global Config Mode

► Privilege Level: Operator

► Format: nat dnat modify <P-1> <P-2> <P-3> <P-4> <P-5> <P-6> <P-7> <P-8> [<P-9>]

Parameter	Value	Meaning
P-1	1..255	DNAT rule number

Parameter	Value	Meaning
P-2	a.b.c.d	Source IP address
	a.b.c.d/n	CIDR mask
	!a.b.c.d	!<a.b.c.d> Everything BUT this address
	!a.b.c.d/n	!<a.b.c.d/n> Everything BUT this CIDR mask
	any	any Any
P-3	number	number UDP/TCP Source Port
	nu-nu	nu-nu Port Range
	nu,nu-nu	nu,nu-nu List of ports (or port ranges)
	any	any Any port (or protocol without a port)
P-4	a.b.c.d	Destination IP address
	a.b.c.d/n	CIDR mask
	!a.b.c.d	!<a.b.c.d> Everything BUT this address
	!a.b.c.d/n	!<a.b.c.d/n> Everything BUT this CIDR mask
	any	any Any
P-5	number	number of the UDP/TCP Destination Port
	nu-nu	nu-nu Port Range
	number,number	nu,nu-nu List of ports (or port ranges)
	any	any Any port (or protocol without a port)
P-6	a.b.c.d	New destination IP address
P-7	number	number of the UDP/TCP New Destination Port
	any	any Any port (or protocol without a port)
P-8	icmp	Internet Control Message Protocol
	igmp	Internet Group Management Protocol
	ipip	IP-within-IP Encapsulation Protocol
	tcp	Transmission Control Protocol
	udp	User Datagram Protocol
	esp	Encapsulating Security Protocol
	ah	Authentication Header
	any	Any of the above
P-9	string	Rule description/name

32.1.4 nat dnat delete

Delete rule from DNAT

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat dnat delete <P-1>

Parameter	Value	Meaning
P-1	1..255	DNAT rule number

32.1.5 nat dnat logtrap

Set log/trap for DNAT rule

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat dnat logtrap <P-1> <P-2> <P-3>

Parameter	Value	Meaning
P-1	1..255	DNAT rule number
P-2	no	Disable Logging
	yes	Enable Logging
P-3	no	Disable SNMP Trap
	yes	Enable SNMP Trap

32.1.6 nat dnat state

Enable/Disable specific DNAT rule

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat dnat state <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..255	DNAT rule number
P-2	enable	Enable the option.
	disable	Disable the option.

32.1.7 nat dnat if add

Add Interface

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: nat dnat if add <P-1> <P-2> <P-3>

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	1..255	DNAT rule number
P-3	0..6500	Priority

32.1.8 nat dnat if delete

Delete interface

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: nat dnat if delete <P-1> <P-2>

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	1..255	DNAT rule number

32.1.9 nat 1to1nat commit

Commit pending changes for 1:1 NAT (commits every NAT change).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: nat 1to1nat commit

32.1.10 nat 1to1nat add

Add rule to 1:1 NAT

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: nat 1to1nat add <P-1> [cfg <P-2> <P-3> <P-4>] [ingress <P-5>] [egress <P-6>] [<P-7>]

[cfg]: Configure the rule immediately

[ingress]: Configure ingress interface

[egress]: Configure egress interface

Parameter	Value	Meaning
P-1	1..256	1:1 NAT rule number
P-2	a.b.c.d	Virtual destination IP address
	a.b.c.d/n	CIDR mask
P-3	a.b.c.d	Actual destination IP address
	a.b.c.d/n	CIDR mask
P-4	0..6500	Priority
P-5	slot no./port no.	
P-6	slot no./port no.	
P-7	string	Rule description/name

32.1.11 nat 1to1nat modify

Configure single 1:1 NAT rule

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: nat 1to1nat modify <P-1> <P-2> <P-3> <P-4> [ingress <P-5>] [egress <P-6>] [<P-7>]

[ingress]: Configure ingress interface

[egress]: Configure egress interface

Parameter	Value	Meaning
P-1	1..256	1:1 NAT rule number
P-2	a.b.c.d	Virtual destination IP address
	a.b.c.d/n	CIDR mask
P-3	a.b.c.d	Actual destination IP address
	a.b.c.d/n	CIDR mask
P-4	0..6500	Priority
P-5	slot no./port no.	

Parameter	Value	Meaning
P-6	slot no./port no.	
P-7	string	Rule description/name

32.1.12 nat 1to1nat delete

Delete the rule from 1:1 NAT

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: nat 1to1nat delete <P-1>

Parameter	Value	Meaning
P-1	1..256	1:1 NAT rule number

32.1.13 nat 1to1nat logtrap

Set log/trap for 1:1 NAT rule

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: nat 1to1nat logtrap <P-1> <P-2> <P-3>

Parameter	Value	Meaning
P-1	1..256	1:1 NAT rule number
P-2	no	Disable Logging
	yes	Enable Logging
P-3	no	Disable SNMP Trap
	yes	Enable SNMP Trap

32.1.14 nat 1to1nat state

Enable/Disable specific 1:1 NAT rule

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: nat 1to1nat state <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..256	1:1 NAT rule number
P-2	enable	Enable the option.
	disable	Disable the option.

32.1.15 nat masq commit

Commit pending changes for Masquerading (commits every NAT change).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: nat masq commit

32.1.16 nat masq add

Add rule to Masquerading

- ▶ Mode: Global Config Mode
 - ▶ Privilege Level: Operator
 - ▶ Format: nat masq add <P-1> [cfg <P-2> <P-3> <P-4> [<P-5>]]
- [cfg]: Configure the rule immediately

Parameter	Value	Meaning
P-1	1..128	Masquerading rule number
P-2	a.b.c.d	Source IP address
	a.b.c.d/n	CIDR mask
	!a.b.c.d	!<a.b.c.d> Everything BUT this address
	!a.b.c.d/n	!<a.b.c.d/n> Everything BUT this CIDR mask
	any	any Any
P-3	number	number UDP/TCP Source Port
	nu-nu	nu-nu Port Range
	nu,nu-nu	nu,nu-nu List of ports (or port ranges)
	any	any Any port (or protocol without a port)
P-4	tcp	Transmission Control Protocol
	udp	User Datagram Protocol
	any	Any protocol at all
P-5	string	Rule description/name

32.1.17 nat masq modify

Configure single Masquerading rule

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: nat masq modify <P-1> <P-2> <P-3> <P-4> [<P-5>]

Parameter	Value	Meaning
P-1	1..128	Masquerading rule number
P-2	a.b.c.d	Source IP address
	a.b.c.d/n	CIDR mask
	!a.b.c.d	!<a.b.c.d> Everything BUT this address
	!a.b.c.d/n	!<a.b.c.d/n> Everything BUT this CIDR mask
	any	any Any
P-3	number	number UDP/TCP Source Port
	nu-nu	nu-nu Port Range
	nu,nu-nu	nu,nu-nu List of ports (or port ranges)
	any	any Any port (or protocol without a port)
P-4	tcp	Transmission Control Protocol
	udp	User Datagram Protocol
	any	Any protocol at all
P-5	string	Rule description/name

32.1.18 nat masq delete

Delete rule from Masquerading

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: nat masq delete <P-1>

Parameter	Value	Meaning
P-1	1..128	Masquerading rule number

32.1.19 nat masq logtrap

Set log/trap for Masquerading rule

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: nat masq logtrap <P-1> <P-2> <P-3>

Parameter	Value	Meaning
P-1	1..128	Masquerading rule number
P-2	no	Disable Logging
	yes	Enable Logging
P-3	no	Disable SNMP Trap
	yes	Enable SNMP Trap

32.1.20 nat masq ipsec-exempt

Exclude IPsec traffic from Masquerading rule

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: nat masq ipsec-exempt <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..128	Masquerading rule number
P-2	disabled	Apply rule to IPsec traffic
	enabled	Do not apply rule to IPsec traffic

32.1.21 nat masq state

Enable/Disable specific Masquerading rule

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: nat masq state <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..128	Masquerading rule number
P-2	enable	Enable the option.
	disable	Disable the option.

32.1.22 nat masq if add

Add interface

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat masq if add <P-1> <P-2> <P-3>

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	1..128	Masquerading rule number
P-3	0..6500	Priority

32.1.23 nat masq if delete

Delete interface

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat masq if delete <P-1> <P-2>

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	1..128	Masquerading rule number

32.1.24 nat doublenat commit

Commit pending changes for Double NAT (commits all NAT changes).

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat doublenat commit

32.1.25 nat doublenat add

Add rule to Double NAT

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat doublenat add <P-1> [cfg <P-2> <P-3> <P-4> <P-5> [<P-6>]]
[cfg]: Configure the rule immediately

Parameter	Value	Meaning
P-1	1..255	Double NAT rule number
P-2	a.b.c.d	Local internal IP address
P-3	a.b.c.d	Local external IP address
P-4	a.b.c.d	Remote Internal IP Address
P-5	a.b.c.d	Remote External IP Address
P-6	string	Rule description/name

32.1.26 nat doublenat modify

Configure single Double NAT rule

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat doublenat modify <P-1> <P-2> <P-3> <P-4> <P-5> [<P-6>]

Parameter	Value	Meaning
P-1	1..255	Double NAT rule number
P-2	a.b.c.d	Local internal IP address
P-3	a.b.c.d	Local external IP address
P-4	a.b.c.d	Remote Internal IP Address
P-5	a.b.c.d	Remote External IP Address
P-6	string	Rule description/name

32.1.27 nat doublenat delete

Delete rule from Double NAT

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: nat doublenat delete <P-1>

Parameter	Value	Meaning
P-1	1..255	Double NAT rule number

32.1.28 nat doublenat logtrap

Set log/trap for Double NAT rule

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: nat doublenat logtrap <P-1> <P-2> <P-3>

Parameter	Value	Meaning
P-1	1..255	Double NAT rule number
P-2	no	Disable Logging
	yes	Enable Logging
P-3	no	Disable SNMP Trap
	yes	Enable SNMP Trap

32.1.29 nat doublenat state

Enable/Disable specific Double NAT rule

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: nat doublenat state <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..255	Double NAT rule number
P-2	enable	Enable the option.
	disable	Disable the option.

32.1.30 nat doublenat if add

Add Interface

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: nat doublenat if add <P-1> <P-2> <P-3> <P-4>

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	ingress	Ingress
	egress	Egress
	both	Both
P-3	1..255	Double NAT rule number
P-4	0..6500	Priority

32.1.31 nat doublenat if delete

Delete interface

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: nat doublenat if delete <P-1> <P-2> <P-3>

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	ingress	Ingress
	egress	Egress
	both	Both
P-3	1..255	Double NAT rule number

32.2 show

Display device options and settings.

32.2.1 show nat dnat global

Display the summary.

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

32.2.2 show nat dnat rules

Display the DNAT rules.

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

Parameter	Value	Meaning
P-1	1..255	DNAT rule number

32.2.3 show nat dnat if

Display the DNAT interface configuration.

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

32.2.4 show nat dnat logtrap

Display the Log/Trap settings for the DNAT rules.

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

Parameter	Value	Meaning
P-1	1..255	DNAT rule number

32.2.5 show nat masq global

Display the summary.

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

32.2.6 show nat masq rules

Display the masquerading rules.

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

Parameter	Value	Meaning
P-1	1..128	Masquerading rule number

32.2.7 show nat masq logtrap

Display the Log/Trap settings for the masquerading rules.

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

Parameter	Value	Meaning
P-1	1..128	Masquerading rule number

32.2.8 show nat masq if

Display the masquerading interface configuration.

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

32.2.9 show nat 1to1nat global

Display the summary.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show nat 1to1nat global

32.2.10 show nat 1to1nat rules

Display the 1:1 NAT rules.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show nat 1to1nat rules [<P-1>]

Parameter	Value	Meaning
P-1	1..256	1:1 NAT rule number

32.2.11 show nat 1to1nat logtrap

Display the Log/Trap settings for 1:1 NAT rules.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show nat 1to1nat logtrap [<P-1>]

Parameter	Value	Meaning
P-1	1..256	1:1 NAT rule number

32.2.12 show nat doublenat global

Display the summary.

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

32.2.13 show nat doublenat rules

Display the Double NAT rules.

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

Parameter	Value	Meaning
P-1	1..255	Double NAT rule number

32.2.14 show nat doublenat logtrap

Display the Log/Trap settings for the Double NAT rules.

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

Parameter	Value	Meaning
P-1	1..255	Double NAT rule number

32.2.15 show nat doublenat if

Display the Double NAT interface configuration.

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

33 Network Time Protocol (NTP)

33.1 ntp

Configure NTP settings.

33.1.1 ntp client operation

Enable or disable the NTP client.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ntp client operation <P-1>

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

33.1.2 ntp client operating-mode

Set the NTP client operating mode.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ntp client operating-mode <P-1>

Parameter	Value	Meaning
P-1	unicast	Enable NTP client in unicast operating mode.
	broadcast	Enable NTP client in broadcast operating mode.

33.1.3 ntp server operation

Enable or disable the NTP server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ntp server operation <P-1>

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

33.1.4 ntp server operating-mode

Set the NTP server operating mode.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ntp server operating-mode <P-1>

Parameter	Value	Meaning
P-1	symmetric	Enable NTP server in symmetric operating mode.
	client-server	Enable NTP server in client-server operating mode.

33.1.5 ntp server localclock-stratum

Set the stratum of the localclock.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ntp server localclock-stratum <P-1>

Parameter	Value	Meaning
P-1	1..16	Localclock stratum.

33.1.6 ntp peers add

Add a new peer.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ntp peers add <P-1> ip <P-2> [iburst <P-3>] [burst <P-4>] [prefer <P-5>]

ip: Set the peer address.

[iburst]: Speed up the initial synchronization (default: disabled). Used only when operating in client-unicast mode.

[burst]: Increase the precision on links with high jitter (default: disabled). Used only in client-unicast mode.
[prefer]: If correctly operating, choose this peer as synchronization source (default: disabled).

Parameter	Value	Meaning
P-1	1..4	NTP servers index.
P-2	A.B.C.D	IP address.
P-3	enable	Enable the option.
	disable	Disable the option.
P-4	enable	Enable the option.
	disable	Disable the option.
P-5	enable	Enable the option.
	disable	Disable the option.

