

Management Software

AT-S100

User's Guide

For use with the AT-9000/28, AT-9000/28SP, and
AT-9000/52 Managed Layer 2 GE ecoSwitches

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Contents

Preface	17
Document Conventions	18
Where to Find Web-based Guides	19
Contacting Allied Telesis	20
Online Support	20
Email and Telephone Support.....	20
Warranty.....	20
Returning Products	20
Sales or Corporate Information	20
Management Software Updates.....	20
Chapter 1: Getting Started with the Command Line Interface	21
Introducing the Command Modes	22
View Mode	25
Privileged Executive Mode.....	26
Configuration Terminal Mode.....	27
Interface Configuration Mode.....	28
VLAN Configuration Mode	29
Line Mode	30
Starting the Command Line Interface.....	31
Formatting Commands.....	32
Command Line Interface Features.....	32
Command Formatting Conventions	32
Specifying an Interface.....	32
Command Line Syntax Conventions.....	33
Chapter 2: Configuring the AT-S100 Software	35
Setting the Switch.....	36
Assigning an IP Address	36
Setting DHCP.....	37
Setting a Gateway Address.....	37
Setting the Network Time.....	37
Increasing Frame Size (Jumbo Frames).....	39
Saving the Configuration.....	39
Adding a User Name and Password	39
Displaying and Setting MAC Addresses	40
Rebooting the Switch	43
Resetting Switch to Factory Default Values.....	43
Upgrading or Downgrading Software	43
Uploading an Image File	45
Displaying and Saving Configuration Files.....	46
Copying Configuration Files.....	47
Selecting the Configuration File for Next Start-up.....	48
Uploading and Downloading Configuration Files	48
Creating VLANs	49

Setting the Ports	52
Displaying Port Ethernet Statistics	52
Setting Port Mirroring.....	52
Setting Port Speed and Duplex Mode	53
Enabling and Disabling Ports	54
Setting MDI and MDIX.....	54
Setting Port Security.....	55
Creating Static Trunks	58
Enabling Backpressure.....	59
Enabling Flow Control	60
Limiting Broadcast Storms.....	61
Configuring Protocols.....	62
Setting GVRP	62
Enabling IGMP Snooping	64
Setting the Link Access Control Protocol (LACP).....	65
Setting 802.1x Port Authentication	66
Configuring RADIUS Authentication.....	67
Setting Simple Network Management Protocol (SNMP)	68
Setting the Secure Shell	71
Setting STP and RSTP	71
Configuring 802.1p Class of Service	76

Section I: Command Modes 79

Chapter 3: View Mode Commands	81
CLEAR COUNTERS.....	84
CLEAR GMRP STATISTICS	85
CLEAR GVRP STATISTICS	86
CLEAR LACP COUNTERS	87
CLEAR MAC ADDRESS-TABLE DYNAMIC.....	88
CLEAR MAC ADDRESS-TABLE MULTICAST	90
CLEAR MAC ADDRESS-TABLE STATIC	92
CLEAR SPANNING-TREE DETECTED PROTOCOL.....	94
CLOCK SET.....	95
ENABLE	96
EXIT	97
HELP.....	98
LOGOUT	100
QUIT	101
SHOW CLOCK	102
SHOW DOT1X.....	104
SHOW DOT1X ALL	105
SHOW DOT1X INTERFACE	108
SHOW DOT1X SESSIONSTATISTICS	110
SHOW DOT1X STATISTICS INTERFACE.....	112
SHOW ETHERCHANNEL	114
SHOW ETHERCHANNEL DETAIL	115
SHOW ETHERCHANNEL SUMMARY	117
SHOW FLOWCONTROL INTERFACE.....	118
SHOW GMRP CONFIGURATION	119
SHOW GMRP MACHINE	120
SHOW GMRP STATISTICS	121
SHOW GMRP TIMER.....	122
SHOW GVRP CONFIGURATION.....	123
SHOW GVRP STATISTICS	125

SHOW GVRP TIMER	127
SHOW HISTORY	129
SHOW INTERFACE	130
SHOW INTERFACE STATUS ALL	132
SHOW INTERFACE SWITCHPORT ALL	135
SHOW IP ARP	137
SHOW IP IGMP GROUPS	139
SHOW IP IGMP INTERFACE	141
SHOW IP IGMP SNOOPING STATISTICS	143
SHOW IP INTERFACE BRIEF	144
SHOW INTERFACE SWITCHPORT ALL	146
SHOW IP ROUTE	148
SHOW LACP-COUNTER	150
SHOW LACP SYS-ID	152
SHOW LIST	153
SHOW LOG	155
SHOW MAC ADDRESS-TABLE	156
SHOW MIRROR	158
SHOW MIRROR INTERFACE	159
SHOW MLS QOS INTERFACE	160
SHOW NTP ASSOCIATIONS	161
SHOW NTP STATUS	163
SHOW PORT ETHERCHANNEL	164
SHOW PORT-SECURITY ADDRESS	166
SHOW PORT-SECURITY INTERFACE	168
SHOW PRIVILEGE	171
SHOW RMON ALARM	172
SHOW RMON EVENT	173
SHOW RMON HISTORY	174
SHOW RMON STATISTICS	176
SHOW SNMP COMMUNITY	178
SHOW SNMP HOST	179
SHOW SNMP STATUS	180
SHOW SPANNING-TREE	181
SHOW SSHFINGERPRINT	184
SHOW SSHSERVER STATUS	185
SHOW STATIC-CHANNEL-GROUP	187
SHOW STORM-CONTROL	188
SHOW UPLINK INTERFACE	189
SHOW USER-PRIORITY	191
SHOW USER-PRIORITY-REGEN-TABLE	192
SHOW USERS	193
SHOW VERSION	194
SHOW VLAN ALL	195
SHOW VLAN BRIEF	197
SHOW VLAN DYNAMIC	199
SHOW VLAN STATIC	200
TERMINAL LENGTH	202
Chapter 4: Privileged Executive Mode Commands	203
BOOT CONFIG-FILE	207
CAT	208
CLEAR ARP CACHE	209
CLEAR COUNTERS	210
CLEAR GMRP STATISTICS	211
CLEAR GVRP STATISTICS	212

CLEAR IP IGMP	213
CLEAR IP IGMP GROUP	214
CLEAR IP IGMP INTERFACE	215
CLEAR LACP COUNTERS	216
CLEAR LINE VTY	217
CLEAR MAC ADDRESS-TABLE DYNAMIC.....	218
CLEAR MAC ADDRESS-TABLE MULTICAST	220
CLEAR MAC ADDRESS-TABLE STATIC	222
CLEAR SPANNING-TREE DETECTED PROTOCOLS.....	224
CLOCK SET.....	225
CONFIGURE TERMINAL	226
COPY	228
COPY A.B.C.D	229
COPY DEFAULT.CFG	231
COPY WORD XMODEM	233
COPY XMODEM WORD	234
CP	235
DISABLE	236
DOT1X INITIALIZE INTERFACE	237
DOWNLOAD SERIAL XMODEM	238
DOWNLOAD TFTP	240
EXIT	241
HELP.....	242
LOGOUT	243
LS.....	244
PING	245
MV.....	247
RM	248
SHOW BOOT.....	249
SHOW CLOCK	250
SHOW DOT1X.....	252
SHOW DOT1X ALL	253
SHOW DOT1X INTERFACE	256
SHOW DOT1X SESSIONSTATISTICS	258
SHOW DOT1X STATISTICS INTERFACE.....	260
SHOW ETHERCHANNEL	262
SHOW ETHERCHANNEL DETAIL	263
SHOW ETHERCHANNEL LOAD-BALANCE.....	265
SHOW ETHERCHANNEL SUMMARY	266
SHOW FLOWCONTROL INTERFACE.....	267
SHOW GMRP CONFIGURATION	269
SHOW GMRP MACHINE	270
SHOW GMRP STATISTICS	271
SHOW GMRP TIMER.....	272
SHOW GVRP CONFIGURATION.....	273
SHOW GVRP MACHINE	275
SHOW GVRP STATISTICS	277
SHOW GVRP TIMER	279
SHOW HISTORY	281
SHOW INTERFACE	282
SHOW INTERFACE STATUS	284
SHOW INTERFACE SWITCHPORT ALL	287
SHOW IP ARP	289
SHOW IP IGMP GROUPS.....	291
SHOW IP IGMP INTERFACE	293

SHOW IP INTERFACE BRIEF	295
SHOW IP ROUTE	297
SHOW LACP-COUNTER	299
SHOW LACP SYS-ID	301
SHOW LIST	302
SHOW LOG	304
SHOW MAC ADDRESS-TABLE	305
SHOW MAC ADDRESS-TABLE AGING-TIME	307
SHOW MAC ADDRESS-TABLE DYNAMIC	309
SHOW MAC ADDRESS-TABLE INTERFACE	311
SHOW MAC ADDRESS-TABLE STATIC	313
SHOW MAC ADDRESS-TABLE VLAN	315
SHOW MIRROR	317
SHOW MIRROR INTERFACE	318
SHOW MLS QOS INTERFACE	319
SHOW NTP ASSOCIATIONS	320
SHOW NTP STATUS	322
SHOW PORT-SECURITY ADDRESS	323
SHOW PORT-SECURITY INTERFACE	325
SHOW PRIVILEGE	328
SHOW RMON ALARM	329
SHOW RMON EVENT	330
SHOW RMON HISTORY	331
SHOW RMON STATISTICS	333
SHOW RUNNING-CONFIG FULL	335
SHOW RUNNING-CONFIG INTERFACE	337
SHOW RUNNING-CONFIG IP IGMP SNOOPING	339
SHOW RUNNING-CONFIG SWITCH	340
SHOW SSHFINGERPRINT	342
SHOW SSHSERVER STATUS	343
SHOW SPANNING-TREE	345
SHOW STARTUP-CONFIG	347
SHOW STATIC-CHANNEL-GROUP	349
SHOW STORM-CONTROL	350
SHOW UPLINK INTERFACE	351
SHOW USER-PRIORITY	353
SHOW USER-PRIORITY-REGEN-TABLE	354
SHOW USERS	355
SHOW VERSION	356
SYSTEM FACTORY-RESET	357
SYSTEM REBOOT	358
TELENET	359
TRACEROUTE	360
UPLOAD SERIAL XMODEM	361
UPLOAD TFTP	363
WRITE FILE	365
WRITE TERMINAL	366
Chapter 5: Configuration Terminal Mode Commands	369
ARP	371
BANNER	373
CLOCK SUMMER-TIME RECURRING	374
CLOCK TIMEZONE	376
CRYPTO KEY GENERATE	378
CRYPTO KEY ZEROIZE	380
CRYPTO SSHSERVER	381

DOT1X SYSTEM-AUTH-CTRL.....	383
ENABLE SECRET	384
EXIT	385
HELP.....	386
HOSTNAME.....	388
INTERFACE.....	389
IP IGMP LIMIT	391
IP IGMP SNOOPING	393
IP ROUTE	394
IP SSH AUTHENTICATION-TRIES	395
IP SSH TIMEOUT	396
IP SSH RSA KEYPAIR-NAME.....	397
IP SSH VERSION	398
LACP SYSTEM-PRIORITY.....	399
LINE CONSOLE	400
MAC ADDRESS-TABLE AGING-TIME.....	401
MAC ADDRESS-TABLE STATIC DISCARD	402
MAC ADDRESS-TABLE STATIC FORWARD.....	404
MLS QOS.....	406
MLS QOS ENABLE	408
NTP AUTHENTICATE	409
NTP AUTHENTICATION-KEY	410
NTP SERVER	412
NTP TRUSTED-KEY	414
SERVICE ADVANCED-VTY	415
SERVICE PASSWORD-ENCRYPTION.....	416
SERVICE TERMINAL-LENGTH	417
SHOW LIST	418
SHOW RUNNING-CONFIG.....	420
SHOW RUNNING-CONFIG FULL	424
SHOW RUNNING-CONFIG INTERFACE.....	426
SHOW RUNNING-CONFIG IP IGMP SNOOPING	428
SHOW RUNNING-CONFIG SWITCH.....	429
SHOW RUNNING-CONFIG SWITCH LACP	431
SHOW RUNNING-CONFIG SWITCH RADIUS-SERVER	432
SHOW RUNNING-CONFIG SWITCH VLAN	433
USERNAME.....	434
Chapter 6: Log Server Commands	435
CLEAR LOG	436
LOG BUFFERED	437
LOG CONSOLE.....	438
LOG FILE.....	440
LOG HOST	442
LOG RECORD-PRIORITY.....	443
LOG STDOUT.....	444
LOG SYSLOG.....	446
LOG TRAP	447
Chapter 7: Interface Configuration Mode Commands	449
CHANNEL-GROUP	451
DOT1X PORT-CONTROL	453
EXIT	454
FLOW CONTROL BACKPRESSURE.....	455
FLOW CONTROL RECEIVE	456
FLOW CONTROL SEND	457