33.1.7 ntp peers delete

Delete a peer.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ntp peers delete <P-1>

Parameter	Value	Meaning
P-1	1..4	NTP servers index.

33.2 show

Display device options and settings.

33.2.1 show ntp client-status

Status of the NTP client connection.

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

33.2.2 show ntp server-status

Overall operational status of the NTP server.

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

34 Packet Filter

34.1 packet-filter

Creation and configuration of Firewall rules.

34.1.1 packet-filter l3 commit

Writes all changes made in the L3 firewall configuration to the device

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: packet-filter l3 commit

34.1.2 packet-filter l3 defaultpolicy

Sets the default policy of the L3 and DynFw rule tables

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: packet-filter l3 defaultpolicy <P-1>

Parameter	Value	Meaning
P-1	accept	Accept packets
	drop	Drop packets without notification
	reject	Drop packets and notify source

34.1.3 packet-filter l3 checksum-validation

Configures the connection tracking checksum validation in Netfilter

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: packet-filter l3 checksum-validation

■ no packet-filter l3 checksum-validation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no packet-filter l3 checksum-validation

34.1.4 packet-filter l3 addrule

Adds a rule to the L3 firewall table

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: packet-filter l3 addrule <P-1> <P-2> <P-3> <P-4> <P-5> <P-6> <P-7> protocol-name <P-8> [description <P-9>] [profile-index <P-10>]

protocol-name: Protocol Name

[description]: Rule description/name for the L3 firewall rule

[profile-index]: Profile index of the DPI profile this rule is assigned to depending on enforcer action. Value 0 no profile this rule is assigned to. You cannot assign the rule to an inactive profile if an active enforcer will mapping to it.

Parameter	Value	Meaning
P-1	1..2048	Rule index
P-2	string	Source IP address/CIDR mask/'any'/asset name from asset table
P-3	string	Source port/port list with comma/port range with hyphen/'any'
P-4	string	Target IP address/CIDR mask/'any'/asset name from asset table
P-5	string	Target port/port list with comma/port range with hyphen/'any'
P-6	string	Parameters for rule (or 'none')

Parameter	Value	Meaning
P-7	accept	Accept packets.
	drop	Drop packets without notification.
	reject	Drop packets and notify source.
	enforce-modbus	Accept or drop packets by Modbus TCP/IP enforcer, protocol should be TCP or UDP.
	enforce-opc	Accept or drop packets by OPC enforcer, protocol should be TCP.
	enforce-iec104	Accept or drop packets by IEC104 enforcer, protocol should be TCP.
	enforce-ethernetip	Accept or drop packets by ENIP enforcer, protocol should be TCP.
	enforce-dnp3	Accept or drop packets by DNP3 enforcer, protocol should be TCP.
P-8	string	Protocol Name from protocol table or tcp/udp/icmp/igmp/ipp/esp/ah/icmpv6/any
P-9	string	Rule description/name
P-10	0..32	Profile index 0 - 32

34.1.5 packet-filter l3 modifyrule

Modifies a rule to the L3 firewall table

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: packet-filter l3 modifyrule <P-1> <P-2> <P-3> <P-4> <P-5> <P-6> <P-7>
protocol-name <P-8> [description <P-9>] [profile-index <P-10>]

protocol-name: Protocol Name

[description]: Rule description/name for the L3 firewall rule

[profile-index]: Profile index of the DPI profile this rule is assigned to depending on enforcer action. Value 0 no profile this rule is assigned to. You cannot assign the rule to an inactive profile if an active enforcer will mapping to it.

Parameter	Value	Meaning
P-1	1..2048	Rule index
P-2	string	Source IP address/CIDR mask/'any'/asset name from asset table
P-3	string	Source port/port list with comma/port range with hyphen/'any'
P-4	string	Target IP address/CIDR mask/'any'/asset name from asset table
P-5	string	Target port/port list with comma/port range with hyphen/'any'
P-6	string	Parameters for rule (or 'none')
P-7	accept	Accept packets.
	drop	Drop packets without notification.
	reject	Drop packets and notify source.
	enforce-modbus	Accept or drop packets by Modbus TCP/IP enforcer, protocol should be TCP or UDP.
	enforce-opc	Accept or drop packets by OPC enforcer, protocol should be TCP.
	enforce-iec104	Accept or drop packets by IEC104 enforcer, protocol should be TCP.
	enforce-ethernetip	Accept or drop packets by ENIP enforcer, protocol should be TCP.
	enforce-dnp3	Accept or drop packets by DNP3 enforcer, protocol should be TCP.
P-8	string	Protocol Name from protocol table or tcp/udp/icmp/igmp/ipp/esp/ah/icmpv6/any
P-9	string	Rule description/name
P-10	0..32	Profile index 0 - 32

34.1.6 packet-filter l3 delrule

Deletes a rule from L3 rule table

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: packet-filter l3 delrule <P-1>

Parameter	Value	Meaning
P-1	1..2048	Rule index

34.1.7 packet-filter l3 enablerule

Enables a rule from L3 rule table. A rule can only be enabled when all the required parameters are set. You cannot enable a rule if the mapped enforcer's profile is inactive.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: packet-filter l3 enablerule <P-1>

Parameter	Value	Meaning
P-1	1..2048	Rule index

34.1.8 packet-filter l3 disablerule

Disables a rule from L3 rule table

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: packet-filter l3 disablerule <P-1>

Parameter	Value	Meaning
P-1	1..2048	Rule index

34.1.9 packet-filter l3 logmode

Set logmode for a rule from L3 rule table

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: packet-filter l3 logmode <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..2048	Rule index
P-2	log	Log when rule is applied
	trap	Send trap when rule is applied
	logtrap	Log and send trap when rule is applied
	none	Disable log and trap

34.1.10 packet-filter l3 addif

Adds an interface to a L3 firewall rule

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: packet-filter l3 addif <P-1> <P-2> <P-3> <P-4>

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	ingress	Rule applies on ingress direction.
	egress	Rule applies on egress direction.
	both	Rule applies in ingress and egress direction.
P-3	1..2048	Rule index
P-4	0..4294967295	Priority

34.1.11 packet-filter l3 delif

Deletes an interface of a L3 firewall rule

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: packet-filter l3 delif <P-1> <P-2> <P-3>

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	ingress	Rule applies on ingress direction.
	egress	Rule applies on egress direction.
	both	Rule applies in ingress and egress direction.
P-3	1..2048	Rule index

34.1.12 packet-filter l3 enableif

Enables an interface of a L3 firewall rule

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: packet-filter l3 enableif <P-1> <P-2> <P-3>

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	ingress	Rule applies on ingress direction.
	egress	Rule applies on egress direction.
	both	Rule applies in ingress and egress direction.
P-3	1..2048	Rule index

34.1.13 packet-filter l3 disableif

Disables an interface of a L3 firewall rule

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: packet-filter l3 disableif <P-1> <P-2> <P-3>

Parameter	Value	Meaning
P-1	slot no./port no.	
P-3	ingress	Rule applies on ingress direction.
	egress	Rule applies on egress direction.
	both	Rule applies in ingress and egress direction.
P-3	1..2048	Rule index

34.1.14 packet-filter l2 commit

Writes all changes made in the L2 firewall configuration to the device

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: packet-filter l2 commit

34.1.15 packet-filter l2 defaultpolicy

Sets the default policy of the L2 rule tables.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: packet-filter l2 defaultpolicy <P-1>

Parameter	Value	Meaning
P-1	accept	Accept packets.
	drop	Drop packets without notification.

34.1.16 packet-filter l2 fcs-validation

Activates/Deactivates FCS validation

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: packet-filter l2 fcs-validation <P-1>

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

34.1.17 packet-filter l2 rule add

Adds a rule to the L2 firewall table.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: packet-filter l2 rule add <P-1> action <P-2> [src-mac <P-3>] [dst-mac <P-4>] [src-ip <P-5>] [sourceport <P-6>] [dest-ip <P-7>] [destport <P-8>] [ethertype <P-9>] [proto <P-10>] [vlan <P-11>] [assign-queue <P-12>] [description <P-13>] [profile-index <P-14>] [rate-limit <P-15> <P-16> <P-17>] [tos <P-18>] [log <P-19>] [trap <P-20>]

action: Set Action

[src-mac]: Specify the source MAC address/'any'/asset name from the asset table.

[dst-mac]: Specify the destination MAC address/'any'/asset name from the asset table.

[src-ip]: Specify the source IP address/CIDR mask/'any'/asset name from the asset table.

[sourceport]: Specify the source L4 port.

[dest-ip]: Specify the destination IP address/CIDR mask/'any'/asset name from the asset table.

[destport]: Specify the destination L4 port.

[ethertype]: Specify the Ethertype.

[proto]: Specify the protocol for the L2 firewall rule/user-defined protocol from the protocol table.

[vlan]: Specify the VLAN ID for L2 firewall rule.

[assign-queue]: Assign a user Queue.

[description]: Rule description/name for the L2 firewall rule.

[profile-index]: Profile index of the DPI profile this rule is assigned to depending on enforcer action. Value 0 no profile this rule is assigned to. You cannot assign the rule to an inactive profile if an active enforcer is mapped to it.

[rate-limit]: Specify the rate limit and burst size.

[tos]: Specify TOS for L2 rule.
[log]: Set logging.
[trap]: Set sending SNMP traps.

Parameter	Value	Meaning
P-1	1..2048	Rule index
P-2	accept	Accept packets.
	drop	Drop packets without notification.
	enforce-modbus	Accept or drop packets by Modbus TCP/IP enforcer, protocol should be TCP or UDP.
	enforce-opc	Accept or drop packets by OPC enforcer, protocol should be TCP.
	enforce-iec104	Accept or drop packets by IEC104 enforcer, protocol should be TCP.
	enforce-ethernetip	Accept or drop packets by ENIP enforcer, protocol should be TCP.
	enforce-dnp3	Accept or drop packets by DNP3 enforcer, protocol should be TCP.
	enforcer-amp	Accept or drop packets by AMP enforcer, protocol should be TCP.
	enforce-goose	Accept or drop packets by GOOSE.
P-3	string	Source MAC address/'any'/asset name from the asset table
P-4	string	Target MAC address/'any'/asset name from the asset table
P-5	string	Source IP address/CIDR mask/'any'/asset name from asset table
P-6	any	Any port/portless protocol
	a-b	Port Range
	a,b	Port List (may be longer than two ports)
	a-b, c-d	List of Port Ranges (may be longer than two ranges)
	1 to 65535	Port Number
P-7	string	Target IP address/CIDR mask/'any'/asset name from asset table
P-8	any	Any port/portless protocol
	a-b	Port Range
	a,b	Port List (may be longer than two ports)
	a-b, c-d	List of Port Ranges (may be longer than two ranges)
	1 to 65535	Port Number
P-9	value	Ethertype
	appletalk	Appletalk
	arp	ARP
	ibmsna	IBMSNA
	ipv4	IPv4
	ipv6	IPv6
	ipx-old	IPX-OLD
	mplsmcast	MPLS Multicast
	mplsucast	MPLS Unicast
	netbios	NetBIOS
	novell	NOVELL
	pppoedisc	PPPOEDISC
	rarp	RARP
	pppoesess	PPPOESESS
	ipxnew	IPXNEW
	profinet	PROFINET
	powerlink	POWERLINK
	ethercat	ETHERCAT
	vlan8021q	IEEE802_1Q VLAN
	goose	GOOSE
P-10	string	Protocol Name from protocol table or tcp/udp/icmp/igmp/ipp/esp/ah/icmpv6/any
P-11	1..4042	Enter a VLAN ID in the given range.
P-12	0..7	Enter a Queue ID in the given range.
P-13	string	Rule description/name
P-14	0..32	Profile index 0 - 32
P-15	0..10000000	Committed rate value, specified in kbps or pps.
P-16	0..128	Committed burst size value, specified in kbytes or pps.
P-17	pps	Packets per second.
	kbps	kbytes per second.
P-18	0..255	Specify the IP TOS bits to match.
P-19	enable	Enable logging when applying the rule
	disable	Do not log applying the rule
P-20	enable	Enable sending a trap when applying the rule
	disable	Do not send a trap when applying the rule

■ no packet-filter l2 rule add

Disable the option

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: no packet-filter l2 rule add action [src-mac] [dst-mac] [src-ip] [sourceport] [dest-ip] [destport] [ethertype] [proto] [vlan] [assign-queue] [description] [profile-index] [rate-limit] [tos] [log <P-19>] [trap <P-20>]

34.1.18 packet-filter l2 rule modify

Modifies a rule to the L2 firewall table.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: packet-filter l2 rule modify <P-1> [action <P-2>] [src-mac <P-3>] [dst-mac <P-4>] [src-ip <P-5>] [sourceport <P-6>] [dest-ip <P-7>] [destport <P-8>] [ethertype <P-9>] [proto <P-10>] [vlan <P-11>] [assign-queue <P-12>] [description <P-13>] [profile-index <P-14>] [rate-limit <P-15> <P-16> <P-17>] [tos <P-18>] [log <P-19>] [trap <P-20>]

[action]: Set Action

[src-mac]: Specify the source MAC address/'any'/asset name from the asset table.

[dst-mac]: Specify the destination MAC address/'any'/asset name from the asset table.

[src-ip]: Specify the source IP address/CIDR mask/'any'/asset name from the asset table.

[sourceport]: Specify the source L4 port.

[dest-ip]: Specify the destination IP address/CIDR mask/'any'/asset name from the asset table.

[destport]: Specify the destination L4 port.

[ethertype]: Specify the Ethertype.

[proto]: Specify the protocol for the L2 firewall rule/user-defined protocol from the protocol table.

[vlan]: Specify the VLAN ID for L2 firewall rule.

[assign-queue]: Assign a user Queue.

[description]: Rule description/name for L2 firewall rule.

[profile-index]: Profile index of the DPI profile this rule is assigned to depending on enforcer action. Value 0 no profile this rule is assigned to. You cannot assign the rule to an inactive profile if an active enforcer will mapping to it.

[rate-limit]: Specify the rate limit and burst size.

[tos]: Specify TOS for L2 rule.