IP ADDRESS	458
IP ADDRESS DHCP	461
LACP PORT-PRIORITY	462
MDIX	463
MIRROR INTERFACE DIRECTION	464
MTU	466
SHOW RUNNING-CONFIG INTERFACE	467
SHUTDOWN	469
SPANNING-TREE PORTFAST BPDU-GUARD	470
SPEED	472
STATIC-CHANNEL-GROUP	475
STORM-CONTROL	476
SWITCHPORT ACCESS VLAN	478
SWITCHPORT MODE TRUNK	479
SWITCHPORT TRUNK ALLOWED VLAN	481
TRAFFIC-CLASS-TABLE USER-PRIORITY NUM-TRAFFIC-CLASSES	483
USER-PRIORITY	484
USER-PRIORITY-REGEN-TABLE	485
Chapter 8: Line Mode Commands	487
CLEAR LINE VTY	488
LOGIN REMOTELOCAL	489
LINE CONSOLE	490
LINE VTY	491
SHOW RUNNING-CONFIG INTERFACE	493
TELENET	495

Section II: Advanced Configuration 497

Chapter 9: 802.1x Access Control Commands	499
DOT1X PORT-CONTROL	500
DOT1X SYSTEM-AUTH-CTRL	501
IP RADIUS SOURCE-INTERFACE	502
RADIUS-SERVER DEADTIME	504
RADIUS-SERVER HOST	506
RADIUS-SERVER KEY	508
RADIUS-SERVER RETRANSMIT	509
RADIUS-SERVER TIMEOUT	510
SHOW DOT1X	511
SHOW DOT1X ALL	512
SHOW DOT1X INTERFACE	515
SHOW DOT1X STATISTICS INTERFACE	517
Chapter 10: GVRP Commands	519
Overview	520
Guidelines	521
SET GVRP	522
SET GVRP APPLICANT	523
SET GVRP DYNAMIC-VLAN-CREATION	524
SET GVRP REGISTRATION	525
SET GVRP TIMER	527
Chapter 11: GMRP Commands	529
SET GMRP	530
SET GMRP EXTENDED-FILTERING	531
SET GMRP FDWALL	532

SET GMRP REGISTRATION	533
SET GMRP TIMER	535
SET GMRP VLAN	537
Chapter 12: Port Security Commands	539
SWITCHPORT PORT-SECURITY MAC-ADDRESS	540
SWITCHPORT PORT-SECURITY MAXIMUM	542
SWITCHPORT PORT-SECURITY MODE	543
SWITCHPORT PORT-SECURITY VIOLATION	545
Chapter 13: Simple Network Management Protocol (SNMP) Commands	547
RMON ALARM	548
RMON EVENT	550
SNMP-SERVER COMMUNITY	552
SNMP-SERVER CONTACT	554
SNMP-SERVER ENABLE TRAPS ENVIRON	556
SNMP-SERVER ENABLE TRAPS SNMP	558
SNMP-SERVER GROUP	559
SNMP-SERVER HOST	561
SNMP-SERVER LOCATION	563
SNMP-SERVER USER	564
SNMP-SERVER USER REMOTE	566
SNMP-SERVER VIEW	568
Chapter 14: Spanning Tree Protocol (STP) Commands	571
SHOW SPANNING-TREE	572
SPANNING-TREE ACQUIRE	575
SPANNING-TREE ERDDISABLE-TIMEOUT ENABLE	576
SPANNING-TREE ERDDISABLE-TIMEOUT INTERVAL	578
SPANNING-TREE ENABLE	580
SPANNING-TREE FORWARD-TIME	582
SPANNING-TREE HELLO-TIME	583
SPANNING-TREE MAX-AGE	584
SPANNING-TREE MODE	585
SPANNING-TREE PORTFAST BPDU-FILTER DEFAULT	586
SPANNING-TREE PORTFAST BPDU-GUARD DEFAULT	587
SPANNING-TREE PORTFAST BPDU-GUARD	588
SPANNING-TREE PRIORITY	590
Chapter 15: Virtual Local Area Networks (VLAN) Commands	591
SHOW RUNNING-CONFIG INTERFACE	592
SHOW VLAN ALL	594
SHOW VLAN BRIEF	596
SHOW VLAN DYNAMIC	598
SHOW VLAN STATIC	599
SWITCHPORT TRUNK ALLOWED VLAN	601
VLAN	603
VLAN DATABASE	604
Index	605

Figures

Figure 1: AT-S100 Command Modes.....	23
Figure 2: Command Line Login Screen.....	31
Figure 3: SHOW CLOCK Command.....	103
Figure 4: SHOW DOT1X Command.....	104
Figure 5: SHOW DOT1X ALL Command.....	105
Figure 6: SHOW DOT1X INTERFACE Command.....	109
Figure 7: SHOW DOT1X SESSIONSTATISTICS Command.....	110
Figure 8: SHOW DOT1X INTERFACE STATISTICS Command.....	112
Figure 9: SHOW ETHERCHANNEL Command.....	114
Figure 10: SHOW ETHERCHANNEL DETAIL Command.....	115
Figure 11: SHOW ETHERCHANNEL SUMMARY Command.....	117
Figure 12: SHOW FLOWCONTROL INTERFACE Command.....	118
Figure 13: SHOW GVRP CONFIGURATION Command.....	123
Figure 14: SHOW GVRP STATISTICS Command.....	126
Figure 15: SHOW GVRP TIMER Command.....	127
Figure 16: SHOW HISTORY Command.....	129
Figure 17: SHOW INTERFACE Command.....	131
Figure 18: SHOW INTERFACE STATUS ALL Command, Screen 1.....	133
Figure 19: SHOW INTERFACE STATUS ALL Command, Screen 2.....	133
Figure 20: SHOW INTERFACE SWITCHPORT ALL Command.....	136
Figure 21: SHOW IP ARP Command.....	137
Figure 22: SHOW IP IGMP GROUPS Command.....	140
Figure 23: SHOW IP IGMP INTERFACE Command.....	142
Figure 24: SHOW IP INTERFACE BRIEF Command.....	144
Figure 25: SHOW INTERFACE SWITCHPORT ALL Command.....	147
Figure 26: SHOW IP ROUTE Command.....	148
Figure 27: SHOW LACP-COUNTER Command.....	150
Figure 28: SHOW LACP SYS-ID Command.....	152
Figure 29: SHOW LIST Command.....	153
Figure 30: SHOW LOG Command.....	155
Figure 31: SHOW MAC ADDRESS-TABLE Command.....	157
Figure 32: SHOW MIRROR Command.....	158
Figure 33: SHOW MIRROR Interface Command.....	159
Figure 34: SHOW MLS QOS Interface Command.....	160
Figure 35: SHOW NTP ASSOCIATIONS Command.....	161
Figure 36: SHOW NTP ASSOCIATIONS DETAIL Command.....	162
Figure 37: SHOW NTP STATUS Command.....	163
Figure 38: SHOW PORT ETHERCHANNEL Command.....	165
Figure 39: SHOW PORT-SECURITY ADDRESS Command.....	166
Figure 40: SHOW PORT-SECURITY INTERFACE Command.....	168
Figure 41: SHOW RMON EVENT Command.....	173
Figure 42: SHOW RMON HISTORY Command.....	174
Figure 43: SHOW RMON STATISTICS Command.....	176
Figure 44: SHOW SNMP COMMUNITY Command.....	178
Figure 45: SHOW SNMP HOST Command.....	179
Figure 46: SHOW SNMP STATUS Command.....	180
Figure 47: SHOW SPANNING-TREE Command, Screen 1.....	182
Figure 48: SHOW SPANNING-TREE Command, Screen 2.....	182
Figure 49: SHOW SSHFINGERPRINT Command.....	184
Figure 50: SHOW SSHSERVER STATUS Command.....	185

Figure 51: SHOW STATIC-CHANNEL-GROUP	187
Figure 52: SHOW STORM-CONTROL Command	188
Figure 53: SHOW UPLINK INTERFACE Command	190
Figure 54: SHOW USER-PRIORITY-REGEN-TABLE Command	192
Figure 55: SHOW USERS Command	193
Figure 56: SHOW VLAN ALL	195
Figure 57: SHOW VLAN BRIEF Command	197
Figure 58: SHOW VLAN DYNAMIC Command	199
Figure 59: SHOW VLAN STATIC Command	200
Figure 60: HELP Command	242
Figure 61: LS Command	244
Figure 62: SHOW BOOT Command	249
Figure 63: SHOW CLOCK Command	251
Figure 64: SHOW DOT1X Command	252
Figure 65: SHOW DOT1X ALL Command	253
Figure 66: SHOW DOT1X INTERFACE Command	257
Figure 67: SHOW DOT1X SESSIONSTATISTICS Command	258
Figure 68: SHOW DOT1X STATISTICS INTERFACE Command	260
Figure 69: SHOW ETHERCHANNEL Command	262
Figure 70: SHOW ETHERCHANNEL DETAIL Command	263
Figure 71: SHOW ETHERCHANNEL LOAD-BALANCE Command	265
Figure 72: SHOW ETHERCHANNEL SUMMARY Command	266
Figure 73: SHOW FLOWCONTROL INTERFACE Command	267
Figure 74: SHOW GVRP CONFIGURATION Command	273
Figure 75: SHOW GVRP MACHINE Command	275
Figure 76: SHOW GVRP STATISTICS Command	278
Figure 77: SHOW GVRP TIMER Command	279
Figure 78: SHOW HISTORY Command	281
Figure 79: SHOW INTERFACE STATUS Command	285
Figure 80: SHOW INTERFACE STATUS ALL Command, Screen 2	285
Figure 81: SHOW INTERFACE SWITCHPORT ALL Command	288
Figure 82: SHOW IP ARP Command	289
Figure 83: SHOW IP IGMP GROUPS Command	292
Figure 84: SHOW IP IGMP INTERFACE Command	294
Figure 85: SHOW IP INTERFACE BRIEF Command	295
Figure 86: SHOW IP ROUTE Command	297
Figure 87: SHOW LACP-COUNTER Command	299
Figure 88: SHOW LACP SYS-ID Command	301
Figure 89: SHOW LIST Command	302
Figure 90: SHOW LOG Command	304
Figure 91: SHOW MAC ADDRESS-TABLE Command	306
Figure 92: SHOW MAC ADDRESS-TABLE AGING-TIME	307
Figure 93: SHOW MAC ADDRESS-TABLE DYNAMIC Command	310
Figure 94: SHOW MAC ADDRESS-TABLE INTERFACE Command	312
Figure 95: SHOW MAC ADDRESS-TABLE STATIC	314
Figure 96: SHOW MAC ADDRESS-TABLE VLAN Command	316
Figure 97: SHOW MIRROR Command	317
Figure 98: SHOW MIRROR Interface Command	318
Figure 99: SHOW MLS QOS Interface Command	319
Figure 100: SHOW NTP ASSOCIATIONS Command	320
Figure 101: SHOW NTP ASSOCIATIONS DETAIL Command	321
Figure 102: SHOW NTP STATUS Command	322
Figure 103: SHOW PORT-SECURITY ADDRESS Command	323
Figure 104: SHOW PORT-SECURITY INTERFACE Command	325
Figure 105: SHOW RMON EVENT Command	330
Figure 106: SHOW RMON HISTORY Command	331
Figure 107: SHOW RMON STATISTICS Command	333
Figure 108: SHOW RUNNING-CONFIG FULL Command	336
Figure 109: SHOW RUNNING-CONFIG INTERFACE Port Example	338
Figure 110: SHOW RUNNING-CONFIG INTERFACE Bridge Example	338

Figure 111: SHOW RUNNING-CONFIG INTERFACE DOT1X Example	338
Figure 112: SHOW RUNNING-CONFIG IP IGMP SNOOPING Example	339
Figure 113: SHOW RUNNING-CONFIG SWITCH STP Example	341
Figure 114: SHOW SSHFINGERPRINT Command	342
Figure 115: SHOW SSHSERVER STATUS Command	343
Figure 116: SHOW SPANNING-TREE Command, Screen 1	346
Figure 117: SHOW SPANNING-TREE Command, Screen 2	346
Figure 118: SHOW RUNNING-CONFIG Command, Screen 1	348
Figure 119: SHOW STATIC-CHANNEL-GROUP	349
Figure 120: SHOW STORM-CONTROL Command	350
Figure 121: SHOW UPLINK INTERFACE Command	352
Figure 122: SHOW USER-PRIORITY-REGEN-TABLE Command	354
Figure 123: SHOW USERS Command	355
Figure 124: WRITE TERMINAL Command	367
Figure 125: SHOW LIST Command	419
Figure 126: SHOW RUNNING-CONFIG Command, Screen 1	421
Figure 127: SHOW RUNNING-CONFIG Command, Screen 2	422
Figure 128: SHOW RUNNING-CONFIG Command, Screen 3	423
Figure 129: SHOW RUNNING-CONFIG FULL Command	425
Figure 130: SHOW RUNNING-CONFIG INTERFACE Port Example	427
Figure 131: SHOW RUNNING-CONFIG INTERFACE Bridge Example	427
Figure 132: SHOW RUNNING-CONFIG INTERFACE DOT1X Example	427
Figure 133: SHOW RUNNING-CONFIG SWITCH STP Example	430
Figure 134: SHOW RUNNING-CONFIG SWITCH LACP Example	431
Figure 135: SHOW RUNNING-CONFIG SWITCH RADIUS-SERVER Example	432
Figure 136: SHOW RUNNING-CONFIG SWITCH VLAN Example	433
Figure 137: LOG STDOUT Command	445
Figure 138: SHOW RUNNING-CONFIG INTERFACE Port Example	468
Figure 139: SHOW RUNNING-CONFIG INTERFACE Bridge Example	468
Figure 140: SHOW RUNNING-CONFIG INTERFACE DOT1X Example	468
Figure 141: SHOW RUNNING-CONFIG INTERFACE Port Example	494
Figure 142: SHOW RUNNING-CONFIG INTERFACE Bridge Example	494
Figure 143: SHOW RUNNING-CONFIG INTERFACE DOT1X Example	494
Figure 144: SHOW DOT1X Command	511
Figure 145: SHOW DOT1X ALL Command	512
Figure 146: SHOW DOT1X INTERFACE Command	516
Figure 147: SHOW DOT1X INTERFACE STATISTICS Command	517
Figure 148: SHOW SPANNING-TREE Command, page 1	573
Figure 149: SHOW SPANNING-TREE Command, page 2	573
Figure 150: SHOW RUNNING-CONFIG INTERFACE Port Example	593
Figure 151: SHOW RUNNING-CONFIG INTERFACE Bridge Example	593
Figure 152: SHOW RUNNING-CONFIG INTERFACE DOT1X Example	593
Figure 153: SHOW VLAN ALL	594
Figure 154: SHOW VLAN BRIEF	596
Figure 155: SHOW VLAN DYNAMIC	598
Figure 156: SHOW VLAN STATIC	599

Tables

Table 1: Command Modes	24
Table 2: Examples of View Mode Commands	26
Table 3: Examples of Privileged Executive Mode Commands	26
Table 4: Examples of Configuration Terminal Mode Commands	27
Table 5: Examples of Interface Configuration Mode Commands	29
Table 6: Examples of VLAN Mode Commands	30
Table 7: LINE Mode Commands	30
Table 8: Command Line Syntax Conventions	33
Table 9: SHOW CLOCK Parameters	102
Table 10: SHOW DOT1X ALL Parameter Description	106
Table 11: SHOW IP ARP Field Descriptions	138
Table 12: SHOW IP IGMP GROUPS Field Descriptions	140
Table 13: SHOW NTP ASSOCIATIONS Command	161
Table 14: Port Security Status Definitions	169
Table 15: SHOW SSHSERVER STATUS	185
Table 16: SHOW CLOCK Parameters	250
Table 17: SHOW DOT1X Parameter Description	254
Table 18: SHOW IP ARP Field Descriptions	290
Table 19: SHOW IP IGMP GROUPS Field Descriptions	292
Table 20: SHOW NTP ASSOCIATIONS Command	320
Table 21: Port Security Status Definitions	326
Table 22: SHOW SSHSERVER STATUS	343
Table 23: SHOW DOT1X Parameter Description	513

Preface

The AT-S100 Management Software is the operating system for the AT-9000/28, AT-9000/28SP, and AT-9000/52 Managed Layer 2 GE ecoSwitches. This guide describes the management software commands that you use to control and monitor the operating parameters of the AT-9000 switches.

This Preface contains the following sections:

- “Document Conventions” on page 18
- “Where to Find Web-based Guides” on page 19
- “Contacting Allied Telesis” on page 20

Document Conventions

This document uses the following conventions:

Note

Notes provide additional information.



Caution

Cautions inform you that performing or omitting a specific action may result in equipment damage or loss of data.



Warning

Warnings inform you that performing or omitting a specific action may result in bodily injury.

Where to Find Web-based Guides

The installation and user guides for all Allied Telesis products are available in portable document format (PDF) on our web site at **www.alliedtelesis.com**. You can view the documents online or download them onto a local workstation or server.

For details about the features and functions of the AT-9000/28, AT-9000/28SP and AT-9000/52 switches, see the following installation guide on our web site:

- *AT-9000 Managed Layer 2 GE ecoSwitch Family Installation Guide*
(part number 613-001100)

Contacting Allied Telesis

This section provides Allied Telesis contact information for technical support as well as sales and corporate information.

Online Support

You can request technical support online by accessing the Allied Telesis Knowledge Base: www.alliedtelesis.com/support/kb.aspx. You can use the Knowledge Base to submit questions to our technical support staff and review answers to previously asked questions.

Email and Telephone Support

For Technical Support via email or telephone, refer to the Support section of the Allied Telesis web site: www.alliedtelesis.com.

Warranty

For warranty information about the AT-9000 Series switches, go to the Allied Telesis web site at www.alliedtelesis.com.

Returning Products

Products for return or repair must first be assigned a return materials authorization (RMA) number. A product sent to Allied Telesis without an RMA number will be returned to the sender at the sender's expense. For instructions on how to obtain an RMA number, go to the Support section on our web site at www.alliedtelesis.com/support.rma.aspx.

Sales or Corporate Information

You can contact Allied Telesis for sales or corporate information through our web site at www.alliedtelesis.com.

Management Software Updates

New releases of the management software for our managed products are available from the following Internet sites:

- Allied Telesis web site: www.alliedtelesis.com
- Allied Telesis FTP server: <ftp://ftp.alliedtelesis.com>

If the FTP server prompts you to log on, enter "anonymous" as the user name and your email address as the password.

Chapter 1

Getting Started with the Command Line Interface

This chapter describes the command modes of the AT-S100 command line interface (CLI) and how to access them. This chapter includes the following sections:

- ❑ “Introducing the Command Modes” on page 22
- ❑ “Starting the Command Line Interface” on page 31
- ❑ “Formatting Commands” on page 32

Introducing the Command Modes

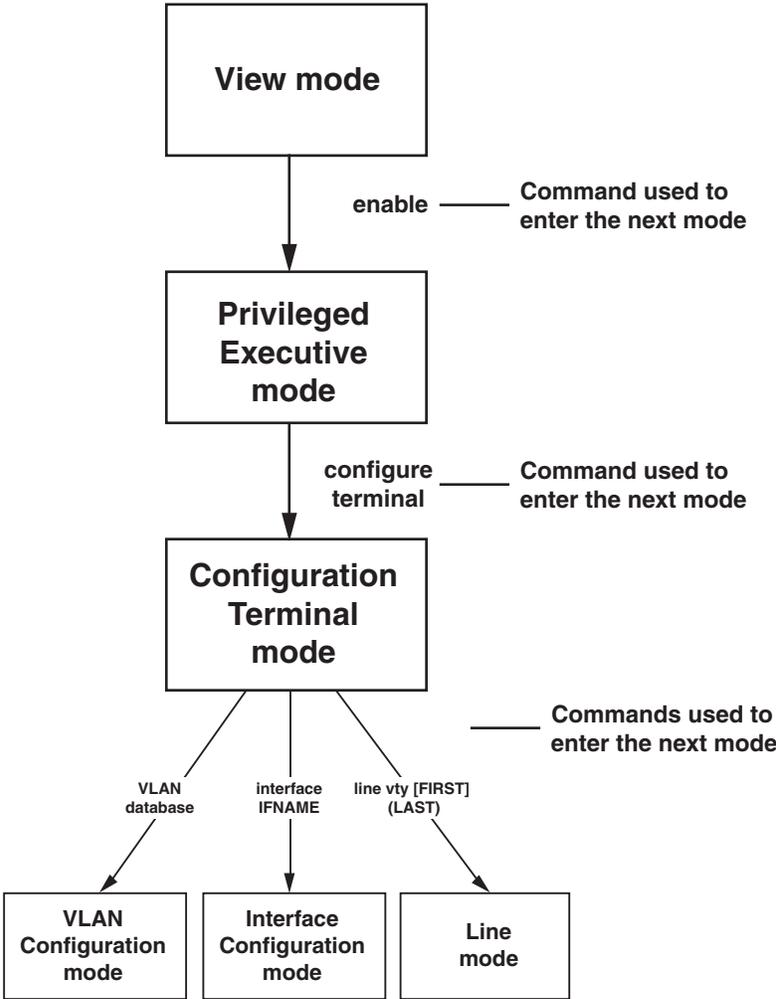
This chapter describes the CLI command modes and how to access the command line interface. There are 6 command modes:

- ❑ View Mode
- ❑ Privileged Executive Mode
- ❑ Configuration Terminal Mode
- ❑ VLAN Configuration Mode
- ❑ Interface Configuration Mode
- ❑ Line Mode

In the AT-S100 software, the commands are accessed through a hierarchy of command modes. Each command mode contains a subset of commands that are available within that mode. See Figure 1 on page 23 for an illustration of the command modes.

When you log on to the CLI interface, the default command mode that you access depends on your login id. There are two default login ids that are sent from the factory—the manager and operator login ids. The manager login id permits full administrator capabilities. With this login, you access the Privileged Executive mode by default. The operator login id enables you to display information about the software configuration. With this login, you access the View command mode automatically.

To navigate from one command mode to another, you enter a specific command. For example, to access the Configuration Terminal mode, enter the CONFIGURE TERMINAL command from the Privileged Executive mode. Once you enter a new command mode, the AT-S100 prompt changes to indicate the new mode.



1221

Figure 1. AT-S100 Command Modes

See Table 1 for information about the commands used to access the modes and their respective prompts.

Table 1. Command Modes

Command Mode	Prompt	Description
View Mode	(Switch)>	<ul style="list-style-type: none"> <input type="checkbox"/> This is the default command mode for the operator login. <input type="checkbox"/> To enter the Privileged Executive Mode, use the ENABLE command. You are then prompted for a password. <input type="checkbox"/> Enter the EXIT or LOGOUT commands to exit the management session.
Privileged Executive Mode	(Switch)#	<ul style="list-style-type: none"> <input type="checkbox"/> This is the default command mode for the manager login. <input type="checkbox"/> Use the CONFIGURE command to enter the Configuration Terminal mode from the Privileged Executive mode. <input type="checkbox"/> Enter the EXIT or LOGOUT commands to exit the management session.
Configuration Terminal Mode	(Switch)(config)#	<ul style="list-style-type: none"> <input type="checkbox"/> To access interface 1 in the Interface Configuration mode, enter the following command: interface ge1 <input type="checkbox"/> To access VLAN 1, in the Interface Configuration mode, enter the following command: interface vlan1 <input type="checkbox"/> To enter the VLAN mode, use the VLAN DATABASE command. <input type="checkbox"/> To enter the Line Mode, use the LINE VTY command. <input type="checkbox"/> To return to the Privileged Executive mode, enter the EXIT command.
Interface Configuration	Switch(config-if)#	<ul style="list-style-type: none"> <input type="checkbox"/> Enter the EXIT command to return to the Configuration Terminal mode.
VLAN Configuration	Switch(config-vlan)#	<ul style="list-style-type: none"> <input type="checkbox"/> Enter the EXIT command to return to the Configuration Terminal mode.
Line	Switch(config-line)	<ul style="list-style-type: none"> <input type="checkbox"/> Enter the EXIT command to return to the Configuration Terminal mode.

There are commands that are common to all of the modes. For instance, the SHOW LIST command display a list of commands in the current mode. Also, the EXIT and QUIT commands allow you to either exit the current mode or ends the login session depending on the mode you are in. For example, typing the EXIT command when you are in the Interface Configuration mode returns you to the Configuration Terminal mode. From the Privilege Executive mode, the EXIT command exits the software.

If you enter a command that is not accessible from a command mode, the software displays a “command not found” message. For example, you can enter the SHOW SNMP command from the Privileged Executive mode, but you cannot enter this command from the VLAN Configuration mode. Within the manual, a command mode is listed for each command.

See the following sections for a description of each command mode:

- ❑ “View Mode” on page 25
- ❑ “Privileged Executive Mode” on page 26
- ❑ “Configuration Terminal Mode” on page 27
- ❑ “Interface Configuration Mode” on page 28
- ❑ “VLAN Configuration Mode” on page 29
- ❑ “Line Mode” on page 30

View Mode

The View command mode is the default command mode for the operator login. The commands in this mode provide limited access to the software. For example, you can clear counters and MAC addresses as well as view the status of features in the View mode. Many of the commands in this mode are also in the Privileged Executive mode. In the View mode, the prompt is “Switch>.”

With a manger login, you can allow someone with an operator login to access the Privileged Executive mode from the View mode by defining a password, with the ENABLE SECRET command. See “ENABLE SECRET” on page 384. After you define a password, you can provide it to someone with the operator mode login to access the Privileged Executive mode with the ENABLE command (they are prompted for the password). Once you enter the Privileged Executive mode, you have the same access as the manager login.

See Table 2 on page 26 for a sample list of commands that can be accessed from the View command mode. See Chapter 3, “View Mode Commands” on page 81 for detailed information about all of the commands in this mode.

Table 2. Examples of View Mode Commands

Command	Description
CLEAR COUNTERS	Deletes the counters for the specified interface.
CLEAR MAC ADDRESS-TABLE DYNAMIC	Removes a dynamic MAC address from the switch.
CLEAR SPANNING-TREE DETECTED PROTOCOL	Removes the Spanning-Tree protocol configured on the specified port.
SHOW CLOCK	Displays the system's current configured local time and date.
SHOW MIRROR	Displays the status of all mirrored ports.
SHOW VERSION	Displays the current version of the software.

Privileged Executive Mode

The Privileged Executive command mode is the default command mode for the manager login. The commands in this mode permit you to perform system level commands such as:

- Rebooting and resetting the system
- Displaying feature configuration and status
- Downloading a new image file
- Displaying Ethernet port statistics

The prompt changes to "Switch#" to indicate the Privileged Executive mode.

To access the Configuration Terminal mode from the Privileged Executive mode, enter the CONFIGURE TERMINAL command. To return to the Privileged Executive mode from the Configuration Terminal mode, enter the EXIT command.