[log]: Set logging.

[trap]: Set sending SNMP traps.

Parameter	Value	Meaning
P-1	1..2048	Rule index
P-2	accept	Accept packets.
	drop	Drop packets without notification.
	enforce-modbus	Accept or drop packets by Modbus TCP/IP enforcer, protocol should be TCP or UDP.
	enforce-opc	Accept or drop packets by OPC enforcer, protocol should be TCP.
	enforce-iec104	Accept or drop packets by IEC104 enforcer, protocol should be TCP.
	enforce-ethernetip	Accept or drop packets by ENIP enforcer, protocol should be TCP.
	enforce-dnp3	Accept or drop packets by DNP3 enforcer, protocol should be TCP.
	enforce-amp	Accept or drop packets by AMP enforcer, protocol should be TCP.
P-3	enforce-goose	Accept or drop packets by GOOSE.
	string	Source MAC address/'any'/asset name from the asset table
	string	Target MAC address/'any'/asset name from the asset table
	string	Source IP address/CIDR mask/'any'/asset name from asset table
	any	Any port/portless protocol
	a-b	Port Range
	a,b	Port List (may be longer than two ports)
	a-b, c-d	List of Port Ranges (may be longer than two ranges)
P-4	1 to 65535	Port Number
	string	Target IP address/CIDR mask/'any'/asset name from asset table
	any	Any port/portless protocol
	a-b	Port Range
	a,b	Port List (may be longer than two ports)
	a-b, c-d	List of Port Ranges (may be longer than two ranges)
	1 to 65535	Port Number
	string	Target IP address/CIDR mask/'any'/asset name from asset table

Parameter	Value	Meaning
P-9	value	Ethertype
	appletalk	Appletalk
	arp	ARP
	ibmsna	IBMSNA
	ipv4	IPv4
	ipv6	IPv6
	ipx-old	IPX-OLD
	mplsmcast	MPLS Multicast
	mplsucast	MPLS Unicast
	netbios	NetBIOS
	novell	NOVELL
	pppoedisc	PPPOEDISC
	rarp	RARP
	pppoesess	PPPOESESS
	ipxnew	IPXNEW
	profinet	PROFINET
	powerlink	POWERLINK
	ethercat	ETHERCAT
	vlan8021q	IEEE802.1Q VLAN
	goose	GOOSE
P-10	string	Protocol Name from protocol table or tcp/udp/icmp/igmp/ipp/esp/ah/icmpv6/any
P-11	1..4042	Enter a VLAN ID in the given range
P-12	0..7	Enter a Queue ID in the given range.
P-13	string	Rule description/name
P-14	0..32	Profile index 0 - 32
P-15	0..10000000	Committed rate value, specified in kbps or pps.
P-16	0..128	Committed burst size value, specified in kbytes or pps.
P-17	pps	Packets per second.
	kbps	kbytes per second.
P-18	0..255	Specify the IP TOS bits to match.
P-19	enable	Enable logging when applying the rule
	disable	Do not log applying the rule
P-20	enable	Enable sending a trap when applying the rule
	disable	Do not send a trap when applying the rule

■ no packet-filter l2 rule modify

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no packet-filter l2 rule modify [action] [src-mac] [dst-mac] [src-ip] [sourceport] [dest-ip] [destport] [ethertype] [proto] [vlan] [assign-queue] [description] [profile-index] [rate-limit] [tos] [log <P-19>] [trap <P-20>]

34.1.19 packet-filter l2 rule delete

Deletes a rule from L2 rule table.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: packet-filter l2 rule delete <P-1>

Parameter	Value	Meaning
P-1	1..2048	Rule index

34.1.20 packet-filter l2 rule enable

Enables a rule from L2 rule table.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: packet-filter l2 rule enable <P-1>

Parameter	Value	Meaning
P-1	1..2048	Rule index

34.1.21 packet-filter l2 rule disable

Disables a rule from L2 rule table.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: packet-filter l2 rule disable <P-1>

Parameter	Value	Meaning
P-1	1..2048	Rule index

34.1.22 packet-filter l2 if add

Adds an interface to a L2 firewall rule.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: packet-filter l2 if add <P-1> <P-2> <P-3> <P-4> <P-5>

Parameter	Value	Meaning
P-1	port	Interface type to use is physical interface.
	vlan	Interface type to use is L2 VLAN.
P-2	1..4042	Interface ID for rule assignment.
P-3	ingress	Rule applies on ingress direction.
	egress	Rule applies on egress direction.
P-4	1..2048	Rule index
P-5	0..4294967295	Priority

34.1.23 packet-filter l2 if delete

Deletes an interface of a L2 firewall rule.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: packet-filter l2 if delete <P-1> <P-2> <P-3> <P-4>

Parameter	Value	Meaning
P-1	port	Interface type to use is physical interface.
	vlan	Interface type to use is L2 VLAN.
P-2	1..4042	Interface ID for rule assignment.
P-3	ingress	Rule applies on ingress direction.
	egress	Rule applies on egress direction.
P-4	1..2048	Rule index

34.1.24 packet-filter l2 if enable

Enables an interface of a L2 firewall rule.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: packet-filter l2 if enable <P-1> <P-2> <P-3> <P-4>

Parameter	Value	Meaning
P-1	port	Interface type to use is physical interface.
	vlan	Interface type to use is L2 VLAN.
P-2	1..4042	Interface ID for rule assignment.
P-3	ingress	Rule applies on ingress direction.
	egress	Rule applies on egress direction.
P-4	1..2048	Rule index

34.1.25 packet-filter l2 if disable

Disables an interface of a L2 firewall rule.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: packet-filter l2 if disable <P-1> <P-2> <P-3> <P-4>

Parameter	Value	Meaning
P-1	port	Interface type to use is physical interface.
	vlan	Interface type to use is L2 VLAN.
P-2	1..4042	Interface ID for rule assignment.
P-3	ingress	Rule applies on ingress direction.
	egress	Rule applies on egress direction.
P-4	1..2048	Rule index

34.2 clear

Clear several items.

34.2.1 clear fw-state-table

Clear Firewall connection tracking table.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: clear fw-state-table

34.3 show

Display device options and settings.

34.3.1 show packet-filter l3 global

Display the packet-filter global information and settings.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show packet-filter l3 global

34.3.2 show packet-filter l3 maxrules

Max. number of allowed rules in L3 rule table

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show packet-filter l3 maxrules

34.3.3 show packet-filter l3 defaultpolicy

Default policy (accept(1), drop(2), reject(3))

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show packet-filter l3 defaultpolicy

34.3.4 show packet-filter l3 ruletable

Display the L3 rule table.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show packet-filter l3 ruletable

34.3.5 show packet-filter l3 iftable

Display the L3 interface mapping table.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show packet-filter l3 iftable

34.3.6 show packet-filter l3 pending

Display whether uncommitted changes for L3 exist.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show packet-filter l3 pending

34.3.7 show packet-filter l2 global

Display the packet-filter global information and settings.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show packet-filter l2 global

34.3.8 show packet-filter l2 rule

Display the L2 rule table.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: `show packet-filter l2 rule`

34.3.9 show packet-filter l2 if

Display the L2 interface mapping table.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: `show packet-filter l2 if`

35 Protocol

35.1 protocol

Protocol configuration.

35.1.1 protocol add

Add a Protocol configuration to the protocol table.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: protocol add <P-1> name <P-2> [description <P-3>] [protocol-type <P-4>] [ethertype <P-5>] [proto-number <P-6>] [port <P-7>]

name: Specify the Protocol Name

[description]: Specify the Protocol Description

[protocol-type]: Specify the Protocol Type

[ethertype]: Specify the ethernet type

[proto-number]: Specify the Protocol number

[port]: Specify the Port

Parameter	Value	Meaning
P-1	1..50	Protocol Index
P-2	string	Protocol Name
P-3	string	Protocol Description
P-4	any	any protocol
	ethernet	ethernet protocol
	icmp	internet control message protocol
	tcp	transmission control protocol
	udp	user datagram protocol
P-5	value	Ethertype
	appletalk	Appletalk
	arp	ARP
	ibmsna	IBMSNA
	ipv4	IPv4
	ipv6	IPv6
	ipx-old	IPX-OLD
	mplsmcast	MPLS Multicast
	mplsucast	MPLS Unicast
	netbios	NetBIOS
	novell	NOVELL
	pppoedisc	PPPOEDISC
	rarp	RARP
	pppoesess	PPPOESESS
	ipxnew	IPXNEW
	profinet	PROFINET
	powerlink	POWERLINK
	ethercat	ETHERCAT
	vlan8021q	IEEE802 1Q VLAN
	goose	GOOSE
P-6	0..255.	Protocol Number
P-7	any	Any port/portless protocol
	a-b	Port Range
	a,b	Port List (may be longer than two ports)
	a-b, c-d	List of Port Ranges (may be longer than two ranges)
	1 to 65535	Port Number

35.1.2 protocol modify

Modifies a protocol configuration present in the protocol table.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: protocol modify <P-1> [name <P-2>] [description <P-3>] [protocol-type <P-4>] [ethertype <P-5>] [proto-number <P-6>] [port <P-7>]

[name]: Specify the Protocol Name
[description]: Specify the Protocol Description
[protocol-type]: Specify the Protocol Type
[ethertype]: Specify the ethernet type
[proto-number]: Specify the Protocol Number
[port]: Specify the Port

Parameter	Value	Meaning
P-1	1..50	Protocol Index
P-2	string	Protocol Name
P-3	string	Protocol Description
P-4	any	any protocol
	ethernet	ethernet protocol
	icmp	internet control message protocol
	tcp	transmission control protocol
	udp	user datagram protocol
P-5	value	Ethertype
	appletalk	Appletalk
	arp	ARP
	ibmsna	IBMSNA
	ipv4	IPv4
	ipv6	IPv6
	ipx-old	IPX-OLD
	mplsmcast	MPLS Multicast
	mplsucast	MPLS Unicast
	netbios	NetBIOS
	novell	NOVELL
	pppoedisc	PPPOEDISC
	rarp	RARP
	pppoesess	PPPOESESS
	ipxnew	IPXNEW
	profinet	PROFINET
	powerlink	POWERLINK
	ethercat	ETHERCAT
	vlan8021q	IEEE802_1Q VLAN
	goose	GOOSE
P-6	0..255	Protocol Number
P-7	any	Any port/portless protocol
	a-b	Port Range
	a,b	Port List (may be longer than two ports)
	a-b,c-d	List of Port Ranges (may be longer than two ranges)
	1 to 65535	Port Number

35.1.3 protocol delete

Delete a protocol configuration present in the protocol table.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: protocol delete <P-1>

Parameter	Value	Meaning
P-1	1..50	Protocol Index

35.2 show

Display device options and settings.

35.2.1 show protocol list

Display all configured protocol list

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

36 Port Monitor

36.1 link-flap

Configure the link flap settings.

36.1.1 link-flap operation

Enable or disable the link flap.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: link-flap operation

■ no link-flap operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no link-flap operation

36.2 show

Display device options and settings.

36.2.1 show link-flap operation

Display the link flap operation.

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

37 Password Management

37.1 passwords

Manage password policies and options.

37.1.1 passwords min-length

Set minimum password length for user passwords.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: passwords min-length <P-1>

Parameter	Value	Meaning
P-1	1..64	Enter a number in the given range.

37.1.2 passwords max-login-attempts

Set maximum login attempts for the users.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: passwords max-login-attempts <P-1>

Parameter	Value	Meaning
P-1	0..5	Enter a number in the given range.

37.1.3 passwords min-uppercase-chars

Set minimum upper case characters for user passwords.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: passwords min-uppercase-chars <P-1>

Parameter	Value	Meaning
P-1	0..16	Enter a number in the given range.

37.1.4 passwords min-lowercase-chars

Set minimum lower case characters for user passwords.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: passwords min-lowercase-chars <P-1>

Parameter	Value	Meaning
P-1	0..16	Enter a number in the given range.

37.1.5 passwords min-numeric-chars

Set minimum numeric characters for user passwords.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: passwords min-numeric-chars <P-1>

Parameter	Value	Meaning
P-1	0..16	Enter a number in the given range.

37.1.6 passwords min-special-chars

Set minimum special characters for user passwords.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: passwords min-special-chars <P-1>

Parameter	Value	Meaning
P-1	0..16	Enter a number in the given range.

37.1.7 passwords login-attempt-period

The time period [minutes] in which the number of failed authentication attempts is counted. Value 0 disables this functionality.

- ▶ **Mode:** Global Config Mode
- ▶ **Privilege Level:** Administrator
- ▶ **Format:** passwords login-attempt-period <P-1>

Parameter	Value	Meaning
P-1	0	Disables the counting.
	1..60	Enter a number in the given range.

37.2 show

Display device options and settings.

37.2.1 show passwords

Display the password policies and options.

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

38 Radius

38.1 radius

Configure RADIUS parameters.

38.1.1 radius server attribute 4

Specifies the RADIUS client to use the NAS-IP Address attribute in the RADIUS requests.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: radius server attribute 4 <P-1>

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

38.1.2 radius server auth add

Add a RADIUS authentication server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: radius server auth add <P-1> ip <P-2> [name <P-3>] [port <P-4>]

ip: RADIUS authentication server IP address.
[name]: RADIUS authentication server name.
[port]: RADIUS authentication server port (default: 1812).

Parameter	Value	Meaning
P-1	1..8	Next RADIUS server valid index (it can be seen with '#show radius global' command).
P-2	string	Hostname or IP address.
P-3	string	Enter a user-defined text, max. 32 characters.
P-4	1..65535	Enter port number between 1 and 65535

38.1.3 radius server auth delete

Delete a RADIUS authentication server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: radius server auth delete <P-1>

Parameter	Value	Meaning
P-1	1..8	RADIUS server index.

38.1.4 radius server auth modify

Change a RADIUS authentication server parameters.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: radius server auth modify <P-1> [name <P-2>] [port <P-3>] [msgauth <P-4>] [primary <P-5>] [status <P-6>] [secret [<P-7>]] [encrypted <P-8>]

[name]: RADIUS authentication server name.
[port]: RADIUS authentication server port (default: 1812).
[msgauth]: Enable or disable the message authenticator attribute for this server.
[primary]: Configure the primary RADIUS server.
[status]: Enable or disable a RADIUS authentication server entry.
[secret]: Configure the shared secret for the RADIUS authentication server.
[encrypted]: Configure the encrypted shared secret.