See Table 3 for a sample list of commands that can be accessed from the Privileged Executive command mode. See Chapter 4, "Privileged Executive Mode Commands" on page 203 for detailed information about all of the commands in this mode.

Table 3. Examples of Privileged Executive Mode Commands

Command	Description
COPY RUN START	Saves the current configuration.

Table 3. Examples of Privileged Executive Mode Commands (Continued)

Command	Description
CONFIGURE TERMINAL	Changes the mode to the Configuration Terminal Mode.
COPY	Uploads the configuration file to an image or configuration file.
SHOW INTERFACE	Displays interface configuration and status.
SYSTEM FACTORY- RESET	Resets the AT-S100 software to the factory default settings

Configuration Terminal Mode

The Configuration Terminal mode allows you to configure advanced system features such as:

- Broadcast storm control
- IGMP Snooping
- SNMP
- Spanning Tree Protocol (STP) and Rapid Tree Protocol (RSTP)

Within the Configuration Terminal mode, you can perform the majority of the administrative functions. Also, you can only access the remaining modes through the Configuration Terminal mode.

To access this mode, you must first access the Privileged Executive mode. Then type CONFIGURE TERMINAL to access the Configuration Terminal mode. The prompt changes to "Switch(config)#" to indicate the software has entered the Configuration Terminal mode. To return to the Privilege Executive Mode, enter the EXIT command. To exit the management session, enter the EXIT command again.

See Table 4 for a sample list of commands that can be accessed from the Configuration Terminal mode. For more information about the commands in this mode, see the Chapter 5, "Configuration Terminal Mode Commands" on page 369.

Table 4. Examples of Configuration Terminal Mode Commands

Command	Description
IP-ACCESS-LIST	Creates an access list.
LINE CONSOLE	Sets the console configuration. Accesses the Line mode.
HOSTNAME	Sets the name of the system.

Table 4. Examples of Configuration Terminal Mode Commands

Command	Description
INTERFACE	Accesses the Interface Configuration command mode. You must also specify an interface.
SNMP-SERVER ENABLE	Enables an SNMP agent on the switch.
USERNAME	Sets a system user name and password.

Interface Configuration Mode

The Interface Configuration mode allows you to configure features that pertain to the port and VLAN interfaces such as flow control and duplex mode. To access this mode, you must first access the Privileged Executive and Configuration Terminal modes, depending on your login id.

There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. For each command in this mode, choose a port number depending on the switch you are using. To specify a port, precede the port number with “ge.” For example, to access port 5 enter the following from the Configuration Terminal mode:

```
switch(config)#interface ge5
```

After you enter this command, the prompt changes to “Switch(config-if)#” to indicate the Interface Configuration mode.

To specify a VLAN interface, precede the VLAN ID with “vlan.” For example, to access VLAN 1 (the default VLAN), enter the following from the Configuration Terminal mode:

```
interface vlan1
```

After you have accessed the Interface Configuration mode, the commands you enter apply only to the interface specified in the Configuration Terminal mode. For example, if you enter “interface ge3” in the Configuration Terminal mode, all of the subsequent commands that you enter apply to interface 3 only. To perform interface-specific commands on another interface, do the following:

- ❑ exit the Interface Configuration mode by entering the EXIT command
- ❑ specify the new interface in the Configuration Terminal mode
- ❑ re-enter the commands for the new interface

For a sample list of commands that can be accessed from the Interface Configuration command mode, see Table 5. For more detailed information about the commands in the Interface Configuration mode, see Chapter 7, “Interface Configuration Mode Commands” on page 449.

Table 5. Examples of Interface Configuration Mode Commands

Commands	Description
DOT1X MAX-REQ	Sets the maximum number of reauthentication attempts after authentication fails.
FLOWCONTROL ON	Enables flow control and configures the flow control mode for the interface.
IP ADDRESS	Sets an IP address for the switch or specifies that the switch uses a DHCP client to obtain an IP address.
MAC-ADDRESS	Sets the MAC address for a specified interface.
SHUTDOWN	Disables an interface.
SPEED	Sets the speed and duplex mode for an interface.

VLAN Configuration Mode

The VLAN Configuration mode allows you to configure commands that are applied to a specific VLAN interface. For instance, you can create a VLAN in this mode.

To access this mode, you must first access the Privileged Executive mode and then the Configuration Terminal mode. From the Privileged Executive mode, use the CONFIGURATION TERMINAL command to access the Configuration Terminal mode. From the Configuration Terminal command mode, use the VLAN DATABASE command. The prompt changes to “Switch(config-vlan)#” to indicate the VLAN Configuration mode.

After you have accessed the VLAN Configuration mode, enter commands that apply to a specific VLAN.

The default VLAN has a VLAN ID of 1 and it includes 28 ports for the AT-9000/28 and AT-9000/28SP switches. For the AT-9000/52 switch, the default VLAN includes ports 1 through 52. You can create a VLAN with a VLAN ID value between 2 and 4094. However, you cannot configure VLAN 1 as it always remains the default VLAN.

For a sample list of commands that can be accessed from the VLAN Configuration command mode, see Table 6 on page 30. For more detailed information about the commands in this mode, see Chapter 15, “Virtual Local Area Networks (VLAN) Commands” on page 591.

Table 6. Examples of VLAN Mode Commands

Commands	Description
SHOW RUNNING-CONFIGURATION SWITCH VLAN	Displays information about VLANs on the switch.
VLAN	Creates a VLAN and enables it.
VLAN NAME	Assigns a name to a VLAN.
VLAN STATE	Sets the operational state of the VLAN.

Line Mode

The Line mode permits you to create a Telnet session and set the length of the console lines. Also, a command in this mode enables password checking on the RADIUS server. Access the Line mode through the Configuration Terminal mode, with the LINE VTY command. The prompt changes to “Switch(config-line)#” to indicate the Line mode. See Table 7 for a list of the commands in this mode. For more information about the commands in the Line mode, see Chapter 8, “Line Mode Commands” on page 487.

To exit the Line mode and return to the Configuration Terminal mode, use the EXIT command.

Table 7. LINE Mode Commands

Commands	Description
CLEAR LINE VTY	Resets the line number of a virtual terminal in a Telnet session.
LOGIN REMOTELOCAL	Enables password checking on a RADIUS server.
LINE CONSOLE	Sets the console configuration and enters the Line mode.
LINE VTY	Sets the console configuration and enters the Line mode.
TELNET	Opens a Telnet session to a remote device.

Starting the Command Line Interface

To start the command line interface, perform the following procedure:

1. Type the user id and password.

There are two default user ids and passwords. For the system administrator login, the default user id is “manager” and the default password is “friend.”

A command line prompt is displayed in Figure 2.

```
Username : manager  
Password :  
(none)#
```

Figure 2. Command Line Login Screen

The default switch name is “(none)” and the pound sign (#) prompt indicates the Privileged Executive mode which is the default mode accessed by the manager login.

Formatting Commands

The AT-S100 software command line interface follows the same formatting conventions in all of the command modes. There are command line interface features which apply to the general use of the command line and command syntax conventions which apply when entering the commands. See the following sections.

Command Line Interface Features

The following features are supported in the command line interface:

- ❑ Command history - Use the up and down arrow keys.
- ❑ Context-specific help - Press the question mark key, ?, to display a list of permitted parameters or all of the available commands for a particular command mode. There are two formatting options:
 - command ? - List the keywords or arguments that are required by a particular command. A space between a command and a question mark is required.
 - abbreviated command? - Provides a list of commands that begin with a particular character string. There is no space between the command and the question mark.
- ❑ Keyword abbreviations - Any keyword can be recognized by typing an unambiguous prefix, for example, type “sh” and the software responds with “show.”
- ❑ Tab key - Pressing the Tab key fills in the rest of the keyword automatically. For example, typing “di” and then pressing the Tab key enters “disable” on the command line.

Command Formatting Conventions

The following formatting conventions are used in this manual:

- ❑ screen text font - This font illustrates the format of a command and command examples.
- ❑ ALL CAPITAL LETTERS- All capital letters indicate a command for you to enter.
- ❑ [] - Brackets indicate optional parameters.
- ❑ | - Vertical line separates parameter options for you to choose from.

Specifying an Interface

The AT-S100 software allows you to access both ports and VLANs in the Privileged Executive, Configuration Terminal, and Interface Configuration modes. In addition, you can access VLANs in the VLAN Configuration mode.

To specify a port, you need to know how many ports are on your switch. Both the AT-9000/28 and the AT-9000/28SP switches have 28 ports. The AT-9000/52 switch has 52 ports. Choose a port number depending on the switch you are using. Specify each port with “ge” followed by the number of the interface. For example, port 3 is specified as “ge3.”

To specify a VLAN interface, precede the VLAN ID with “vlan.” For example, to access VLAN 1 (the default VLAN), enter “vlan1.”

Command Line Syntax Conventions

The following table describes the conventions used in the AT-S100 command interface.

Table 8. Command Line Syntax Conventions

Convention	Description	Example
A.B.C.D/M	Indicates an IP address and a subnet mask.	192.68.1.11/24
line	Indicates a line of text that accepts spaces without quotation marks.	Switch 24, San Jose, Building 4
string	Indicates a string of alphanumeric characters, including special characters such as spaces. You must place quotation marks around a value with spaces.	“Switch 24, San Jose, Building 4”
IFNAME, IF_NAME, or INTERFACE	Indicates an interface name. Specify values ge1 through ge52, depending on the number of ports on your switch.	ge3
mask	Indicates a subnet mask.	255.255.240.0
sec	Indicates seconds.	120
min	Indicates minutes.	8
VLANID	Indicates a VLAN instance (including name and VLAN identifier).	vlan3

Chapter 2

Configuring the AT-S100 Software

This chapter provides configuration information about the AT-S100 software. The features are divided into three sections.

This chapter contains the following sections:

- ❑ “Setting the Switch” on page 36
- ❑ “Setting the Ports” on page 52
- ❑ “Configuring Protocols” on page 62

Setting the Switch

The procedures in this section describe how to perform basic switch functions such as assigning an IP address, creating a user name and password, and downloading software. See the following sections:

- ❑ “Assigning an IP Address” on page 36
- ❑ “Setting DHCP” on page 37
- ❑ “Setting a Gateway Address” on page 37
- ❑ “Setting the Network Time” on page 37
- ❑ “Increasing Frame Size (Jumbo Frames)” on page 39
- ❑ “Saving the Configuration” on page 39
- ❑ “Adding a User Name and Password” on page 39
- ❑ “Displaying and Setting MAC Addresses” on page 40
- ❑ “Rebooting the Switch” on page 43
- ❑ “Resetting Switch to Factory Default Values” on page 43
- ❑ “Upgrading or Downgrading Software” on page 43
- ❑ “Uploading an Image File” on page 45
- ❑ “Displaying and Saving Configuration Files” on page 46
- ❑ “Copying Configuration Files” on page 47
- ❑ “Uploading and Downloading Configuration Files” on page 48
- ❑ “Selecting the Configuration File for Next Start-up” on page 48
- ❑ “Creating VLANs” on page 49

Assigning an IP Address

The IP address for the switch enables you to access the switch through the console port. You must assign an IP address to a VLAN in the Interface Command Mode. You may assign the IP address to the default VLAN which is VLAN 1 or to a VLAN that you have created. For information about how to create a VLAN, see “Creating VLANs” on page 49.

The syntax of the IP address command is:

```
ip address xxx.xxx.xxx.xxx/subnet mask
```

To set the IP address to 192.68.12.8 with a subnet mask of 255.255.255.0 (24 bits) to VLAN 1, enter the following commands:

```
switch# configure terminal
```

```
switch(config)# interface vlan1
```

```
switch(config-if)# ip address 192.68.12.8/24
```

For more information about this command, see “IP ADDRESS” on page 458.

Setting DHCP

The DHCP feature enables the switch to obtain an IP address from the DHCP server. You must assign the DHCP command to the default VLAN, VLAN 1, in the Interface Configuration mode. The syntax of the DHCP address command is:

```
ip address dhcp
```

The following example sets the DHCP feature on the switch.

```
switch# configure terminal
switch(config)# interface vlan1
switch(config-if)# ip address dhcp
```

For more information about this command, see “IP ADDRESS DHCP” on page 461.

Setting a Gateway Address

The gateway address consists of an IP address and a subnet mask that you assign to an interface on the switch. The local router uses this information to allow devices that are not on the LAN to communicate with the switch. The syntax of the gate address command, IP ROUTE, is:

```
ip route 0.0.0.0/0 interface
```

To set the gateway address on port 20 to 192.168.1.1 and with a subnet mask of 24, enter the following commands:

```
switch# configure terminal
switch(config)# ip route 192.168.1.1/24 ge20
```

For more information about this command, see “IP ROUTE” on page 394.

Setting the Network Time

The Network Time Protocol (NTP) is used to configure the time on the switch by setting the IP address of an NTP server and setting a key to ensure the proper NTP server has access to the switch. In addition, an NTP server ensures that the time on the switch is set using the Greenwich Mean Standard (GMT).

Note

You must have access to an NTP server to use this feature. Some Allied Telesis switches can act as an NTP server.

Setting the NTP Server Address

Setting an NTP server allows the switch to have an official time. The basic syntax of this command is:

```
ntp server xxx.xxx.xxx.xxx
```

To set the IP address of an NTP server to 198.10.1.1, enter the following commands:

```
switch# configure terminal  
switch(config)# ntp server 198.10.1.1
```

For more information about this command, see “NTP SERVER” on page 412.

Turning on NTP Authentication

After you have assigned an NTP server, you can turn on NTP authentication. The basic syntax of this command is:

```
ntp authenticate
```

To turn on NTP authentication, enter the following commands:

```
switch# configure terminal  
switch(config)# ntp authenticate
```

For more information about this command, see “NTP AUTHENTICATE” on page 409.

Configuring an NTP Trusted Key

You may want to configure an NTP Trusted key as a security measure to verify that the NTP server that you have allowed to access your switch is the one you specified.

The basic syntax of this command is:

```
ntp trusted-key <1-xx>
```

To configure an NTP trusted key, enter the following commands:

```
switch# configure terminal  
switch(config)# ntp trusted-key
```

For more information about this command, see “NTP TRUSTED-KEY” on page 414.

Increasing Frame Size (Jumbo Frames)

The jumbo frame command allows an interface on the switch to accept large or jumbo frames which are Ethernet frames with greater than 1,500 bytes of payload (MTU). The syntax of the jumbo frame command is:

```
mtu <64-9216>
```

To allow jumbo frames to be accepted by port 7, enter the following commands:

```
switch# configure terminal
```

```
switch(config)# interface ge7
```

```
switch(config-if)# mtu 1518
```

For more information about this command, see “MTU” on page 466.

Saving the Configuration

To save the current configuration of your switch, use the COPY command or the WRITE FILE command. The syntax of the COPY command is:

```
copy running-config startup-config
```

In the following example, the running configuration file is copied to the startup configuration file which is named “startup-config.”

The software displays:

```
Building configuration...
[OK]
```

For more information about this command, see “COPY” on page 228. Also see “WRITE FILE” on page 365.

Adding a User Name and Password

To add new users to the switch, you create a user name, determine a privilege level, and assign a password. These tasks are accomplished with the USERNAME command. The syntax of this command is:

```
username WORD privilege <1-15> password LINE <8>
```

Note

By default, the AT-S100 software provides one user name named “manager” with “friend” as the default password. A manager login has permission to perform all of the AT-S100 software commands in all of the command modes.

privilege Specifies a user privilege level. Enter a value between 1 and 15. Values 1 through 14 provide operator privileges. Value 15 provides an administrator, or manager, privileges.

LINE Specifies a password for an administrator or manager. Enter an alphanumeric value between 1 and 8 characters in length.

The following commands set the user name to “faye,” the privilege to “15,” and the password to “friend:”

```
switch#configure terminal
```

```
switch(config)#username faye privilege 15 password friend
```

For more information about this command, see “USERNAME” on page 434.

Displaying and Setting MAC Addresses

A media access control (MAC) address is a unique number assigned to every network card by the manufacturer. The AT-S100 software keeps track of the MAC addresses of devices that have passed traffic through the switch in a MAC address table. There is an 8K limit of MAC addresses that you can store in the table. As a result, the MAC address table is flushed automatically in time intervals determined by the *aging time*.

In addition, you can enter a MAC address into the table that cannot be flushed. This type of address is called a *static MAC address*. You may want to assign a static MAC address when you have a LAN that is not connected to the Internet.

The following sections explain how to display and set the MAC address table:

- ❑ “Displaying the Full MAC Address Table” on page 40
- ❑ “Displaying the MAC Address Aging Time” on page 41
- ❑ “Clearing the MAC Address Table” on page 41
- ❑ “Setting the Aging Time” on page 41
- ❑ “Adding a Static MAC Address” on page 42
- ❑ “Removing a Static MAC Address” on page 42

Displaying the Full MAC Address Table

The full MAC address table includes the following information:

- ❑ All static MAC addresses
- ❑ All dynamic MAC addresses
- ❑ MAC addresses assigned to a port
- ❑ MAC addresses assigned to a VLAN

The syntax of this command is:

```
show mac address-table
```

To display the full MAC address table, enter the following command:

```
switch#show mac address-table
```

For more information about this command, including a sample display see “SHOW MAC ADDRESS-TABLE” on page 305.

Displaying the MAC Address Aging Time

As stated above, the MAC address aging time indicates the time interval when the MAC address table is flushed automatically.

The syntax of this command is:

```
sh mac address-table aging-time
```

To display the MAC address aging time for the switch, enter the following command:

```
switch#show mac address-table aging-time
```

For more information about this command, including a sample display, see “SHOW MAC ADDRESS-TABLE AGING-TIME” on page 307.

Clearing the MAC Address Table

You can remove the static, multicast, and static MAC addresses from the MAC address table. The syntax of this command is:

```
clear mac address-table dynamic|static|multicast
```

To remove all of the dynamic commands from the MAC address table enter the following command:

```
switch>clear mac address-table dynamic
```

For more information about this command, see “CLEAR MAC ADDRESS-TABLE DYNAMIC” on page 88.

Setting the Aging Time

The MAC address aging time is set for the switch instead of a port. By default, the aging time is set to 300 seconds. The syntax of this command is:

```
mac address-table aging-time (10-1000000)
```

To set the aging time to 35 seconds, enter the following commands:

```
switch# configure terminal  
switch(config)# mac address-table aging-time 35
```

For more information about this command, see “MAC ADDRESS-TABLE AGING-TIME” on page 401.

Adding a Static MAC Address

To add a static address to the MAC address table, specify the MAC address, the assigned port number, and the VLAN ID. The syntax of this command is:

```
mac address-table static (HHHH.HHHH.HHHH) forward  
interface ge(1-28) vlan(2-4094)
```

To add a static MAC address, 5679AEB04324, on port 15 and VLAN 2 to the MAC address table, enter the following commands:

```
switch# configure terminal  
switch(config)# mac address-table static  
5679.AEB0.4324 forward interface ge15 vlan2
```

For more information about this command, see “MAC ADDRESS-TABLE STATIC FORWARD” on page 404.

Removing a Static MAC Address

To remove a static address from the MAC address table you must specify the MAC address, the assigned port number, and the VLAN ID. The syntax of this command is:

```
mac address-table static (HHHH.HHHH.HHHH) discard  
interface ge(1-28) vlan(2-4094)
```

To remove static MAC address, 5679AEB04322, from port 15 and VLAN 3, enter the following commands:

```
switch# configure terminal  
switch(config)# mac address-table static  
5679.AEB0.4324 discard interface ge15 vlan3
```

For more information about this command, see “MAC ADDRESS-TABLE STATIC DISCARD” on page 402.

Rebooting the Switch

To reboot the switch, enter the following command:

```
switch#system reboot
```

When you enter this command the current session is ended. To start a new session on the switch, log in again.

For more information about this command, see “SYSTEM REBOOT” on page 358.

Resetting Switch to Factory Default Values

To reset the AT-S100 software to its factory default values, enter the following command:

```
switch#system factory-reset
```



Warning

This command does not save your current configuration. To save your current configuration, see “COPY DEFAULT.CFG” on page 231.

For more information about this command, see “SYSTEM FACTORY-RESET” on page 357.

Upgrading or Downgrading Software

To upgrade an AT-9000 switch with the latest version of the AT-S100 software, you need to download the software onto your switch with a TFTP server. To obtain the latest version of the AT-S100 software, go to our website, www.alliedtelesis.com and copy it on your PC.

You can use the following procedure to upgrade the AT-S100 software image file to the latest version or downgrade the software to an earlier version. However, it is unlikely that you would want to downgrade the current version of the AT-S100 software to an earlier version.

Note

You do not need to upgrade the bootloader file.

Upgrading or Downgrading the AT-S100 Software with a TFTP Server

Use the following procedure to upgrade or downgrade the AT-S100 software with a TFTP server.

1. Check the current software version installed on your switch, enter the SHOW VERSION command.

See below for a sample output of the SHOW VERSION command:

```
(switch)#show version
```

```
Product ID=ATS100
```

```
Application Version=1.0.4
Application BuildTime=18:02:47
Application BuildDate=May 15 2009
Serial Number= A04149A083700041
Model=AT-9000/28
Ethaddr=00-15-77-C9-A5-77
Baudrate=9600
Uptime= 16:01:02 up 1 min, load average:
0.21, 0.08, 0.02
```

```
HwRev=b
```

See “SHOW VERSION” on page 356.

2. Assign an IP address and subnet mask to the switch with the IP ADDRESS A.B.C.D/mask command.

The following commands set VLAN 1 with the primary IP address and mask of 192.0.0.1/8.

```
switch#configure terminal
switch(config)#interface vlan1
switch(config-if)#ip address 192.0.0.25/8
```



Caution

Make sure the IP address of the TFTP server is in the same subnet as the IP address of the switch.

3. Save your configuration by entering the following command:

```
switch#copy running-config startup-config
```

4. Use the DOWNLOAD command to download the image file from the TFTP server onto the switch.

Note

Be sure to include the .img suffix in the name of the image file.

The following command uses a TFTP server, with an IP address of 192.0.0.15/8, to download the “ATS100_ATI_v104.img” file onto the switch:

```
switch#download tftp 192.0.0.15/8
ATS100_ATI_v104.img
```

The following is displayed:

```
TFTP IP 192.0.0.15, file name ATs100_ATI_v104.img
Erasing 87 Sectors ...

writing to flash ...
DOWNLOAD COMPLETE! Please restart the unit
switch#
```



Caution

Do not interrupt the download process. It takes several minutes to complete.

- After the download complete message is displayed, if you are downgrading the AT-S100 software to an earlier version, the following confirmation message is displayed:

```
Current version of the image is newer. Download
anyway? (y/n)
```

- Type “y” to allow the download to proceed.
- Reboot the switch by entering the following command:

```
switch#system reboot
```

Uploading an Image File

The most common reason to upload the image file of the AT-S100 software onto an TFTP server is to make a backup copy of the file. To upload an image file, use the UPLOAD command. You must have the IP address of the TFTP server to set this command.

You do not need to know the name of the image file on the switch to upload it. The filename that you specify in the UPLOAD command indicates the filename on the TFTP server. As a result, you can name it anything you'd like as long as the suffix is “.img.”

Uploading an Image File with a TFTP Server

To upload an image file from the switch onto a TFTP server, use the UPLOAD command. The basic syntax of this command is:

```
upload tftp xxx.xxx.xxx.xxx filename.img
```

Note

For security reasons, some TFTP server software requires a file with the same file name as the file on the switch that you want to upload before you enter the UPLOAD command. If you do not have a file with the same name, you may receive an error message.

For example, to upload the image file from the switch onto a TFTP server with an IP address of 192.58.48.10 and a file name of “at100v104.img,” enter the following command:

```
switch# upload tftp 192.58.48.10 at100v104.img
```

The switch displays the following which indicates a successful upload operation:

```
TFTP IP 192.58.48.10, file name at100v104.img
```

For more information about this command, see “UPLOAD TFTP” on page 363.

Displaying and Saving Configuration Files

This section describes how to display and save configuration files. These files have a “.cfg” suffix. See the following sections:

- “Displaying the Current Configuration” on page 46
- “Saving the Current Configuration” on page 47

Displaying the Current Configuration

There are several ways to display the current configuration of the switch. You can display the full running configuration of the switch, the running configuration for a port, and the running configuration for a VLAN ID.

To display the full running configuration, enter the following command in any command mode:

```
switch# show running-config
```

In addition, you can display the running configuration for an interface such as a port or a VLAN. To display the running configuration for port 4, enter the following command in any command mode:

```
switch# show running-config interface ge4
```

To display the status of the current running configuration of a switch for VLAN 2, enter the following command:

```
switch#show running-config interface vlan2
```

For more information about the show running configuration commands including sample displays, see “SHOW RUNNING-CONFIG” on page 420 and “SHOW RUNNING-CONFIG INTERFACE” on page 426.

Saving the Current Configuration

The AT-S100 software does not automatically save your changes. As a result, you want to save your changes to the software frequently. To save the current configuration to the startup configuration file, enter the following command:

```
switch# copy running-config startup-config
```

For more information about this command, see “COPY” on page 228.

To set a file named “default.cfg” that stores the startup-configuration file, enter the following commands:

```
switch# configuration terminal
```

```
switch(config)# boot config-file default.cfg
```

For more information about this command, see “BOOT CONFIG-FILE” on page 207.

Copying Configuration Files

You may want to make a copy of a configuration file in order to have a backup copy. This section describes how you can make a copy a configuration file and save it on your switch.

Copying a Configuration File

Use the CP command to make a copy of a configuration file and save it in the current directory on the switch.

The syntax of CP command is:

```
cp sourcefile newfile
```

Note

The CP command does not save your current configuration onto the switch. To save your current configuration, see the COPY command described in the previous section.

In the following example, the running configuration file is copied to the startup configuration file which is named “frank2.cfg:”

```
switch#cp default.cfg frank2.cfg
```

For more information about this command, see “CP” on page 235.

Selecting the Configuration File for Next Start-up

Use the BOOT command to identify which configuration file will be used when the switch is reset or power cycled.

For example, if you want to identify the file “frank2.cfg” as the configuration file that is loaded next time the switch is started, use the following command:

```
switch#boot config-file frank2.cfg
```

For more information about this command, see “BOOT CONFIG-FILE” on page 207.

Uploading and Downloading Configuration Files

Once you have made a copy of the configuration file on the switch, you may want to upload it onto a TFTP server to create a backup copy. Or, you can download a configuration file from a TFTP server onto the switch. See the following sections for a description of these procedures.