Parameter	Value	Meaning
P-1	1..8	RADIUS server index.
P-2	string	Enter a user-defined text, max. 32 characters.
P-3	1..65535	Enter port number between 1 and 65535
P-4	enable disable	Enable the option. Disable the option.
P-5	enable disable	Enable the option. Disable the option.

Parameter	Value	Meaning
P-6	enable	Enable the option.
	disable	Disable the option.
P-7	string	Enter a user-defined text, max. 128 characters.
P-8	string	Enter a user-defined text, max. 128 characters.

38.1.5 radius server retransmit

Configure the retransmit value for the RADIUS server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: radius server retransmit <P-1>

Parameter	Value	Meaning
P-1	1..15	Maximum number of retransmissions (default: 4).

38.1.6 radius server timeout

Configure the RADIUS server timeout value.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: radius server timeout <P-1>

Parameter	Value	Meaning
P-1	1..30	Timeout in seconds (default: 5).

38.2 show

Display device options and settings.

38.2.1 show radius global

Display the global RADIUS configuration.

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

38.2.2 show radius auth servers

Display the configured RADIUS authentication servers.

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

Parameter	Value	Meaning
P-1	1..8	RADIUS server index.

38.2.3 show radius auth statistics

Display the RADIUS authentication server statistics.

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

Parameter	Value	Meaning
P-1	1..8	RADIUS server index.

38.3 clear

Clear several items.

38.3.1 clear radius

Clear the RADIUS statistics.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: clear radius <P-1>

Parameter	Value	Meaning
P-1	statistics	Clear the RADIUS statistics.

39 Remote Authentication

39.1 Idap

Configure LDAP settings.

39.1.1 Idap operation

Enable or disable the remote authentication operation.

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

■ no Idap operation

Disable the option

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

39.1.2 Idap cache-timeout

Configure LDAP user cache entry timeout.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap cache-timeout <P-1>

Parameter	Value	Meaning
P-1	1..1440	Enter a number in the given range.

39.1.3 Idap flush-user-cache

Flush LDAP user cache.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap flush-user-cache <P-1>

Parameter	Value	Meaning
P-1	action	Flush the LDAP user cache.

39.1.4 Idap role-policy

Configure LDAP user role selection policy.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap role-policy <P-1>

Parameter	Value	Meaning
P-1	highest	Use the role mapping with the highest user role.
	first	Use the first matching role mapping table entry.

39.1.5 Idap basedn

Base distinguished name for LDAP query at the external AD server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap basedn <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 255 characters.

39.1.6 Idap search-attr

Search attribute for LDAP query at the external AD server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap search-attr <P-1>

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

39.1.7 ldap bind-user

Bind-account user name for LDAP query at the external AD server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap bind-user <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 255 characters.

39.1.8 ldap bind-passwd

Bind-account user password for LDAP query at the external AD server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap bind-passwd <P-1>

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

39.1.9 ldap default-domain

Default domain used for users without a domain name.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap default-domain <P-1>

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

39.1.10 ldap client server add

Add a LDAP client server connection.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap client server add <P-1> <P-2> [port <P-3>] [security <P-4>]
[description <P-5>]

[port]: Set the port number of the external LDAP server.

[security]: Set the security settings for the connection to external LDAP server.

[description]: Description of the external LDAP server.

Parameter	Value	Meaning
P-1	1..4	Enter a number in the given range.
P-2	a.b.c.d	IP address.
P-3	1..65535	Port number of LDAP Server.
P-4	none ssl startTLS	
P-5	string	Enter a user-defined text, max. 100 characters.

39.1.11 ldap client server delete

Delete a LDAP client server connection.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap client server delete <P-1>

Parameter	Value	Meaning
P-1	1..4	Enter a number in the given range.

39.1.12 ldap client server enable

Enable a LDAP client server connection.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap client server enable <P-1>

Parameter	Value	Meaning
P-1	1..4	Enter a number in the given range.

39.1.13 Idap client server disable

Disable a LDAP client server connection.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap client server disable <P-1>

Parameter	Value	Meaning
P-1	1..4	Enter a number in the given range.

39.1.14 Idap client server modify

Modify a LDAP client server connection.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap client server modify <P-1> [addr <P-2>] [port <P-3>] [security <P-4>] [description <P-5>]

[addr]: Modify the host address of the external LDAP server.

[port]: Modify the port number of the external LDAP server.

[security]: Modify the security settings for the connection to external LDAP server.

[description]: Modify the description of the external LDAP server.

Parameter	Value	Meaning
P-1	1..4	Enter a number in the given range.
P-2	a.b.c.d	IP address.
P-3	1..65535	Port number of LDAP Server.
P-4	none	
	ssl	
	startTLS	
P-5	string	Enter a user-defined text, max. 100 characters.

39.1.15 Idap mapping add

Add a LDAP mapping entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap mapping add <P-1> access-role <P-2> mapping-type <P-3> mapping-parameter <P-4>

access-role: Access role type.

mapping-type: Role mapping type.

mapping-parameter: Role mapping parameter.

Parameter	Value	Meaning
P-1	1..64	Enter a number in the given range.
P-2	slot no./port no.	
P-3	attribute	
	group	
P-4	string	Enter a user-defined text, max. 255 characters.

39.1.16 Idap mapping delete

Delete a LDAP role mapping entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ldap mapping delete <P-1>

Parameter	Value	Meaning
P-1	1..64	Enter a number in the given range.

39.1.17 Idap mapping enable

Activate a LDAP role mapping entry.

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

Parameter	Value	Meaning
P-1	1..64	Enter a number in the given range.

39.1.18 ldap mapping disable

Deactivate a LDAP role mapping entry.

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

Parameter	Value	Meaning
P-1	1..64	Enter a number in the given range.

39.2 show

Display device options and settings.

39.2.1 show ldap global

Display the LDAP configuration parameters and information.

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

39.2.2 show ldap client server

Display the LDAP client server connections.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Administrator
- ▶ Format: show ldap client server [<P-1>]

Parameter	Value	Meaning
P-1	1..4	Enter a number in the given range.

39.2.3 show ldap mapping

Display the LDAP role mapping entries.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Administrator
- ▶ Format: show ldap mapping [<P-1>]

Parameter	Value	Meaning
P-1	1..64	Enter a number in the given range.

39.3 copy

Copy different kinds of items.

39.3.1 copy ldapcert remote

Copy CA certificate file (*.pem) from the remote AD server to the specified destination.

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

nvm: Copy CA certificate file (*.pem) from the remote AD server to the device.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.
P-2	string	Enter a user-defined text, max. 100 characters.

39.3.2 copy ldapcert envm

Copy CA certificate file (*.pem) from external non-volatile memory to the specified destination.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: copy ldapcert envm <P-1> nvm [<P-2>]

nvm: Copy CA certificate file (*.pem) from external non-volatile memory to the device.

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 128 characters.
P-2	string	Enter a user-defined text, max. 100 characters.

40 Remote Monitoring (RMON)

40.1 show

Display device options and settings.

40.1.1 show rmon statistics

Show RMON statistics configuration.

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

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

41 Script File

41.1 script

CLI Script File.

41.1.1 script apply

Executes the CLI script file available in the device.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: script apply <P-1>

Parameter	Value	Meaning
P-1	string	Filename.

41.1.2 script validate

Only validates the CLI script file available in the device.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: script validate <P-1>

Parameter	Value	Meaning
P-1	string	Filename.

41.1.3 script list system

List all the script files available in the device memory.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: script list system

41.1.4 script list envm

List all the script files available in external non-volatile memory.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: script list envm

41.1.5 script delete

Delete the CLI script files.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: script delete [<P-1>]

Parameter	Value	Meaning
P-1	string	Filename.

41.2 copy

Copy different kinds of items.

41.2.1 copy script envm

Copy script file from external non-volatile memory to specified destination.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Administrator
- ▶ Format: copy script envm <P-1> running-config nvm <P-2>

running-config: Copy script file from external non-volatile memory to the running-config.

nvm: Copy script file from external non-volatile memory to the non-volatile memory.

Parameter	Value	Meaning
P-1	string	Filename.

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

41.2.2 copy script remote

Copy script file from server to specified destination.

- ▶ Mode: Privileged Exec Mode
 - ▶ Privilege Level: Administrator
 - ▶ Format: copy script remote <P-1> running-config nvm <P-2>
- running-config: Copy script file from file server to running-config.
nvm: Copy script file to non-volatile memory.

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

41.2.3 copy script nvm

Copy Script file from non-volatile memory to the specified destination.

- ▶ Mode: Privileged Exec Mode
 - ▶ Privilege Level: Administrator
 - ▶ Format: copy script nvm <P-1> running-config envm <P-2> remote <P-3>
- running-config: Copy Script file from non-volatile system memory to running-config.
envm: Copy Script file to external non-volatile memory device.
remote: Copy Script file to file server.

Parameter	Value	Meaning
P-1	string	Filename.
P-2	string	Enter a user-defined text, max. 32 characters.
P-3	string	Enter a user-defined text, max. 128 characters.

41.3 show

Display device options and settings.

41.3.1 show script envm

Display the content of the CLI script file present in the envm.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Administrator
- ▶ Format: show script envm <P-1>

Parameter	Value	Meaning
P-1	string	Filename.

41.3.2 show script system

Display the content of the CLI script file present in the device.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Administrator
- ▶ Format: show script system <P-1>

Parameter	Value	Meaning
P-1	string	Filename.

42 Selftest

42.1 selftest

Configure the selftest settings.

42.1.1 selftest action

Configure the action that a selftest component should take.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: selftest action <P-1> <P-2>

Parameter	Value	Meaning
P-1	task	Configure the action for task errors.
	resource	Configure the action for lack of resources.
	software	Configure the action for broken software integrity.
	hardware	Configure the action for detected hardware errors.
P-2	log-only	Write a message to the logging file.
	send-trap	Send a trap to the management station.
	reboot	Reboot the device.

42.1.2 selftest ramtest

Enable or disable the RAM selftest on cold start of the device. When disabled the device booting time is reduced.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: selftest ramtest

■ no selftest ramtest

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no selftest ramtest

42.1.3 selftest system-monitor

Enable or disable the System Monitor 1 access during the boot phase. Please note: If the System Monitor is disabled it is possible to loose access to the device permanently in case of loosing administrator password or mis-configuration.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: selftest system-monitor

■ no selftest system-monitor

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no selftest system-monitor

42.1.4 selftest boot-default-on-error

Enable or disable loading of the default configuration in case there is any error loading the configuration during boot phase. If disabled the system will be halted.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: selftest boot-default-on-error

■ no selftest boot-default-on-error

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no selftest boot-default-on-error

42.2 show

Display device options and settings.

42.2.1 show selftest action

Display the actions the device takes if an error occurs.

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

42.2.2 show selftest settings

Display the selftest settings.

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

43 Small Form-factor Pluggable (SFP)

43.1 show

Display device options and settings.

43.1.1 show sfp

Display the information about the plugged SFP modules.

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

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

44 Signal Contact

44.1 signal-contact

Configure the signal contact settings.

44.1.1 signal-contact mode

Configure the Signal Contact mode setting.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: signal-contact <P-1> mode <P-2>

Parameter	Value	Meaning
P-1	signal contact no.	
P-2	manual	The signal contact's status is determined by the associated manual setting (subcommand 'state').
	monitor	The signal contact's status is determined by the associated monitor settings.
	device-status	The signal contact's status is determined by the device status.
	security-status	The signal contact's status is determined by the security status.
	dev-sec-status	The signal contact's status is determined by the device status and security status.

44.1.2 signal-contact monitor link-failure

Sets the monitoring of the network connection(s).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: signal-contact <P-1> monitor link-failure

Parameter	Value	Meaning
P-1	signal contact no.	

■ no signal-contact monitor link-failure

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no signal-contact <P-1> monitor link-failure

44.1.3 signal-contact monitor envm-not-in-sync

Sets the monitoring whether the external non-volatile memory device is in sync with the running configuration.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: signal-contact <P-1> monitor envm-not-in-sync

Parameter	Value	Meaning
P-1	signal contact no.	

■ no signal-contact monitor envm-not-in-sync

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no signal-contact <P-1> monitor envm-not-in-sync

44.1.4 signal-contact monitor envm-removal

Sets the monitoring of the external non-volatile memory device removal.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: signal-contact <P-1> monitor envm-removal

Parameter	Value	Meaning
P-1	signal contact no.	

■ no signal-contact monitor envm-removal

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no signal-contact <P-1> monitor envm-removal

44.1.5 signal-contact monitor temperature

Sets the monitoring of the device temperature.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: signal-contact <P-1> monitor temperature

Parameter	Value	Meaning
P-1	signal contact no.	

■ no signal-contact monitor temperature

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no signal-contact <P-1> monitor temperature

44.1.6 signal-contact monitor power-supply

Sets the monitoring of the power supply(s).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: signal-contact <P-1> monitor power-supply <P-2>

Parameter	Value	Meaning
P-1	signal contact no.	
P-2	1..2	Number of power supply.

■ no signal-contact monitor power-supply

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no signal-contact <P-1> monitor power-supply <P-2>

44.1.7 signal-contact state

Configure the Signal Contact manual state (only takes immediate effect in manual mode).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: signal-contact <P-1> state <P-2>

Parameter	Value	Meaning
P-1	signal contact no.	
P-2	open	Open the signal contact (only takes effect in the manual mode).
	close	Close the signal contact (only takes effect in the manual mode).

44.1.8 signal-contact trap

Configure if a trap is sent when the Signal Contact changes state (in monitor mode).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: signal-contact <P-1> trap

Parameter	Value	Meaning
P-1	signal contact no.	

■ no signal-contact trap

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no signal-contact <P-1> trap

44.2 signal-contact

Configure the signal contact interface settings.

44.2.1 signal-contact link-alarm

Configure the monitoring of the specific network ports.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: signal-contact <P-1> link-alarm

Parameter	Value	Meaning
P-1	signal contact no.	