You may want to upload a configuration file from your switch onto a backup server. Or, you may want to upload a configuration file from your switch to a TFTP server and then download it to other AT-9000 Series switches. You must have the IP address of the TFTP server to set this command.



Caution

Once you have copied a configuration file onto your PC, use the Wordpad application to open a configuration file in Windows. Do not use the Notepad application to open the file because it deletes all of the line breaks.

Uploading A Configuration File onto a TFTP Server

Use the COPY DEFAULT.CFG command to upload a configuration file from the switch onto an TFTP server.

Enter the following command to upload a configuration file called “frank2.cfg” from the switch onto a TFTP server with an IP address of 192.58.48.1. The file on the TFTP server is called “at100v104.cfg.”

```
switch# copy frank2.cfg 192.58.48.1 at100v104.cfg
```

For more information about this command, see “COPY DEFAULT.CFG” on page 231.

Downloading A Configuration File from an TFTP Server

To download a configuration file from a TFTP sever to the switch, use the COPY A.B.C.D command. You may want to download a configuration file from a backup server onto your switch. You must have the IP address of the TFTP server to set this command.

To download a configuration file from an TFTP Server, do the following:

1. Enter the following command to download a configuration file called "jenny3.cfg" from a TFTP server with an IP address of 192.58.48.1 onto your switch. The new file is called "at100v104.cfg."

```
switch# copy 192.58.48.1 jenny3.cfg at100v104.cfg
```

The system responds with the following message:

```
% operation completed.
```

2. To make the new configuration file, "jenny3.cfg," the configuration file to use when the switch is rebooted, enter the following command:

```
switch# boot config-file jenny3.cfg
```

3. Reboot the switch to make the new configuration file the active configuration file. Enter:

```
switch# system reboot
```

4. Log onto the switch with the username of "manager" and the password "friend."

For more information about this command, see "COPY A.B.C.D" on page 229.

Creating VLANs

A VLAN is a group of ports on an Ethernet switch that form a logical Ethernet segment. The ports of a VLAN form an independent traffic domain where the traffic generated by the nodes of a VLAN remains within the VLAN.

With VLANs, you can segment your network through the switch's AT-S100 Management Software and group nodes with related functions into their own separate, logical LAN segments. These VLAN groupings can be based on similar data needs or security requirements. For example, you can create separate VLANs for the different departments in your company, such as one for the sales department and another for the accounting department.

A port-based VLAN is a group of ports on a Gigabit Ethernet Switch that form a logical Ethernet segment. Each port of a port-based VLAN can belong to only one VLAN at a time.

You need to specify which ports are members of the VLAN. In the case of a tagged VLAN, it is usually a combination of both untagged ports and tagged ports. You specify which ports are tagged and which are untagged when you create the VLAN.

An untagged port, whether a member of a port-based VLAN or a tagged

VLAN, can be in only one VLAN at a time. However, a tagged port can be a member of more than one VLAN. A port can also be an untagged member of one VLAN and a tagged member of different VLANs simultaneously.

Creating a VLAN

Use the VLAN command to create a VLAN and enable it. The syntax of this command is:

```
vlan <2-4094> name NAME state enable|disable
```

The following commands create VLAN 4 with a name of “Eng2” and enables it:

```
switch# configure terminal
switch(config)# vlan database
switch(config-vlan)# vlan 2 name Eng2 state enable
```

For more information about this command, see “VLAN” on page 603.

Adding Untagged Ports to a VLAN

To add untagged ports to a VLAN, you must specify a VLAN that you have created already. Also, you must specify a port in the Interface Configuration mode. The syntax of this command is:

```
switchport access vlan VLANID <2-4094>
```

The following commands assign VLAN 2 to port 8:

```
switch#configure terminal
switch(config)#interface ge8
switch(config-if)#switchport access vlan 2
```

For more information about this command, see “SWITCHPORT ACCESS VLAN” on page 478.

Adding Tagged Ports to a VLAN

To add tagged ports to a VLAN, you must specify a VLAN that you have created already. You must specify a port in the Interface Configuration mode. The syntax of this command is:

```
switchport trunk allowed vlan add|remove VLANID
```

The following commands add VLAN 6, to the member set of port 12:

```
switch#configure terminal
switch(config)#interface ge12
switch(config-if)#switchport mode trunk
switch(config-if)#switchport trunk allowed vlan add 6
```

For more information about this command, see “SWITCHPORT TRUNK ALLOWED VLAN” on page 481.

Setting the Ports

For procedures to set the switch ports, see the following sections:

- “Displaying Port Ethernet Statistics” on page 52
- “Setting Port Mirroring” on page 52
- “Setting Port Speed and Duplex Mode” on page 53
- “Enabling and Disabling Ports” on page 54
- “Setting MDI and MDIX” on page 54
- “Setting Port Security” on page 55
- “Creating Static Trunks” on page 58
- “Enabling Backpressure” on page 59
- “Enabling Flow Control” on page 60
- “Limiting Broadcast Storms” on page 61

Displaying Port Ethernet Statistics

You may want to display the status of a port as well as configuration information about a port on the switch. The syntax of this command is:

```
show interface IFNAME vlan<1-4094> | ge<1-52>
```

To display the port ethernet statistics for port 17, enter the following command:

```
switch# show interface ge17
```

See “SHOW INTERFACE” on page 282 for a sample display of this command.

Setting Port Mirroring

The port mirror feature allows for the unobtrusive monitoring of ingress or egress traffic on one or more ports on a switch, without impacting network performance or speed. It copies the traffic from a specified port to another port where the traffic can be monitored with a network analyzer.

The port whose traffic is mirrored is called the *source port*. The port where the traffic is copied to is referred to as the *destination port*. The syntax of this command is:

```
mirror interface ge<1-52> direction  
both|receive|transmit
```

To set port mirroring with port 5 as the source port and port 7 as the destination port, enter the following commands:

```
switch# configure terminal
switch(config)# interface ge7
switch(config-if)# mirror ge5 direction receive
```

For more information about this command, see “MIRROR INTERFACE DIRECTION” on page 464.

Setting Port Speed and Duplex Mode

A twisted pair port can operate in either half- or full-duplex mode. (Full-duplex mode is the only mode available when a port is operating at 1000 Mbps.) The twisted pair ports are IEEE 802.3u-compliant and Auto-Negotiate the duplex mode setting.

You can disable Auto-Negotiation on one or all of the switch ports in order to set the duplex mode manually through the AT-S100 Management Software.

Note

For a switch port to successfully Auto-Negotiate its duplex mode with a 10 or 100 Mbps end node, the end node must be configured for Auto-Negotiation. Otherwise, a duplex mode mismatch can occur. A switch port using Auto-Negotiation defaults to half-duplex if it detects that the end node is not using Auto-Negotiation. This results in a mismatch if the end node is operating at a fixed duplex mode of full-duplex.

To avoid this problem when connecting an end node with a fixed duplex mode of full-duplex to a switch port, use the AT-S100 Management Software to disable Auto-Negotiation on the local port and set the port speed and duplex mode manually.

You can set both the port speed and the duplex mode for each port on the switch. The syntax of this command is:

```
speed 1000mfull | 1000mfull | 100mfull | 100mhalf | 100fx |
10mfull | 10mhalf | auto
```

To set port 28 to 100FX in full-duplex mode, enter the following commands:

```
switch# configure terminal
switch(config)# interface ge28
switch(config-if)# speed 100fx
```

For more information about this command, see “SPEED” on page 472.

Enabling and Disabling Ports

To enable or disable a port on the switch, use the SHUTDOWN command. The syntax of this command is:

```
shutdown|no shutdown
```

To enable port 12, enter the following commands:

```
switch# configure terminal
switch(config)# interface ge12
switch(config-if)# no shutdown
```

To disable port 19, enter the following commands:

```
switch# configure terminal
switch(config)# interface ge19
switch(config-if)# shutdown
```

For more information about this command, see “SHUTDOWN” on page 469.

Setting MDI and MDIX

The twisted pair ports on the switch feature auto-MDI and MDIX. This feature, available when a port’s speed and duplex mode are set through Auto-Negotiation, configures a switch port to MDI or MDIX automatically, depending on the wiring configuration of the port on the end node. This feature allows you to connect any network device to a port on the switch using a straight-through twisted pair cable.

If Auto-Negotiation is disabled on a port and the speed and duplex mode are set manually, the auto-MDI/MDI-X feature is also disabled and the port’s wiring configuration defaults to the MDI-X setting. This setting can be configured with the AT-S100 Management Software.

The syntax of this command is:

```
mdix mdi|mdix
```

To set a port to MDI, enter the following commands:

```
switch# configure terminal
switch(config)# interface ge12
switch(config-if)# mdix mdi
```

To set a port to MDIX, enter the following commands:

```
switch# configure terminal
switch(config)# interface ge12
switch(config-if)# mdix mdix
```

For more information about this command, see “MDIX” on page 463.

Setting Port Security

The Port Security feature is based on assigning and limiting MAC addresses learned by a port. You can use the MAC-Address-based Port Security feature to enhance the security of your network by controlling which end nodes can forward frames through the switch, thereby preventing unauthorized individuals from accessing your network. This feature uses a MAC address to determine whether the switch should forward a frame or discard it. The source address is the MAC address of the end node that sent the frame.

There are three levels of port security:

- Limited Mode
- Locked Mode
- Secured Mode

You set port security on a per port basis. Only one security level can be active on a port at a time.

Limited Mode

The Limited security mode allows you to specify the maximum number of dynamic MAC addresses a port can learn. The port forwards only packets of learned source MAC addresses and discards ingress frames with unknown source MAC addresses.

When the Limited security mode is initially activated on a port, all dynamic MAC addresses learned by the port are deleted from the MAC address table. The port then begins to learn new addresses, up to the maximum allowed. After the port has learned its maximum number of addresses, it does not learn any new addresses, even when end nodes become inactive.

A dynamic MAC address learned on a port operating in the Limited security mode never times out from the MAC address table, even when the corresponding end node is inactive.

Static MAC addresses are retained by the port and are not included in the count of maximum dynamic addresses. You can continue to add static MAC addresses to a port operating with this security level, even after the port has already learned its maximum number of dynamic MAC addresses.

Locked Mode

A port set to the Locked mode security level immediately stops learning new dynamic MAC addresses and forwards frames using the dynamic MAC addresses it has already learned and any static MAC addresses assigned to it. Ingress frames with an unknown MAC address are discarded. Dynamic MAC addresses already learned by a port prior to the activation of this security level never time out from the MAC address table, even when the corresponding end nodes are inactive.

You can continue to add new static MAC addresses to a port operating under this security level.

Secured Mode

The Secured Mode security level uses only static MAC addresses assigned to a port to forward frames. Consequently, only those end nodes whose MAC addresses are entered as static addresses are able to forward frames through a port. Dynamic MAC addresses already learned on a port are discarded from the MAC table and no new dynamic addresses are added. Any ingress frames having a source MAC address not entered as a static address on a port are discarded.

After activating this security level, you must enter the static MAC addresses of the end nodes that are to forward frames through the port.

MAC Address Maximum

You can set the maximum number of MAC addresses that can be learned by a port as well as specific secure MAC addresses that can be learned by a port. Once the limit of MAC addresses is reached for the port specified, the action taken by the software is determined by the setting of the SWITCHPORT PORT-SECURITY VIOLATION command. There are 3 possible responses to a violation:

- Protect
- Restrict
- Shutdown

Setting the Maximum Number of MAC Addresses

To limit the number of MAC addresses that can be learned by a port, use the SWITCHPORT PORT-SECURITY MAXIMUM command.

The syntax of this command is:

```
switchport port-security maximum <1-320>
```

To set the maximum number of MAC addresses to 140 on port 8, enter the following commands:

```
switch# configure terminal
switch(config)# interface ge8
switch(config-if)#switchport port-security maximum 140
```

For more information about this command, see “SWITCHPORT PORT-SECURITY MAXIMUM” on page 542.

Assigning Secure MAC Addresses

Assigning the predefined MAC addresses that can be learn on a port, allows you to limit the devices that can access the port.

The syntax of this command is:

```
switchport port-security mac address xxxx.xxxx.xxxx
vlan <2-4094>
```

To add a secure predefined mac address of 00A0.0490.10E0 to port 21 which is assigned to VLAN 3, enter the following commands:

```
switch# configure terminal
switch(config)# interface ge21
switch(config-if)#switchport port-security mac address
00A0.0490.10E0 vlan 3
```

For more information about this command, see “SWITCHPORT PORT-SECURITY MAC-ADDRESS” on page 540.

Setting the Port Security Mode

The Port Security Mode determines how a port responds to an undefined MAC address. The syntax of this command is:

```
switchport port-security mode limited|locked|secured
```

To set the port security mode to limited on port 17, enter the following commands:

```
switch# configure terminal  
switch(config)# interface ge17  
switch(config-if)#switchport port-security mode  
limited
```

For more information about this command, see “SWITCHPORT PORT-SECURITY MODE” on page 543.

Setting Port Security Violation

The Port Security Violation Feature determines how the AT-S100 software reacts when the number of port secure MAC addresses reaches the maximum value set in the SWITCHPORT PORT-SECURITY MAXIMUM command (see “Setting the Maximum Number of MAC Addresses” on page 57.)

The syntax of SWITCHPORT PORT-SECURITY VIOLATION command is:

```
switchport port-security violation  
protect|restrict|shutdown
```

To set the port security violation mode on port 20 to “restrict,” enter the following commands:

```
switch# configure terminal  
switch(config)# interface ge20  
switch(config-if)#switchport port-security violation  
restrict
```

For more information about this command, see “SWITCHPORT PORT-SECURITY VIOLATION” on page 545.

Creating Static Trunks

A static port trunk is a group of two to eight ports that function as a single virtual link between the switch and another device. Traffic is distributed across the ports to multiply bandwidth and enhance reliability by reducing the reliance on a single physical link.

To configure a static port trunk, you designate the ports of the trunk and the management software groups them together automatically. You can also control how traffic is distributed over the trunk ports.

The syntax of the static trunk command is:

```
static-channel-group <1-8>
```

For example, to assign port 8 to static port trunk 2, enter the following commands:

```
switch# configure terminal
switch(config)# interface ge8
switch(config-if)# static-channel-group 2
```

For more information about this command, see “STATIC-CHANNEL-GROUP” on page 475.

To display the static port trunk assigned to group 2, enter the following command:

```
switch#show static-channel-group 2
```

For more information about this command, see “SHOW STATIC-CHANNEL-GROUP” on page 349.

Enabling Backpressure

To maintain the orderly movement of data between the end nodes, an Ethernet switch may periodically need to signal an end node to stop sending data. This can occur under several circumstances. For example, if two end nodes are operating at different speeds, the switch, while transferring data between the end nodes, might need to instruct the faster end node to stop transmitting data to allow the slower end node to catch up. An example of this would be when a server operating at 100 Mbps is sending data to a workstation operating at only 10 Mbps.

How a switch signals an end node to stop transmitting data differs depending on the speed and duplex mode of the end node and switch port. A twisted pair port operating at 100 Mbps and half-duplex mode stops an end node from transmitting data by forcing a collision. A collision on an Ethernet network occurs when two end nodes attempt to transmit data using the same data link at the same time. A collision causes end nodes to stop sending data. To stop a 100 Mbps, half-duplex end node from transmitting data, the switch forces a collision on the data link, which stops the end node. When the switch is ready to receive data again, the switch stops forcing collisions. This is referred to as back pressure.

When the switch is ready to receive data again, the switch stops forcing collisions. This is referred to as back pressure. This feature only applies to ports in the half-duplex mode.

The syntax of this command is:

```
flowcontrol backpressure on|off
```

To active the backpressure feature on port 3, enter the following commands:

```
switch# configure terminal  
switch(config)# interface ge3  
switch(config-if)# flowcontrol backpressure on
```

For more information about this command, see “FLOW CONTROL BACKPRESSURE” on page 455.

Enabling Flow Control

Flow control enables connected Ethernet ports (or interfaces) to control traffic rates during congestion by allowing congested nodes to pause link operation at the other end. If one port experiences congestion and cannot receive any more traffic, it notifies another port to stop sending traffic until the condition clears. When the local device detects congestion at its end, it notifies the remote device by sending a pause frame. After the remote device receives a pause frame, the remote device stops sending data packets. Flow control prevents the loss of data packets during the congestion period.

Note

Flow control is relevant when the port is operating in full duplex mode where receiving and sending is possible for pause frames.

The flow control command determines whether flow control is set to *transmit* or *receive* on a port. Flow control is set on a per port basis. The basic command syntax is:

```
flowcontrol send|receive on|off
```

To set the flow control to transmit on port 7, enter the following commands:

```
switch# configure terminal  
switch(config)# interface ge7  
switch(config-if)# flowcontrol send on
```

For more information about this command, see “FLOW CONTROL SEND” on page 457.

To set the flow control to receive on port 8, enter the following commands:

```
switch# configure terminal  
switch(config)# interface ge8  
switch(config-if)# flowcontrol receive on
```

For more information about this command, see “FLOW CONTROL RECEIVE” on page 456.

Limiting Broadcast Storms

Flooding techniques are used to block the forwarding of unnecessary flooded traffic. A packet storm occurs when a large number of broadcast packets are received on an interface. Forwarding these packets can cause the network to slow down or timeout.

Use the STORM-CONTROL command to specify the rising threshold level for broadcasting, multicast, or destination-lookup-failure traffic. The storm control action occurs when traffic reaches the level specified with the LEVEL parameter. By default, storm control is disabled.

To limit the effect of broadcast storms, enter the following commands:

```
switch# configure terminal
switch(config)# interface ge2
switch(config-if)# storm-control broadcast level (0.0-100.0)
```

To limit the effect of multicast storms, enter the following commands:

```
switch# configure terminal
switch(config)# interface ge2
switch(config-if)# storm-control multicast level (0.0-100.0)
```

To configure for destination-lookup-failure traffic, enter the following commands:

```
switch# configure terminal
switch(config)# interface ge2
switch(config-if)# storm-control dlfl level (0.0-100.0)
```

For more information about this command, see “STORM-CONTROL” on page 476.

Configuring Protocols

This section describes how to set the protocols that are supported by the AT-S100 Management Software. See the following sections:

- ❑ “Setting GVRP” on page 62
- ❑ “Enabling IGMP Snooping” on page 64
- ❑ “Setting the Link Access Control Protocol (LACP)” on page 65
- ❑ “Setting 802.1x Port Authentication” on page 66
- ❑ “Configuring RADIUS Authentication” on page 67
- ❑ “Setting Simple Network Management Protocol (SNMP)” on page 68
- ❑ “Setting the Secure Shell” on page 71
- ❑ “Setting STP and RSTP” on page 71
- ❑ “Configuring 802.1p Class of Service” on page 76

Setting GVRP

The GARP VLAN Registration Protocol (GVRP) allows network devices to share VLAN information. The main purpose of GVRP is to allow switches to automatically discover some of the VLAN information that would otherwise need to be manually configured in each switch. This is helpful in networks where VLANs span more than one switch. Without GVRP, you must manually configure your switches to ensure that the various parts of a VLAN can communicate across the different switches. GVRP, which is an application of the Generic Attribute Registration Protocol (GARP), does this for you automatically.

The AT-S100 Management Software uses GVRP protocol data units (PDUs) to share VLAN information among GVRP-active devices. The PDUs contain the VID numbers of the VLANs on the switch. A PDU contains the VIDs of all the VLANs on the switch, not just the VID of which the transmitting port is a member.

When a switch receives a GVRP PDU on a port, it examines the PDU to determine the VIDs of the VLANs on the device that sent it.

Enabling or Disabling GVRP

By default, the GVRP feature is disabled. The syntax of the command is:

```
set gvrp enable|disable
```

To enable the GVRP feature, enter the following commands:

```
switch# configure terminal
```

```
switch(config)# set gvrp enable
```

To disable the GVRP feature, enter the following commands:

```
switch# configure terminal
switch(config)# set gvrp disable
```

For more information about this command, see “SET GVRP” on page 522.

Setting the GVRP Applicant State

By setting the GVRP applicant state, you permit a port to process GVRP information and transmit PDUs. The GVRP APPLICANT command sets the GID applicant state on a port to active or normal. The syntax of this command is:

```
set gvrp applicant state active|normal ge<1-52>
```

To set the GID applicant on port 5 to an active state enter the following commands:

```
switch#configure terminal
switch(config)#set gvrp applicant state active ge5
```

For more information about this command, see “SET GVRP APPLICANT” on page 523.

Enabling Dynamic VLANs

To enable dynamic VLANs to be created on the switch, use the GVRP DYNAMIC-VLAN-CREATION command. The syntax of this command is:

```
set gvrp dynamic-vlan-creation
```

The following commands allow GVRP VLANs to be created dynamically:

```
switch#configure terminal
switch(config)#set gvrp dynamic-vlan-creation
```

For more information about this command, see “SET GVRP DYNAMIC-VLAN-CREATION” on page 524

Setting GVRP Registration

In setting GVRP registration, you can do one of the following:

- allow manual creation of VLANs (fixed)
- deregister all existing VLANs with the exception of VLAN 1 (forbidden)
- allow dynamic VLAN creation on a per port basis (normal)

The syntax of this command is:

```
set gvrp registration fixed|forbidden|normal ge<1-52>
```

The following commands set GVRP registration to fixed on port 12:

```
switch#configure terminal
```

```
switch(config)#set gvrp registration fixed ge12
```

For more information about this command, see “SET GVRP REGISTRATION” on page 525.

Setting Join and Leave Timers

To set the GARP timers to join or leave a group, use the SET GVRP TIMER command. The syntax of this command is:

```
set gvrp timer join|leave|leaveall <1-65535> ge<1-52>
```

The following commands set the leave timer to 0.5 seconds for all GVRP applications on port 9:

```
switch#configure terminal
```

```
switch(config)#set gvrp timer leave 50 seconds ge9
```

For more information about this command, see “SET GVRP TIMER” on page 527.

Enabling IGMP Snooping

IPv4 routers use IGMP to create lists of nodes that are members of multicast groups. (A multicast group is a group of end nodes that want to receive multicast packets from a multicast application.) The router creates a multicast membership list by periodically sending out queries to the local area networks connected to its ports.

To enable IGMP, enter the following commands:

```
switch# configure terminal
```

```
switch(config)# ip igmp snooping
```

To disable IGMP, enter the following commands:

```
switch# configure terminal
```

```
switch(config)# no ip igmp snooping
```

For more information, see “IP IGMP SNOOPING” on page 393.

Setting the Link Access Control Protocol (LACP)

LACP (Link Aggregation Control Protocol) port trunks perform the same function as static trunks. They increase the bandwidth between network devices by distributing the traffic load over multiple physical links. The advantage of an LACP trunk over a static port trunk is its flexibility. While implementations of static trunking tend to be vendor specific, the implementation of LACP in the AT-S100 Management Software is compliant with the IEEE 802.3ad standard, making it interoperable with equipment from other vendors that also comply with the standard. Therefore, you can create an LACP trunk between an Allied Telesis device and network devices from other manufacturers.

Another advantage is that ports in an LACP trunk can function in a standby mode. This adds redundancy and resiliency to the trunk. If a link in a static trunk goes down, the overall bandwidth of the trunk is reduced until the link is reestablished or another port is added to the trunk. In contrast, an LACP trunk can automatically activate ports in a standby mode when an active link fails so that the maximum possible bandwidth of the trunk is maintained.

The syntax of this command is:

```
channel-group (1-10) mode active|passive
```

To configure LACP on port 12 and channel group 1, enter the following commands:

```
switch# configure terminal
switch(config)# interf ge12
switch(config-if)# channel-group 1 mode active
```

To disable LACP on port 7 in channel group 2 (and leave it as a static channel group), enter the following commands:

```
switch# configure terminal
switch(config)# interface ge7
switch(config-if)# channel-group 2 mode passive
```

To remove port 7 from channel group 2, enter the following commands:

```
switch# configure terminal
switch(config)# interface ge7
switch(config-if)# no channel-group 2
```

For more information about this command, see "CHANNEL-GROUP" on page 451.

Setting 802.1x Port Authentication

The AT-S100 Management Software has several different methods for protecting your network and its resources from unauthorized access. One method is 802.1x port-based network access control which uses the RADIUS protocol to control who can send traffic through and receive traffic from a switch port. The switch does not allow an end node to send or receive traffic through a port until the user of the node has been authenticated by a RADIUS server.

The benefit of this type of network security is that you can prevent unauthorized individuals from connecting a computer to a switch port or using an unattended workstation to access your network resources. Only those users designated as valid network users on the RADIUS server are permitted to use the switch to access the network.

The switch implements the server side of the IEEE 802.1x Port-based and MAC-based Network Access Control. This feature allows only authorized users, or their network devices, access to network resources by establishing criteria for each interface on the switch.

Displaying 802.1x Port Authentication Status

Displaying the status of the 802.1x Port Authentication feature on the switch provides the following information:

- 802.1x Port Authentication status (enabled or disabled)
- RADIUS server IP address
- RADIUS client IP address
- Next RADIUS message ID

The syntax of this command is:

```
show dot1x
```

To display the status of the 802.1x Port Authentication feature, enter the following command:

```
switch#show dot1x
```

For more information about this command including a display, see “SHOW DOT1X” on page 511.

Setting 802.1x Port Authentication

To set 802.1x Port Authentication with a RADIUS server host of 192.168.1.30 and a shared secret key between the RADIUS server and a client of “Encrypt112,” enter the following commands:

```
switch# configure terminal
```

```
switch(config)# dot1x system-auth-ctrl
```

```

switch(config)# interface ge12
switch(config-if)# dot1x port-control auto
switch(config-if)# exit
switch(config)# radius-server host 192.168.1.30
switch(config)# radius-server key Encrypt112

```

For more information about the 802.1x commands, see Chapter 9, “802.1x Access Control Commands” on page 499.

Configuring RADIUS Authentication

For those networks managed by just one or two network managers, you might not need any additional accounts. In the case of larger networks that are managed by several network managers, you may want to give each manager his or her own management login account for a switch rather than have them share an account.

This is where authentication protocols such as RADIUS can be useful. RADIUS is an acronym for Remote Authentication Dial In User Services. You can use RADIUS to transfer the task of validating management access from the switch to an authentication protocol server, enabling you to create your own manager accounts.

With RADIUS you can create a series of username and password combinations that define who can manage the switch.