■ no signal-contact link-alarm

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no signal-contact <P-1> link-alarm

44.3 show

Display device options and settings.

44.3.1 show signal-contact

Display the signal contact settings.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show signal-contact <P-1> mode monitor state trap link-alarm events all

mode: Display the signal contact mode.
monitor: Display the signal contact monitor settings.
state: Display the signal contact state (open/close). Note: This covers the signal contact’s administrative setting as well as its actual state.
trap: Display the signal contact trap information and settings.
link-alarm: Display the settings of the monitoring of the specific network ports.
events: Display the occurred device status events.
all: Display the signal contact settings for the specified signal contact.

Parameter	Value	Meaning
P-1	signal contact no.	

45 Simple Network Management Protocol (SNMP)

45.1 snmp

Configure of SNMP versions and traps.

45.1.1 snmp access version v1

Enable or disable SNMP version V1.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: snmp access version v1

■ no snmp access version v1

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no snmp access version v1

45.1.2 snmp access version v2

Enable or disable SNMP version V2.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: snmp access version v2

■ no snmp access version v2

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no snmp access version v2

45.1.3 snmp access version v3

Enable or disable SNMP version V3.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: snmp access version v3

■ no snmp access version v3

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no snmp access version v3

45.1.4 snmp access port

Configure the SNMP access port.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: snmp access port <P-1>

Parameter	Value	Meaning
P-1	1..65535	Port number of the SNMP server (default: 161).

45.2 show

Display device options and settings.

45.2.1 show snmp access

Display the SNMP access configuration settings.

- ▶ **Mode:** Command is in all modes available.
- ▶ **Privilege Level:** Guest
- ▶ **Format:** `show snmp access`

46 SNMP Community

46.1 snmp

Configure of SNMP versions and traps.

46.1.1 snmp community ro

SNMP v1/v2 read-only community.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: snmp community ro

46.1.2 snmp community rw

SNMP v1/v2 read-write community.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: snmp community rw

46.2 show

Display device options and settings.

46.2.1 show snmp community

Display the SNMP v1/2 community.

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

47 SNMP Logging

47.1 logging

Logging configuration.

47.1.1 logging snmp-request get operation

Enable or disable logging of SNMP GET or SET requests.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging snmp-request get operation <P-1>

Parameter	Value	Meaning
P-1	enable	Enable logging of SNMP GET or SET requests.
	disable	Disable logging of SNMP GET or SET requests.

■ no logging snmp-request get operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no logging snmp-request get operation <P-1>

47.1.2 logging snmp-request get severity

Define severity level.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging snmp-request get severity <P-1>

Parameter	Value	Meaning
P-1	emergency	System is unusable. System failure has occurred.
	alert	Action must be taken immediately. Unrecoverable failure of a component. System failure likely.
	critical	Recoverable failure of a component that may lead to system failure.
	error	Error conditions. Recoverable failure of a component.
	warning	Minor failure, e.g. misconfiguration of a component.
	notice	Normal but significant conditions.
	informational	Informational messages.
	debug	Debug-level messages.
	0	Same as emergency
	1	Same as alert
	2	Same as critical
	3	Same as error
	4	Same as warning
	5	Same as notice
	6	Same as informational
	7	Same as debug

47.1.3 logging snmp-request set operation

Enable or disable logging of SNMP GET or SET requests.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging snmp-request set operation <P-1>

Parameter	Value	Meaning
P-1	enable	Enable logging of SNMP GET or SET requests.
	disable	Disable logging of SNMP GET or SET requests.

■ no logging snmp-request set operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no logging snmp-request set operation <P-1>

47.1.4 logging snmp-request set severity

Define severity level.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: logging snmp-request set severity <P-1>

Parameter	Value	Meaning
P-1	emergency	System is unusable. System failure has occurred.
	alert	Action must be taken immediately. Unrecoverable failure of a component. System failure likely.
	critical	Recoverable failure of a component that may lead to system failure.
	error	Error conditions. Recoverable failure of a component.
	warning	Minor failure, e.g. misconfiguration of a component.
	notice	Normal but significant conditions.
	informational	Informational messages.
	debug	Debug-level messages.
	0	Same as emergency
	1	Same as alert
	2	Same as critical
	3	Same as error
	4	Same as warning
	5	Same as notice
	6	Same as informational
	7	Same as debug

47.2 show

Display device options and settings.

47.2.1 show logging snmp

Display the SNMP logging settings.

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

48 Secure Shell (SSH)

48.1 ssh

Set SSH parameters.

48.1.1 ssh server

Enable or disable the SSH server.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ssh server

■ no ssh server

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no ssh server

48.1.2 ssh timeout

Set the SSH connection idle timeout in minutes (default: 5).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ssh timeout <P-1>

Parameter	Value	Meaning
P-1	0..160	Idle timeout of a session in minutes (default: 5).

48.1.3 ssh port

Set the SSH server port number (default: 22).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ssh port <P-1>

Parameter	Value	Meaning
P-1	1..65535	Port number of the SSH server (default: 22).

48.1.4 ssh max-sessions

Set the maximum number of concurrent SSH sessions (default: 5).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ssh max-sessions <P-1>

Parameter	Value	Meaning
P-1	1..5	Maximum number of concurrent SSH sessions.

48.1.5 ssh key rsa

Generate or delete RSA key

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ssh key rsa <P-1>

Parameter	Value	Meaning
P-1	generate	Generates the item
	delete	Deletes the item

48.1.6 ssh key fingerprint-type

Configure fingerprint type

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ssh key fingerprint-type <P-1>

Parameter	Value	Meaning
P-1	md5	Configure md5 fingerprint of the existing SSH host key
	sha256	Configure sha256 fingerprint of the existing SSH host key.

48.2 copy

Copy different kinds of items.

48.2.1 copy sshkey remote

Copy the SSH key from a server to the specified destination.

- ▶ Mode: Privileged Exec Mode
 - ▶ Privilege Level: Administrator
 - ▶ Format: `copy sshkey remote <P-1> nvm`
- nvm: Copy the SSH key from a server to non-volatile memory.

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

48.2.2 copy sshkey envm

Copy the SSH key from external non-volatile memory to the specified destination.

- ▶ Mode: Privileged Exec Mode
 - ▶ Privilege Level: Administrator
 - ▶ Format: `copy sshkey envm <P-1> nvm`
- nvm: Copy the SSH key from external non-volatile memory to non-volatile memory.

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

48.3 show

Display device options and settings.

48.3.1 show ssh

Display the SSH server and client information.

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

49 Static Multicast Routing

49.1 ip

Set IP parameters.

49.1.1 ip mcast operation

Enables or disables multicast routing globally on the device.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip mcast operation

■ no ip mcast operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip mcast operation

49.1.2 ip static-mcast operation

Enables or disables static multicast routing globally on the device.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip static-mcast operation

■ no ip static-mcast operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip static-mcast operation

49.1.3 ip static-mcast mgroup add

Add a new static multicast group instance.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip static-mcast mgroup add <P-1> inbound <P-2> [source-address <P-3>]
[source-mask <P-4>] group-address <P-5> [group-mask <P-6>]

inbound: Configure inbound interface

[source-address]: Configure IPv4 source address

[source-mask]: Configure IPv4 source netmask

group-address: Configure IPv4 group address

[group-mask]: Configure IPv4 group netmask

Parameter	Value	Meaning
P-1	1..256	Static multicast group ID in the given range.
P-2	slot no./port no.	
P-3	A.B.C.D	IPv4 address.
P-4	0..32	Prefix length netmask.
P-5	A.B.C.D	IPv4 address.
P-6	0..32	Prefix length netmask.

49.1.4 ip static-mcast mgroup modify

Modify a new static multicast group instance.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip static-mcast mgroup modify <P-1> inbound <P-2> [source-address <P-3>]
[source-mask <P-4>] group-address <P-5> [group-mask <P-6>]

inbound: Configure inbound interface

[source-address]: Configure IPv4 source address

[source-mask]: Configure IPv4 source netmask

group-address: Configure IPv4 group address
[group-mask]: Configure IPv4 group netmask

Parameter	Value	Meaning
P-1	1..256	Static multicast group ID in the given range.
P-2	slot no./port no.	
P-3	A.B.C.D	IPv4 address.
P-4	0..32	Prefix length netmask.
P-5	A.B.C.D	IPv4 address.
P-6	0..32	Prefix length netmask.

49.1.5 ip static-mcast mgroup delete

Delete an existing static multicast group instance.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip static-mcast mgroup delete <P-1>

Parameter	Value	Meaning
P-1	1..256	Static multicast group ID in the given range.

49.1.6 ip static-mcast mgroup enable

Enables a rule from static multicast group table.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip static-mcast mgroup enable <P-1>

Parameter	Value	Meaning
P-1	1..256	Static multicast group ID in the given range.

49.1.7 ip static-mcast mgroup disable

Disables a rule from static multicast group table.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip static-mcast mgroup disable <P-1>

Parameter	Value	Meaning
P-1	1..256	Static multicast group ID in the given range.

49.1.8 ip static-mcast mroute add

Add a new static multicast route instance.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip static-mcast mroute add <P-1> inbound <P-2> [source-address <P-3>] [source-mask <P-4>] group-address <P-5> [group-mask <P-6>] outbound <P-7>

inbound: Configure inbound interface

[source-address]: Configure IPv4 source address

[source-mask]: Configure IPv4 source netmask

group-address: Configure IPv4 group address

[group-mask]: Configure IPv4 group netmask

outbound: Configure outbound interface

Parameter	Value	Meaning
P-1	1..256	Static multicast route ID in the given range.
P-2	slot no./port no.	
P-3	A.B.C.D	IPv4 address.
P-4	0..32	Prefix length netmask.
P-5	A.B.C.D	IPv4 address.
P-6	0..32	Prefix length netmask.
P-7	slot/port	Enter a single interface in slot/port format.
	interface range	Enter interface range in the slot/port format use hyphen for range e.g 1/2-1/4.
	interface list	Enter interface list in the slot/port format use comma to separate e.g 1/2,1/4,...
	vlan/<vlan-id>	Enter a single vlan interface e.g vlan/222.
	vlan range	Enter vlan interface range e.g. vlan/1-vlan/3.
	vlan list	Enter vlan interface list use comma to separate e.g. vlan/1,vlan/3.

49.1.9 ip static-mcast mroute modify

Modify a new static multicast route instance.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip static-mcast mroute modify <P-1> inbound <P-2> [source-address <P-3>]
[source-mask <P-4>] group-address <P-5> [group-mask <P-6>] [outbound <P-7>]

inbound: Configure inbound interface

[source-address]: Configure IPv4 source address

[source-mask]: Configure IPv4 source netmask

group-address: Configure IPv4 group address

[group-mask]: Configure IPv4 group netmask

[outbound]: Configure outbound interface

Parameter	Value	Meaning
P-1	1..256	Static multicast route ID in the given range.
P-2	slot no./port no.	
P-3	A.B.C.D	IPv4 address.
P-4	0..32	Prefix length netmask.
P-5	A.B.C.D	IPv4 address.
P-6	0..32	Prefix length netmask.
P-7	slot/port	Enter a single interface in slot/port format.
	interface range	Enter interface range in the slot/port format use hyphen for range e.g 1/2-1/4.
	interface list	Enter interface list in the slot/port format use comma to separate e.g 1/2,1/4,...
	vlan/<vlan-id>	Enter a single vlan interface e.g vlan/222.
	vlan range	Enter vlan interface range e.g. vlan/1-vlan/3.
	vlan list	Enter vlan interface list use comma to separate e.g. vlan/1,vlan/3.

49.1.10 ip static-mcast mroute delete

Delete an existing static multicast route instance.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip static-mcast mroute delete <P-1>

Parameter	Value	Meaning
P-1	1..256	Static multicast route ID in the given range.

49.1.11 ip static-mcast mroute enable

Enables a rule from static multicast route table.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip static-mcast mroute enable <P-1>

Parameter	Value	Meaning
P-1	1..256	Static multicast route ID in the given range.

49.1.12 ip static-mcast mroute disable

Disables a rule from static multicast route table.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip static-mcast mroute disable <P-1>

Parameter	Value	Meaning
P-1	1..256	Static multicast route ID in the given range.

49.2 ip

IP interface commands.

49.2.1 ip static-mcast operation

Enable or disable a multicast static route instance.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip static-mcast operation

■ no ip static-mcast operation

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip static-mcast operation

49.3 show

Display device options and settings.

49.3.1 show ip mcast global

Display the global multicast information.

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

49.3.2 show ip static-mcast global

Display the global static multicast information.

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

49.3.3 show ip static-mcast interface

Display the interface specific information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show ip static-mcast interface [<P-1>]

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

49.3.4 show ip static-mcast mgroup

Display the multicast routing group information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show ip static-mcast mgroup

49.3.5 show ip static-mcast mroute

Display the multicast routing table information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show ip static-mcast mroute

50 Storm Control

50.1 storm-control

Configure the global storm-control settings.

50.1.1 storm-control flow-control

Enable or disable flow control globally.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: storm-control flow-control

■ no storm-control flow-control

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no storm-control flow-control

50.2 storm-control

Storm control commands

50.2.1 storm-control flow-control

Enable or disable flow control (802.3x) for this port.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: storm-control flow-control

■ no storm-control flow-control

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no storm-control flow-control

50.2.2 storm-control ingress unit

Set unit.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: storm-control ingress unit <P-1>

Parameter	Value	Meaning
P-1	percent	Metering unit expressed in percentage of bandwidth.
	pps	Metering unit expressed in packets per second.

50.2.3 storm-control ingress unicast operation

Enable/disable ingress storm control for unicast frames with unknown destination.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: storm-control ingress unicast operation

■ no storm-control ingress unicast operation

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no storm-control ingress unicast operation

50.2.4 storm-control ingress unicast threshold

Set the threshold value for unicast frames with unknown destination.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: storm-control ingress unicast threshold <P-1>

Parameter	Value	Meaning
P-1	0..14880000	Enter a number in the given range. If the configured unit is percent enter a number in (0..100) range.

50.2.5 storm-control ingress multicast operation

Enable/disable ingress storm control for multicast frames.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: storm-control ingress multicast operation

■ no storm-control ingress multicast operation

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no storm-control ingress multicast operation

50.2.6 storm-control ingress multicast threshold

Set the threshold value for multicast frames.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: storm-control ingress multicast threshold <P-1>

Parameter	Value	Meaning
P-1	0..14880000	Enter a number in the given range. If the configured unit is percent enter a number in (0..100) range.

50.2.7 storm-control ingress broadcast operation

Enable/disable ingress storm control for broadcast frames.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: storm-control ingress broadcast operation

■ no storm-control ingress broadcast operation

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no storm-control ingress broadcast operation

50.2.8 storm-control ingress broadcast threshold

Set the threshold value for broadcast frames.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: storm-control ingress broadcast threshold <P-1>

Parameter	Value	Meaning
P-1	0..14880000	Enter a number in the given range. If the configured unit is percent enter a number in (0..100) range.

50.3 show

Display device options and settings.

50.3.1 show storm-control flow-control

Global flow control status.

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

50.3.2 show storm-control ingress

Display the storm control ingress parameters.

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

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

51 System

51.1 system

Set system related values e.g. name of the device, location of the device, contact data for the person responsible for the device, and pre-login banner text.

51.1.1 system name

Edit the name of the device. The system name consists of an alphanumeric ASCII character string with 0..255 characters.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: system name <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 255 characters.

51.1.2 system location

Edit the location of the device. The system location consists of an alphanumeric ASCII character string with 0..255 characters.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: system location <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 255 characters.

51.1.3 system contact

Edit the contact information for the person responsible for the device. The contact data consists of an alphanumeric ASCII character string with 0..255 characters.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: system contact <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 255 characters.

51.1.4 system pre-login-banner operation

Enable or disable the pre-login banner. You use the pre-login banner to display a greeting or information to users before they login to the device.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: system pre-login-banner operation

■ no system pre-login-banner operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no system pre-login-banner operation

51.1.5 system pre-login-banner text

Edit the text for the pre-login banner (C printf format syntax allowed: \n\t) The device allows you to edit an alphanumeric ASCII character string with up to 512 characters.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: system pre-login-banner text <P-1>

Parameter	Value	Meaning
P-1	string	Enter a user-defined text, max. 512 characters (allowed characters are from ASCII 32 to 127).

51.1.6 system resources operation

Enable or disable the measurement operation.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: system resources operation

no system resources operation

Disable the option

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

51.2 temperature

Configure the upper and lower temperature limits of the device. The device allows you to set the threshold as an integer from -99 through 99. You configure the temperatures in degrees Celsius.

51.2.1 temperature upper-limit

Configure the upper temperature limit.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: temperature upper-limit <P-1>

Parameter	Value	Meaning
P-1	-99..99	Upper temperature threshold ([C], default 70).

51.2.2 temperature lower-limit

Configure the lower temperature limit.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: temperature lower-limit <P-1>

Parameter	Value	Meaning
P-1	-99..99	Lower temperature threshold ([C], default 0).

51.3 hardware

The Hardware LAN bypass feature ensures that traffic passes freely between interface pairs when system is fully up and is running an Operating System or when system is in a shutdown state

51.3.1 hardware runtime-bypass

Enable or disable Run-time hardware LAN bypass.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: hardware runtime-bypass

no hardware runtime-bypass

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no hardware runtime-bypass

51.3.2 hardware systemoff-bypass

Enable or disable System-off hardware LAN bypass.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: hardware systemoff-bypass

■ no hardware systemoff-bypass

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no hardware systemoff-bypass

51.4 show

Display device options and settings.

51.4.1 show eventlog

Display the event log notice and warning entries with time stamp.

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

51.4.2 show system info

Display the system related information.

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

51.4.3 show system pre-login-banner

Display the pre-login banner status and text.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show system pre-login-banner

51.4.4 show system flash-status

Display the flash memory statistics of the device.

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

51.4.5 show system temperature limits

Display the temperature limits.

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

51.4.6 show system temperature extremes

Display the minimum and maximum recorded temperature.

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

51.4.7 show system temperature histogram

Display the temperature histogram of the device.

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

51.4.8 show system temperature counters

Display number of 20 centigrade C variations in maximum one hour period.

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

51.4.9 show system resources

Display the system resources information (CPU utilization, memory and network CPU utilization).

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

51.4.10 show hardware runtime-bypass

Display runtime-bypass state of hardware bypass.

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

51.4.11 show hardware systemoff-bypass

Display systemoff-bypass state of hardware bypass.

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

52 Tracking

52.1 track

Configure tracking instances on the device.

52.1.1 track add

Create a tracking instance.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: track add <P-1> <P-2>

Parameter	Value	Meaning
P-1	interface	interface tracking
	ping	ping tracking
	logical	logical tracking
P-2	1..256	Enter a number in the given range.

52.1.2 track delete

Delete a tracking instance.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: track delete <P-1> <P-2>

Parameter	Value	Meaning
P-1	interface	interface tracking
	ping	ping tracking
	logical	logical tracking
P-2	1..256	Enter a number in the given range.

52.1.3 track enable

Activate a tracking instance.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: track enable <P-1> <P-2>

Parameter	Value	Meaning
P-1	interface	interface tracking
	ping	ping tracking
	logical	logical tracking
P-2	1..256	Enter a number in the given range.

52.1.4 track disable

Deactivate a tracking instance.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: track disable <P-1> <P-2>

Parameter	Value	Meaning
P-1	interface	interface tracking
	ping	ping tracking
	logical	logical tracking
P-2	1..256	Enter a number in the given range.

52.1.5 track trap

Enable / Disable the StateChange trap for the corresponding tracking instance.

- Mode: Global Config Mode
- Privilege Level: Operator
- Format: track trap <P-1> <P-2>

Parameter	Value	Meaning
P-1	interface	interface tracking
	ping	ping tracking
	logical	logical tracking
P-2	1..256	Enter a number in the given range.

■ no track trap

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no track trap <P-1> <P-2>

52.1.6 track description

Set the description for the corresponding tracking instance.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: track description <P-1> <P-2> <P-3>

Parameter	Value	Meaning
P-1	interface	interface tracking
	ping	ping tracking
	logical	logical tracking
P-2	1..256	Enter a number in the given range.
P-3	string	Enter a user-defined text, max. 255 characters.

52.1.7 track modify interface

Modify the configuration of an interface tracking instance.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: track modify interface <P-1> [interface <P-2>] [linkup-delay <P-3>]
[linkdown-delay <P-4>]

[interface]: Set the interface number of the interface tracking instance.

[linkup-delay]: Set the linkup-delay of the interface tracking instance

[linkdown-delay]: Set the linkdown-delay of the interface tracking instance

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	slot no./port no.	
P-3	0..255	Enter a number in the given range.
P-4	0..255	Enter a number in the given range.

52.1.8 track modify ping

Modify the configuration of a ping tracking instance.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: track modify ping <P-1> <P-2> [interface <P-2>][address <P-3>]
[interval <P-4>] [miss <P-5>] [success <P-6>] [timeout <P-7>] [ttl <P-8>]

[interface]: Set the source interface number of the ping tracking instance.

[address]: Set the address of the router to be monitored.

[interval]: Set the number of milliseconds between the pings to the target router address.

[miss]: Set the number of consecutive ping misses until the tracked object is considered to be down.

[success]: Set the of consecutive ping successes until the tracked object is considered to be up.

[timeout]: Set the timeout in milliseconds for a ping reply.

[ttl]: Set the time to live for a ping request packet.

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	slot no./port no.	
P-3	a.b.c.d	IP address.
P-4	100..20000	value for ping tracking interval range between 100 and 20000.
P-5	1..10	value for ping tracking interval range between 1 and 10.
P-6	1..10	value for ping tracking range between 1 and 10.
P-7	10..10000	value for ping tracking time range between 10 and 10000.
P-8	1..255	Enter a number in the given range.

52.1.9 track modify logical

Modify the configuration of a logical tracking instance.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: track modify logical <P-1> <P-2> <P-3> <P-4>

Parameter	Value	Meaning
P-1	slot no./port no.	
P-2	string	Track instance.
P-3	and	AND operator
	or	OR operator
P-4	string	Track instance.

52.2 show

Display device options and settings.

52.2.1 show track overview

Display the information and settings for the tracking instances.

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

52.2.2 show track interface

Display the information and settings for the interface tracking instances.

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

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

52.2.3 show track ping

Display the information and settings for the ping tracking instances.

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

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

52.2.4 show track logical

Display the information and settings for the logical tracking instances.

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

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

52.2.5 show track application

Display the information on tracking application registrations.

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

53 L3 Relay

53.1 ip

Set IP parameters.

53.1.1 ip udp-helper operation

Enable or disable the IP helper and DHCP relay.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip udp-helper operation

■ no ip udp-helper operation

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip udp-helper operation

53.1.2 ip udp-helper server add

Add a global relay agent to process DHCP client requests and UDP broadcast packets received on any interface.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip udp-helper server add <P-1> <P-2>

Parameter	Value	Meaning
P-1	dhcp	DHCP server port number.
P-2	A.B.C.D	IP address.

53.1.3 ip udp-helper server delete

Delete a global relay agent.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip udp-helper server delete <P-1> <P-2>

Parameter	Value	Meaning
P-1	dhcp	DHCP server port number.
P-2	A.B.C.D	IP address.

53.1.4 ip udp-helper server enable

Enable a global relay agent to process DHCP client requests and UDP broadcast packets received on any interface.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip udp-helper server enable <P-1> <P-2>

Parameter	Value	Meaning
P-1	dhcp	DHCP server port number.
P-2	A.B.C.D	IP address.

53.1.5 ip udp-helper server disable

Disable a global relay agent from processing DHCP client requests and UDP broadcast packets received on any interface.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip udp-helper server disable <P-1> <P-2>

Parameter	Value	Meaning
P-1	dhcp	DHCP server port number.
P-2	A.B.C.D	IP address.

53.1.6 ip udp-helper maxhopcount

Configure the DHCP relay maximum hop count.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip udp-helper maxhopcount <P-1>

Parameter	Value	Meaning
P-1	1..16	Enter a number in the given range.

53.1.7 ip udp-helper minwaittime

Configure DHCP relay minimum wait time in seconds.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip udp-helper minwaittime <P-1>

Parameter	Value	Meaning
P-1	0..100	Enter a number in the given range.

53.1.8 ip udp-helper cidoptmode

Enable or disable DHCP relay circuit id option mode.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip udp-helper cidoptmode

■ no ip udp-helper cidoptmode

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip udp-helper cidoptmode

53.2 ip

IP interface commands.

53.2.1 ip udp-helper server add

Add a relay agent to process DHCP client requests and UDP broadcast packets received on a specific interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip udp-helper server add <P-1> <P-2>

Parameter	Value	Meaning
P-1	dhcp	DHCP server port number.
P-2	A.B.C.D	IP address.

53.2.2 ip udp-helper server delete

Delete a relay agent from a specific interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip udp-helper server delete <P-1> <P-2>

Parameter	Value	Meaning
P-1	dhcp	DHCP server port number.
P-2	A.B.C.D	IP address.

53.2.3 ip udp-helper server enable

Enable a relay agent to process DHCP client requests and UDP broadcast packets received on a specific interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip udp-helper server enable <P-1> <P-2>

Parameter	Value	Meaning
P-1	dhcp	DHCP server port number.

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

53.2.4 ip udp-helper server disable

Disable a relay agent from processing DHCP client requests and UDP broadcast packets received on a specific interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: `ip udp-helper server disable <P-1> <P-2>`

Parameter	Value	Meaning
P-1	dhcp	DHCP server port number.
P-2	A.B.C.D	IP address.

53.3 show

Display device options and settings.

53.3.1 show ip udp-helper status

Display the IP helper and DHCP relay status information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: `show ip udp-helper status`

53.3.2 show ip udp-helper global

Display the DHCP and UDP relays defined globally.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: `show ip udp-helper global`

53.3.3 show ip udp-helper interface

Display the DHCP and UDP relays defined for specific interfaces.

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

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

53.3.4 show ip udp-helper statistics

Display the IP helper and DHCP relay statistics.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: `show ip udp-helper statistics`

53.4 clear

Clear several items.

53.4.1 clear ip udp-helper

Reset IP helper and DHCP relay statistics.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: `clear ip udp-helper`

54 Traps

54.1 snmp

Configure of SNMP versions and traps.

54.1.1 snmp trap operation

Global enable/disable SNMP trap.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: snmp trap operation

■ no snmp trap operation

Disable the option

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

54.1.2 snmp trap mode

Enable/disable SNMP trap entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: snmp trap mode <P-1>

Parameter	Value	Meaning
P-1	string	<name> Trap name (1 to 32 characters)

■ no snmp trap mode

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: no snmp trap mode <P-1>

54.1.3 snmp trap delete

Delete SNMP trap entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: snmp trap delete <P-1>

Parameter	Value	Meaning
P-1	string	<name> Trap name (1 to 32 characters)

54.1.4 snmp trap add

Add SNMP trap entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: snmp trap add <P-1> <P-2>

Parameter	Value	Meaning
P-1	string	<name> Trap name (1 to 32 characters)
P-2	a.b.c.d	a.b.c.d Single IP address.
	a.b.c.d:n	a.b.c.d:n Address with port.

54.2 show

Display device options and settings.

54.2.1 show snmp traps

Display the SNMP traps.

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

55 Unicast Routing

55.1 routing

Create routing on VLAN.

55.1.1 routing add

Enable routing on VLAN

- ▶ Mode: VLAN Database Mode
- ▶ Privilege Level: Operator
- ▶ Format: routing add <P-1>

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

55.1.2 routing delete

Disable routing on VLAN

- ▶ Mode: VLAN Database Mode
- ▶ Privilege Level: Operator
- ▶ Format: routing delete <P-1>

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

55.2 ip

Set IP parameters.

55.2.1 ip routing

Enables or disables Routing globally on the device.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip routing

■ no ip routing

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip routing

55.2.2 ip proxy-arp max-delay

Configure the maximum time a Proxy ARP response can be delayed

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip proxy-arp max-delay <P-1>

Parameter	Value	Meaning
P-1	0..1000	Enter Proxy ARP max response delay ms

55.3 show

Display device options and settings.

55.3.1 show ip global

Display the summary information of the IP, including the ICMP rate limit configuration and the global ICMP Redirect configuration.

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

55.4 show

Display device options and settings.

55.4.1 show ip interface

Display the interface parameters.

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

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

55.4.2 show ip statistics

Display the global IP statistics.

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

55.5 ip

IP interface commands.

55.5.1 ip routing

This command enables/disables routing for an interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip routing

■ no ip routing

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip routing

55.5.2 ip proxy-arp operation

Enables or disables Proxy ARP on the interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip proxy-arp operation

■ no ip proxy-arp operation

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip proxy-arp operation

55.5.3 ip address secondary

Designates whether an IP Address is a secondary address on this interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip address secondary <P-1> <P-2>

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	a.b.c.d	IP subnet mask.

■ no ip address secondary

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip address secondary <P-1>

55.5.4 ip address primary

Designates whether an IP Address is a primary address on this interface.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip address primary <P-1> <P-2>

Parameter	Value	Meaning
P-1	A.B.C.D	IP address.
P-2	a.b.c.d	IP subnet mask.

■ no ip address primary

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip address primary

55.5.5 ip mtu

Set MTU size for IP protocol

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip mtu <P-1>

Parameter	Value	Meaning
P-1	68..12266	Set the MTU value.

55.5.6 ip icmp redirects

Enables or disables the generation of ICMP Redirect messages.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip icmp redirects

■ no ip icmp redirects

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip icmp redirects

55.6 ip

Set IP parameters.

55.6.1 ip route add

Add a static route entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `ip route add <P-1> <P-2> <P-3> [preference <P-4>]`
[preference]: Change the preference value of a route.

Parameter	Value	Meaning
P-1	A.B.C.D	IPv4 address.
P-2	A.B.C.D	IPv4 netmask address.
P-3	A.B.C.D	Next hop IP address.
P-4	1..255	Enter a number in the given range.

55.6.2 ip route modify

Modify a static route entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `ip route modify <P-1> <P-2> <P-3> [preference <P-4>]`
[preference]: Change the preference value of a route.

Parameter	Value	Meaning
P-1	A.B.C.D	IPv4 address.
P-2	A.B.C.D	IPv4 netmask address.
P-3	A.B.C.D	Next hop IP address.
P-4	1..255	Enter a number in the given range.

55.6.3 ip route delete

Delete a static route entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `ip route delete <P-1> <P-2> <P-3>`

Parameter	Value	Meaning
P-1	A.B.C.D	IPv4 address.
P-2	A.B.C.D	IPv4 netmask address.
P-3	A.B.C.D	Next hop IP address.

55.6.4 ip route distance

Default preference for static routes.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `ip route distance <P-1>`

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

55.6.5 ip route track add

Add a track-id for a static route entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `ip route track add <P-1> <P-2> <P-3> <P-4>`

Parameter	Value	Meaning
P-1	A.B.C.D	IPv4 address.
P-2	A.B.C.D	IPv4 netmask address.
P-3	A.B.C.D	Next hop IP address.
P-4	string	Track instance.

55.6.6 ip route track delete

Remove a track-id for a static route entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: `ip route track delete <P-1> <P-2> <P-3>`

Parameter	Value	Meaning
P-1	A.B.C.D	IPv4 address.
P-2	A.B.C.D	IPv4 netmask address.

Parameter	Value	Meaning
P-3	A.B.C.D	Next hop IP address.

55.6.7 ip default-route add

Add a static default route entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip default-route add <P-1> [preference <P-2>]
[preference]: Change the preference value of a route.

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

55.6.8 ip default-route modify

Modify a static default route entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip default-route modify <P-1> preference <P-2>
preference: Change the preference value of a route.

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

55.6.9 ip default-route delete

Delete a static default route entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip default-route delete <P-1>

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

55.6.10 ip default-route track add

Add a track-id for a static route entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip default-route track add <P-1> <P-2>

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

55.6.11 ip default-route track delete

Remove a track-id for a static route entry.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip default-route track delete <P-1>

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

55.6.12 ip loopback add

Enable a loopback interface.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip loopback add <P-1>

Parameter	Value	Meaning
P-1	1..8	Enter the loopback id in the given range.

55.6.13 ip loopback delete

Disable a loopback interface.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip loopback delete <P-1>

Parameter	Value	Meaning
P-1	1..8	Enter the loopback id in the given range.

55.6.14 ip icmp redirects

Enables or disables the generation of ICMP Redirect messages.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip icmp redirects

■ no ip icmp redirects

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip icmp redirects

55.6.15 ip icmp echo-reply

Enables or disables the generation of ICMP Echo Reply messages.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip icmp echo-reply

■ no ip icmp echo-reply

Disable the option

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: no ip icmp echo-reply

55.6.16 ip icmp rate-limit interval

Configure ICMP rate limit interval in milliseconds.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip icmp rate-limit interval <P-1>

Parameter	Value	Meaning
P-1	0..2147483647	configure the interval.

55.6.17 ip icmp rate-limit burst-size

Configure ICMP rate limit burst size.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Operator
- ▶ Format: ip icmp rate-limit burst-size <P-1>

Parameter	Value	Meaning
P-1	1..200	configure the burst-size.

55.7 show

Display device options and settings.

55.7.1 show ip route all

Display the static, dynamic and local routes.

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

55.7.2 show ip route local

Display the local routes.

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

55.7.3 show ip route static

Display the static routes.

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

55.7.4 show ip route entry

Display the router route entry information.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show ip route entry <P-1> <P-2>

Parameter	Value	Meaning
P-1	A.B.C.D	IPv4 address.
P-2	A.B.C.D	IPv4 netmask address.

55.7.5 show ip route tracking

Display the tracking information for static routes.

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

55.7.6 show ip entry

Display the router route entry information.

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

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

56 Users

56.1 users

Manage Users and User Accounts.

56.1.1 users add

Add a new user.

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

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).

56.1.2 users delete

Delete an existing user.

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

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).

56.1.3 users enable

Enable user.

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

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).

56.1.4 users disable

Disable user.

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

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).

56.1.5 users password

Change user password.

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

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).
P-2	string	Enter a user-defined text, max. 64 characters.

56.1.6 users snmpv3 authentication

Specify authentication setting for a user.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: users snmpv3 authentication <P-1> <P-2>

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).
P-2	md5	MD5 as SNMPv3 user authentication mode.
	sha1	SHA1 as SNMPv3 user authentication mode.

56.1.7 users snmpv3 encryption

Specify encryption settings for a user.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: users snmpv3 encryption <P-1> <P-2>

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).
P-2	none	SNMPv3 encryption method is none.
	des	DES as SNMPv3 encryption method.
	aescfb128	AES-128 as SNMPv3 encryption method.

56.1.8 users access-role

Specify snmpv3 access role for a user.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: users access-role <P-1> <P-2>

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).
P-2	slot no./port no.	

56.1.9 users lock-status

Set the lockout status of a specified user.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: users lock-status <P-1> <P-2>

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).
P-2	unlock	Unlock specific user. User can login again.

56.1.10 users password-policy-check

Set password policy check option. The device checks the "minimum password length", regardless of the setting for this option.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: users password-policy-check <P-1> <P-2>

Parameter	Value	Meaning
P-1	string	<user> User name (up to 32 characters).
P-2	enable	Enable the option.
	disable	Disable the option.

56.2 show

Display device options and settings.

56.2.1 show users

Display the users and user accounts information.

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

57 Virtual LAN (VLAN)

57.1 name

57.1.1 name

Assign a name to a VLAN

- ▶ Mode: VLAN Database Mode
- ▶ Privilege Level: Operator
- ▶ Format: name <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..4042	Enter the VLAN ID.
P-2	string	Enter a user-defined text, max. 32 characters.

57.2 vlan

Creation and configuration of VLANS.

57.2.1 vlan add

Create a VLAN

- ▶ Mode: VLAN Database Mode
- ▶ Privilege Level: Operator
- ▶ Format: vlan add <P-1>

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

57.2.2 vlan delete

Delete a VLAN

- ▶ Mode: VLAN Database Mode
- ▶ Privilege Level: Operator
- ▶ Format: vlan delete <P-1>

Parameter	Value	Meaning
P-1	2..4042	Enter VLAN ID. VLAN ID 1 can not be deleted or created

57.3 vlan

Configure 802.1Q port parameters for VLANs.

57.3.1 vlan acceptframe

Configure how to handle tagged/untagged frames received.

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

Parameter	Value	Meaning
P-1	all	Untagged frames or priority frames received on this interface are accepted and assigned the value of the interface VLAN ID for this port.
	vlanonly	Only frames received with a VLAN tag will be forwarded. All other frames will be dropped.

57.3.2 vlan ingressfilter

Enable/Disable application of Ingress Filtering Rules.

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: vlan ingressfilter

■ no vlan ingressfilter

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no vlan ingressfilter

57.3.3 vlan priority

Configure the priority for untagged frames.

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

Parameter	Value	Meaning
P-1	0..7	Enter a number in the given range.

57.3.4 vlan pvid

Configure the VLAN id for a specific port.

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

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

57.3.5 vlan tagging

Enable or disable tagging for a specific VLAN port.

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

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

■ no vlan tagging

Disable the option

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: no vlan tagging <P-1>

57.3.6 vlan participation include

vlan participation to include

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: vlan participation include <P-1>

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

57.3.7 vlan participation exclude

vlan participation to exclude

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: vlan participation exclude <P-1>

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

57.3.8 vlan participation auto

vlan participation to auto

- ▶ Mode: Interface Range Mode
- ▶ Privilege Level: Operator
- ▶ Format: vlan participation auto <P-1>

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

57.4 show

Display device options and settings.

57.4.1 show vlan id

Display the configuration of a single specified VLAN.

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

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

57.4.2 show vlan brief

Display the general VLAN parameters.

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

57.4.3 show vlan port

Display the VLAN configuration of a single port.

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

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

57.4.4 show vlan member current

Display the membership of ports in static VLAN or dynamically created.

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

57.4.5 show vlan member static

Display the membership of ports in static VLAN.

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

57.5 network

Configure the inband and outband connectivity.

57.5.1 network management vlan

Configure the management VLAN ID of the switch.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: network management vlan <P-1>

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

57.5.2 network management priority dot1p

Configure the management VLAN priority of the switch.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: network management priority dot1p <P-1>

Parameter	Value	Meaning
P-1	0..7	Enter a number in the given range.

57.5.3 network management priority ip-dscp

Configure the management VLAN ip-dscp priority of the switch.

- ▶ Mode: Privileged Exec Mode
- ▶ Privilege Level: Operator
- ▶ Format: network management priority ip-dscp <P-1>

Parameter	Value	Meaning
P-1	0..63	Enter a number in the given range.

58 Virtual Private Network (VPN)

58.1 ipsec

Configure IPsec VPN settings.

58.1.1 ipsec certificate delete

Delete a certificate uploaded to the device.

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ipsec certificate delete <P-1>

Parameter	Value	Meaning
P-1	1..100	Certificate Table Index.

58.1.2 ipsec certificate upload passphrase

Passphrase that will be used to decrypt the next uploaded file, before storing on the device (note: will not be stored after the next upload, no matter if it is used or not!)

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ipsec certificate upload passphrase <P-1>

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

58.1.3 ipsec connection add

Add a IPsec VPN connection (use next free index if none submitted).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ipsec connection add <P-1> [name <P-2>]
[name]: IPsec VPN connection name.

Parameter	Value	Meaning
P-1	1..256	VPN connection index.
P-2	string	Enter a user-defined text, max. 128 characters.

58.1.4 ipsec connection modify

Modify a IPsec VPN connection (index in connection is mandatory).

- ▶ Mode: Global Config Mode
- ▶ Privilege Level: Administrator
- ▶ Format: ipsec connection modify <P-1> name <P-2> certificate ca add <P-3> clear local <P-4> [remote <P-5>] [privkey <P-6>] [passphrase <P-7>] debug informational <P-8> not-handled <P-9> access [method <P-10>] [pre-shared-key <P-11>] [local-type <P-12>] [local-id <P-13>] [remote-type <P-14>] [remote-id <P-15>] key-exchange mode [protocol <P-16>] [startup <P-17>] [dpd-timeout <P-18>] [lifetime <P-19>] [exchange-mode <P-20>] [margintime <P-21>] [re-authenticate <P-22>] algorithms [key-agreement <P-23>] [integrity <P-24>] [encryption <P-25>] endpoints [local-address <P-26>] [remote-address <P-27>] data-exchange mode [lifetime <P-28>] algorithms [key-agreement <P-29>] [integrity <P-30>] [encryption <P-31>]

name: IPsec VPN connection name.

certificate: Manage certificates for this connection.

ca: Set the CA certificate file name(s). Also supports comma-separated chains.

add: Add a CA file name to the current connection.

clear: Remove all the CA file names added to the current connection.

local: Set the file name of the certificate that will identify the current device.

[remote]: Set the file name of the certificate that will identify the remote device.

[privkey]: Set the file name of the private key (if it is encrypted and cannot be automatically matched to the certificate).

[passphrase]: Set the passphrase to be used with an encrypted private key or PKCS12 encrypted container (warning: will be stored in the config!).

debug: IPsec VPN connection additional debugging information to event log.

informational: Enable or disable debug of informational messages.
 not-handled: Enable or disable debug of not handled messages.
 access: IPsec VPN access.
 [method]: Authentication method to be used.
 [pre-shared-key]: Preshared key (passphrase).
 [local-type]: Type of local peer identifier.
 [local-id]: Local peer identifier.
 [remote-type]: Type of remote peer identifier.
 [remote-id]: Remote peer identifier.
 key-exchange: Key exchange parameters.
 mode: Key exchange mode.
 [protocol]: Version of the key exchange protocol.
 [startup]: Key exchange at startup.
 [dpd-timeout]: Dead peer detection timeout.
 [lifetime]: IKE security association lifetime.
 [exchange-mode]: IKE exchange mode.
 [margin-time]: IKE and IPsec margin-time for re-keying before timeout.
 [re-authenticate]: Re-authenticate at end of IKE lifetime (IKEv2 only).
 algorithms: Key exchange algorithms.
 [key-agreement]: Key agreement algorithm to be used.
 [integrity]: Integrity (MAC) algorithm to be used in IKEv2.
 [encryption]: Encryption algorithm to be used.
 endpoints: IPsec VPN tunnel endpoints.
 [local-address]: Address of local security gateway.
 [remote-address]: Address of remote security gateway.
 data-exchange: Data exchange parameters.
 mode: Data exchange mode.
 [lifetime]: Lifetime of IPsec SA.
 algorithms: Data exchange algorithms.
 [key-agreement]: Key agreement algorithm to be used.
 [integrity]: Integrity (MAC) algorithm to be used in IPsec.
 [encryption]: Algorithm to be used for IPsec payload encryption.

Parameter	Value	Meaning
P-1	1..256	VPN connection index.
P-2	string	Enter a user-defined text, max. 128 characters.
P-3	string	Filename.
P-4	string	Filename.
P-5	string	Filename.
P-6	string	Filename.
P-7	string	Enter a user-defined text, max. 128 characters.
P-8	debug_inform	debug informational
P-9	debug_unhandled	debug unhandled
P-10		
	psk	Pre-shared key.
	x509rsa	Individual X.509 RSA certificates.
	pkcs12	Single PKCS12 file with all certificates (including CA).
P-11	string	Enter a user-defined text, max. 128 characters.
P-12		
	default	Local IPv4 address.
	address	IPv4 address or host name (use from address field).
	id	Use identifier.
P-13	string	Enter a user-defined text, max. 255 characters.
P-14		
	any	Not checked.
	address	IPv4 address or host name (use from address field).
	id	Use identifier.
P-15	string	Enter a user-defined text, max. 255 characters.
P-16		
	auto	Accept IKEv1/v2 as responder, start with IKEv2 as initiator.
	v1	IKE version 1 (ISAKMP).
	v2	IKE version 2.

Virtual Private Network (VPN)

58.1 ipsec

Parameter	Value	Meaning
P-17	initiator	Initiates an IKE at startup.
	responder	Peer starts the IKE initiation.
P-18	0..86400	Interval between liveness messages in seconds, 0 to disable.
P-19	300..86400	Lifetime of IKE SA in seconds (Max. 24h).
P-20	main	Initiates or Accepts main mode only.
	aggressive	Initiates or Accepts aggressive mode.
P-21	1..1800	Margintime for re-keying before timeout.
P-22	true	True
	false	False
P-23	any	Accept all algorithms as responder, use default as initiator.
	modp1024	RSA with 1024 bits modulus (DH Group 2).
	modp1536	RSA with 1536 bits modulus (DH Group 5).
	modp2048	RSA with 2048 bits modulus (DH Group 14).
	modp3072	RSA with 3072 bits modulus (DH Group 15).
	modp4096	RSA with 4096 bits modulus (DH Group 16).
	ecp256	NIST Elliptic Curve with 256 bits (DH Group 19).
	ecp384	NIST Elliptic Curve with 384 bits (DH Group 20).
P-24	any	Accept all algorithms as responder, use default as initiator.
	hmacmd5	HMAC-MD5
	hmacsha1	HMAC-SHA1
	hmacsha256	HMAC-SHA256
	hmacsha384	HMAC-SHA384
	hmacsha512	HMAC-SHA512
P-25	any	Accept all algorithms as responder, use default as initiator.
	des	DES
	des3	Triple-DES
	aes128	AES with 128 key bits.
	aes192	AES with 192 key bits.
	aes256	AES with 256 key bits.
P-26	any	Use the primary IP address of external interface.
	a.b.c.d	a.b.c.d IP address.
	nu,nu-nu	host.name.domain FQDN
P-27	any	Use the primary IP address of external interface.
	a.b.c.d	a.b.c.d IP address.
	nu,nu-nu	host.name.domain FQDN
P-28	300..28800	Lifetime of IPsec SA in seconds (Max. 8h).
P-29	any	Accept all algorithms as responder, use default as initiator.
	modp1024	RSA with 1024 bits modulus (DH Group 2).
	modp1536	RSA with 1536 bits modulus (DH Group 5).
	modp2048	RSA with 2048 bits modulus (DH Group 14).
	modp3072	RSA with 3072 bits modulus (DH Group 15).
	modp4096	RSA with 4096 bits modulus (DH Group 16).
	none	No perfect forward secrecy.
	ecp256	NIST Elliptic Curve with 256 bits (DH Group 19).
	ecp384	NIST Elliptic Curve with 384 bits (DH Group 20).
P-30	any	Accept all algorithms as responder, use default as initiator.
	hmacmd5	HMAC-MD5
	hmacsha1	HMAC-SHA1
	hmacsha256	HMAC-SHA256
	hmacsha384	HMAC-SHA384
	hmacsha512	HMAC-SHA512

Parameter	Value	Meaning
P-31	any	Accept all algorithms as responder, use default as initiator.
	des	DES
	des3	Triple-DES
	aes128	AES with 128 key bits.
	aes192	AES with 192 key bits.
	aes256	AES with 256 key bits.
	aes128ctr	AES-COUNTER with 128 key bits.
	aes192ctr	AES-COUNTER with 192 key bits.
	aes256ctr	AES-COUNTER with 256 key bits.
	aes128gcm64	AES-GCM with 64 bit ICV with 128 key bits.
	aes128gcm96	AES-GCM with 96 bit ICV with 128 key bits.
	aes128gcm128	AES-GCM with 128 bit ICV with 128 key bits.
	aes192gcm64	AES-GCM with 64 bit ICV with 192 key bits.
	aes192gcm96	AES-GCM with 96 bit ICV with 192 key bits.
	aes192gcm128	AES-GCM with 128 bit ICV with 192 key bits.
	aes256gcm64	AES-GCM with 64 bit ICV with 256 key bits.
	aes256gcm96	AES-GCM with 96 bit ICV with 256 key bits.
	aes256gcm128	AES-GCM with 128 bit ICV with 256 key bits.

■ no ipsec connection modify

Disable the option

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: no ipsec connection modify name certificate ca add clear local [remote] [privkey] [passphrase] debug informational <P-8> not-handled <P-9> access [method] [pre-shared-key] [local-type] [local-id] [remote-type] [remote-id] key-exchange mode [protocol] [startup] [dpd-timeout] [lifetime] [exchange-mode] [margintime] [re-authenticate] algorithms [key-agreement] [integrity] [encryption] endpoints [local-address] [remote-address] data-exchange mode [lifetime] algorithms [key-agreement] [integrity] [encryption]

58.1.5 ipsec connection status

Enable or disable a IPsec VPN connection (index in connection is mandatory).

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: ipsec connection status <P-1> <P-2>

Parameter	Value	Meaning
P-1	1..256	VPN connection index.
P-2	enable	Enable the option.
	disable	Disable the option.

58.1.6 ipsec connection delete

Delete a IPsec VPN connection (index in connection is mandatory).

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: ipsec connection delete <P-1>

Parameter	Value	Meaning
P-1	1..256	VPN connection index.

58.1.7 ipsec traffic-selector

IPsec VPN traffic selectors.

- Mode: Global Config Mode
- Privilege Level: Administrator
- Format: ipsec traffic-selector <P-1> add <P-2> [name <P-3>] delete <P-4> modify <P-5> [name <P-6>] [source-net <P-7>] [source-restriction <P-8>] [dest-net <P-9>] [dest-restriction <P-10>] status <P-11> <P-12>

add: Add new traffic selector.

[name]: Traffic selector ID.

delete: Delete an existing traffic selector.

modify: Modify an existing traffic selector.

[name]: Traffic selector ID.

[source-net]: Source address for the traffic selector.

[source-restriction]: Source restriction for the traffic selector

[dest-net]: Destination address for the traffic selector.

[dest-restriction]: Destination restriction for the traffic selector.

status: Enable or disable an existing traffic selector.

Parameter	Value	Meaning
P-1	1..256	VPN connection index.
P-2	1..16	Index of the traffic selector (unique inside of a IPsec VPN connection).
P-3	string	Enter a user-defined text, max. 128 characters.
P-4	1..16	Index of the traffic selector (unique inside of a IPsec VPN connection).
P-5	1..16	Index of the traffic selector (unique inside of a IPsec VPN connection).
P-6	string	Enter a user-defined text, max. 128 characters.
P-7	a.b.c.d	a.b.c.d Single IP address.
	a.b.c.d	a.b.c.d Address range in CIDR notation.
	any	Any IP address.
P-8	string	'protocol/port' Traffic selector restriction can be given as string, e.g. tcp/http or can be given as numbers, e.g. 6/80 (=tcp/http)'protocol/port' Traffic selector restriction can be given as string, e.g. http (= any/http) or can be given as numbers,e.g. /53 (= any/53) 'protocol/port' Traffic selector restriction can be given as string, e.g. udp (= udp/any) or can be given as numbers, e.g. 17 (= 17(udp)/any) an empty restriction " means to have no restriction (any/any)
P-9	a.b.c.d	a.b.c.d Single IP address.
	a.b.c.d	a.b.c.d Address range in CIDR notation.
	any	Any IP address.
P-10	string	'protocol/port' Traffic selector restriction can be given as string, e.g. tcp/http or can be given as numbers, e.g. 6/80 (=tcp/http)'protocol/port' Traffic selector restriction can be given as string, e.g. http (= any/http) or can be given as numbers, e.g. /53 (= any/53)'protocol/port' Traffic selector restriction can be given as string, e.g. udp (= udp/any) or can be given as numbers, e.g. 17 (= 17(udp)/any) an empty restriction " means to have no restriction (any/any)
P-11	1..256	Index of the traffic selector (unique inside of a IPsec VPN connection).
P-12	enable	Enable the option.
	disable	Disable the option.

58.2 show

Display device options and settings.

58.2.1 show ipsec general

General IPsec VPN settings.

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

58.2.2 show ipsec connections summary

Overview of all configured connections.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ipsec connections summary

58.2.3 show ipsec connections access

IPsec connection access settings.

- Mode: Command is in all modes available.
- Privilege Level: Guest
- Format: show ipsec connections access <P-1>

Parameter	Value	Meaning
P-1	1..256	VPN connection index.

58.2.4 show ipsec connections certificates

IPsec connection certificates.

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

Parameter	Value	Meaning
P-1	1..256	VPN connection index.

58.2.5 show ipsec connections key-exchange

IPsec connection key exchange settings (IKE).

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show ipsec connections key-exchange <P-1>

Parameter	Value	Meaning
P-1	1..256	VPN connection index.

58.2.6 show ipsec connections data-exchange

IPsec connection data exchange settings.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show ipsec connections data-exchange <P-1>

Parameter	Value	Meaning
P-1	1..256	VPN connection index.

58.2.7 show ipsec connections status

IPsec connection status.

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

Parameter	Value	Meaning
P-1	1..256	VPN connection index.

58.2.8 show ipsec connections tunnels

IPsec connection tunnels.

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

Parameter	Value	Meaning
P-1	1..256	VPN connection index.

58.2.9 show ipsec traffic-selectors

Traffic selectors for a IPsec VPN connection.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Guest
- ▶ Format: show ipsec traffic-selectors <P-1> [<P-2>]

Parameter	Value	Meaning
P-1	1..256	VPN connection index.
P-2	1..16	Index of the traffic selector (unique inside of a IPsec VPN connection).

58.2.10 show ipsec certificate summary

Display a summary of the uploaded certificates and private keys.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Administrator
- ▶ Format: show ipsec certificate summary

58.2.11 show ipsec certificate details

Display the details about a specific certificate or private key.

- ▶ Mode: Command is in all modes available.
- ▶ Privilege Level: Administrator
- ▶ Format: show ipsec certificate details <P-1>

Parameter	Value	Meaning
P-1	1..100	Certificate Table Index.

A Further support

Technical questions

For technical questions, please contact any Hirschmann dealer in your area or Hirschmann directly.

You find the addresses of our partners on the Internet at www.hirschmann.com.

A list of local telephone numbers and email addresses for technical support directly from Hirschmann is available at hirschmann-support.belden.com.

This site also includes a free of charge knowledge base and a software download section.

Technical Documents

The current manuals and operating instructions for Hirschmann products are available at doc.hirschmann.com.

Hirschmann Competence Center

The Hirschmann Competence Center is ahead of its competitors on three counts with its complete range of innovative services:

- ▶ Consulting incorporates comprehensive technical advice, from system evaluation through network planning to project planning.
- ▶ Training offers you an introduction to the basics, product briefing and user training with certification. You find the training courses on technology and products currently available at www.hicomcenter.com.
- ▶ Support ranges from the first installation through the standby service to maintenance concepts.

With the Hirschmann Competence Center, you decided against making any compromises. Our client-customized package leaves you free to choose the service components you want to use.

B Readers' Comments

What is your opinion of this manual? We are constantly striving to provide as comprehensive a description of our product as possible, as well as important information to assist you in the operation of this product. Your comments and suggestions help us to further improve the quality of our documentation.

Your assessment of this manual:

	Very Good	Good	Satisfactory	Mediocre	Poor
Precise description	☐	☐	☐	☐	☐
Readability	☐	☐	☐	☐	☐
Understandability	☐	☐	☐	☐	☐
Examples	☐	☐	☐	☐	☐
Structure	☐	☐	☐	☐	☐
Comprehensive	☐	☐	☐	☐	☐
Graphics	☐	☐	☐	☐	☐
Drawings	☐	☐	☐	☐	☐
Tables	☐	☐	☐	☐	☐

Did you discover any errors in this manual?
If so, on what page?

Suggestions for improvement and additional information:

General comments:

Sender:

Company / Department:

Name / Telephone number:

Street:

Zip code / City:

E-mail:

Date / Signature:

Dear User,

Please fill out and return this page

- ▶ as a fax to the number +49 (0)7127/14-1600 or
- ▶ per mail to

Hirschmann Automation and Control GmbH
Department 01RD-NT
Stuttgarter Str. 45-51
72654 Neckartenzlingen



HIRSCHMANN

A **BELDEN** BRAND