There are three basic functions an authentication protocol provides:

- Authentication
- Authorization
- Accounting

When a network manager logs in to a switch to manage the device, the switch passes the username and password entered by the manager to the authentication protocol server. The server checks to see if the username and password are valid. This is referred to as authentication.

If the combination is valid, the authentication protocol server notifies the switch and the switch completes the login process, allowing the manager to manage the switch.

If the username and password are invalid, the authentication protocol server notifies the switch and the switch cancels the login.

Authorization defines what a manager can do after logging in to a switch.

The final function of an authentication protocol is keeping track of user activity on network devices, referred to as accounting. The AT-S100 Management Software does not support RADIUS accounting as part of manager accounts.

Note

This manual does not explain how to configure a RADIUS server. For instructions, refer to the documentation included with the RADIUS server software.

Setting RADIUS Authentication

To set RADIUS authentication with a RADIUS-server host of 192.168.1.30, a shared secret key of “Encrypt112,” and RADIUS password checking turned on, enter the following commands:

```
switch# configure terminal
switch(config)# radius-server host 192.168.1.30 auth-
port 1812
switch(config)# radius-server key Encrypt112
switch(config)# line console 0
switch(config-line)# login remotelocal
```

For more information about the 802.1x commands, see Chapter 9, “802.1x Access Control Commands” on page 499.

Setting Simple Network Management Protocol (SNMP)

You can manage a switch by viewing and changing the management information base (MIB) objects on the device with the Simple Network Management Program (SNMP). The AT-S100 Management Software supports SNMPv1 and SNMPv2c protocols.

To manage a switch using an SNMP application program, you must do the following:

- ❑ Activate SNMP management on the switch. The default setting for SNMP management is disabled.
- ❑ Load the Allied Telesis MIBs for the switch onto your management workstation containing the SNMP application program. The MIBs are available from the Allied Telesis web site at www.alliedtelesis.com.

To manage a switch using SNMP, you need to know the IP address of the switch or of the master switch of an enhanced stack and at least one of the switch’s community strings.

Enabling and Disabling SNMP

You enable and disable the SNMP protocol on the switch. To enable the SNMP protocol, enter the following commands:

```
switch# configure terminal
switch(config)# snmp-server enable
```

To disable the SNMP protocol, enter the following commands:

```
switch# configure terminal
switch(config)# no snmp-server enable
```

For more information about this command, see “SNMP-SERVER ENABLE TRAPS SNMP” on page 558.

Creating an SNMP Contact Name

The SNMP contact name is a person who is to be contacted in case of questions about your SNMP implementation, an email address, or an IP address for the SNMP system. To create an SNMP contact name of John Smith, enter the following commands:

```
switch# configure terminal
switch(config)# snmp-server contact "John Smith"
```

For more information about this command, see “SNMP-SERVER CONTACT” on page 554.

Creating SNMP Communities

SNMP Communities have several attributes, including a name and an access mode. A community name must have a name of one to eight alphanumeric characters. Spaces are allowed.

The access mode attribute defines the permissions of a community string. There are two access modes: Read and Read/Write. A community string with an access mode of Read can only be used to view, but not change, the MIB objects on a switch. A community string with a Read/Write access can be used to both view the MIB objects and change them.

The AT-S100 Management Software provides two default community strings: public and private. The public string has an access mode of Read and the private string has an access mode of Read/Write. If you activate SNMP management on the switch, delete or disable the private community string, which is a standard community string in the industry, or change its status from open to closed to prevent unauthorized changes to the switch.

The syntax of this command is:

```
snmp-server community <community name> <ro|rw|view>
```

To create an SNMP community called public with an access level of Read only and a community called “mysecret” with read and write access, enter the following commands:

```
switch# configure terminal  
switch(config)# snmp-server community public ro  
switch(config)# snmp-server community mysecret rw
```

For more information about this command, see “SNMP-SERVER COMMUNITY” on page 552.

Adding Management and Trap Receiver Addresses

A trap is a signal sent to one or more management workstations by the switch to indicate the occurrence of a particular operating event on the device. There are numerous operating events that can trigger a trap. For instance, resetting the switch or the failure of a cooling fan are two examples of occurrences that cause a switch to send a trap to the management workstations. You can use traps to monitor activities on the switch.

Trap receivers are the devices, typically management workstations or servers, that you want to receive the traps sent by the switch. You specify the trap receivers by their IP addresses. You assign the IP addresses to the community strings.

Each community string can have up to eight trap IP addresses.

It does not matter which community strings you assign your trap receivers. When the switch sends a trap, it looks at all the community strings and sends the trap to all trap receivers on all community strings. This is true even for community strings that have a access mode of only Read.

If you are not interested in receiving traps, then you do not need to enter the IP addresses of trap receivers.

To add a management and trap receiver IP address, enter the following commands:

```
switch# configure terminal  
switch(config)# snmp-server host <ip address> version  
1|2c <community name> traps
```

```
snmp-server host 192.168.1.2 version 1 public
```

```
snmp-server host 192.168.1.2 version 1 trap
```

For more information about all of the SNMP commands, see Chapter 13, “Simple Network Management Protocol (SNMP) Commands” on page 547.

Setting the Secure Shell

Secure management is increasingly important in modern networks, as the ability to easily and effectively manage switches and the requirement for security are two universal requirements. Switches are often remotely managed using remote sessions via the Telnet protocol. This method, however, has a serious security problem—it is only protected by plain text usernames and passwords which are vulnerable to wiretapping and password guessing.

The Secure Shell (SSH) protocol provides encrypted and strongly authenticated remote login sessions, similar to the Telnet and rlogin protocols, between a host running a Secure Shell server and a machine with a Secure Shell client.

The syntax of this command is:

```
crypto key generate rsa1|rsa <768-32768>
```

To generate a 2048-bit RSA user key for SSH version 2 connections, enter the following commands:

```
switch#configure terminal
```

```
switch(config)#crypto key generate rsa 2048
```

For more information about this command, see “CRYPTO KEY GENERATE” on page 378.

Setting STP and RSTP

The performance of a Ethernet network can be negatively impacted by the formation of a data loop in the network topology. A data loop exists when two or more nodes on a network can transmit data to each other over more than one data path. The problem that data loops pose is that data packets can become caught in repeating cycles, referred to as broadcast storms, that needlessly consume network bandwidth and can significantly reduce network performance.

STP and RSTP prevent data loops from forming by ensuring that only one path exists between the end nodes in your network. Where multiple paths exist, these protocols place the extra paths in a standby or blocking mode, leaving only one main active path.

STP and RSTP can also activate a redundant path if the main path goes down. So not only do these protocols guard against multiple links between segments and the risk of broadcast storms, but they can also maintain

network connectivity by activating a backup redundant path in case a main link fails.

Where the two protocols differ is in the time each takes to complete the process referred to as *convergence*. When a change is made to the network topology, such as the addition of a new bridge, a spanning tree protocol must determine whether there are redundant paths that must be blocked to prevent data loops, or activated to maintain communications between the various network segments. This is the process of convergence.

With STP, convergence can take up to a minute to complete in a large network. This can result in the loss of communication between various parts of the network during the convergence process, and the subsequent loss of data packets.

RSTP is much faster. It can complete a convergence in seconds, and so greatly diminish the possible impact the process can have on your network.

Only one spanning tree protocol can be active on the switch at a time. The default is RSTP.

Setting the Spanning Tree Mode

As mentioned above, the default setting for the spanning tree mode is RSTP. To change the current spanning tree mode setting, use the SPANNING-TREE MODE command. The syntax of this command is:

```
spanning-tree mode stp|rstp
```

To set the spanning tree mode to STP, enter the following commands:

```
switch# configure terminal
```

```
switch(config)# spanning-tree mode stp
```

For more information about this command, see “SPANNING-TREE ENABLE” on page 580.

Displaying Spanning Tree Settings

The spanning tree display includes the following information:

- Bridge setting
- Root Path Cost
- Root Port
- Bridge Priority
- Forward Delay time

- ❑ Hello time
- ❑ Maximum Age
- ❑ Root ID

The syntax of this command is:

```
show spanning-tree
```

To display the current spanning tree settings for the STP mode, enter the following commands:

```
switch# configure terminal  
switch(config)# spanning-tree mode stp  
switch(config)# show spanning-tree
```

For more information about this command including a display, see “SPANNING-TREE ENABLE” on page 580.

Enabling or Disabling the Spanning Tree Mode

To enable or disable the spanning tree mode on the switch, use the SPANNING-TREE ENABLE FORWARD command. The syntax of this command is:

```
spanning-tree stp|rstp enable
```

To enable STP, enter the following commands:

```
switch# configure terminal  
switch(config)# spanning-tree stp enable
```

To disable the RSTP on the switch, enter the following commands:

```
switch# configure terminal  
switch(config)# no spanning-tree rstp enable
```

For more information about this command, see “SPANNING-TREE ENABLE” on page 580.

Setting Spanning-Tree Priority

Use the SPANNING-TREE PRIORITY command to specify the interface priority for the switch. A lower priority value indicates a greater likelihood of becoming a root. The default value is 32,768.

The syntax of this command is:

```
spanning-tree priority (0-61440)
```

The following commands set the spanning-tree priority on the switch to 8,192:

```
switch#configure terminal  
switch(config)#spanning-tree priority 8192
```

For more information about this command, see “SPANNING-TREE PRIORITY” on page 590.

Setting the Max Age

The max-age is the maximum time, in seconds, which a message is considered valid (if a bridge is the root bridge). This setting prevents the frames from looping indefinitely. This value is used by all instances.

The syntax of this command is:

```
spanning-tree max-age (6-40)
```

The following commands set the max-age time for the bridge to 30 seconds:

```
switch#configure terminal  
switch(config)#spanning-tree max-age 30
```

For more information about this command, see “SPANNING-TREE MAX-AGE” on page 584

Setting the Forward Time

Use the SPANNING-TREE FORWARD-TIME command to set the time, after which each interface changes to the learning and forwarding states (if this bridge is the root bridge). This value is measured in seconds and it is used by all instances. The syntax of this command is:

```
spanning-tree forward-time (4-30)
```

The following commands set the forward delay time to 10 seconds:

```
switch#configure terminal  
switch(config)#spanning-tree forward-time 10
```

For more information about this command, see “SPANNING-TREE FORWARD-TIME” on page 582.

Setting the Hello Time

The hello-time is the time, in seconds, after which all the bridges in a bridged LAN exchange Bridge Protocol Data Units (BPDUs). For this to occur, the current bridge must be the root bridge. A very low value of this command leads to excessive traffic on the network, while a higher value delays the detection of topology change. This value is used by all instances.

The syntax of this command is:

```
spanning-tree hello-time (1-10)
```

The following commands set the hello delay time to 5 seconds:

```
switch#configure terminal  
switch(config)#spanning-tree hello-time 5
```

For more information about this command, see “SPANNING-TREE HELLO-TIME” on page 583.

Setting the BPDU Filter

The Spanning Tree Protocol sends BPDUs from all interfaces. Enabling the BPDU filter ensures that portfast-enabled interfaces do not transmit or receive any BPDUs. Use the SPANNING-TREE BPDU-FILTER DEFAULT command to globally enable the BPDU filter on a bridge.

The syntax of this command is:

```
spanning-tree portfast bpdu-filter default
```

The following commands enable the BPDU filter on a bridge:

```
switch#configure terminal  
switch(config)#spanning-tree portfast bpdu-filter  
default
```

For more information about this command, see “SPANNING-TREE PORTFAST BPDU-FILTER DEFAULT” on page 586.

Setting the BPDU Guard

When the BPDU guard feature is set for a bridge, all portfast-enabled interfaces of the bridge that have the BPDU guard set to default shut down the interface on receiving a BPDU. In this case, the BPDU is not processed. You can bring the interface up manually by using the NO SHUTDOWN command. See “SHUTDOWN” on page 469.

Use the `SPANNING-TREE BPDU-GUARD DEFAULT` command to enable the BPDU (Bridge Protocol Data Unit) guard feature on a bridge. This command indicates the bridge level BPDU-Guard configuration takes effect.

The syntax of this command is:

```
spanning-tree portfast bpdu-guard default
```

The following commands enable the BPDU Guard feature on a bridge:

```
switch#configure terminal
```

```
switch(config)#spanning-tree portfast bpdu-guard
```

For more information about this command, see “`SPANNING-TREE PORTFAST BPDU-GUARD DEFAULT`” on page 587.

Configuring 802.1p Class of Service

When a port on an Ethernet switch becomes oversubscribed—its egress queues contain more packets than the port can handle in a timely manner—the port may be forced to delay the transmission of some packets, resulting in the delay of packets reaching their destinations. A port may be forced to delay transmission of packets while it handles other traffic. Some packets destined to be forwarded to an oversubscribed port from other switch ports may be discarded.

Although minor delays are often of no consequence to a network or its performance, there are applications, referred to as delay or time sensitive applications, that can be impacted by packet delays. Voice transmission and video conferencing are two examples. A delay in the transmission of packets carrying their data could impact the quality of the audio or video.

This is where CoS can be of value. What it does is it permits a switch to give higher priority to some packets over other packets.

There are two principal types of traffic found on the ports of a Gigabit Ethernet switch, one being untagged packets and the other tagged packets. As explained in “`Tagged VLAN Overview`” on page 257, one of the principal differences between them is that tagged packets contain VLAN information.

CoS applies mainly to tagged packets because, in addition to carrying VLAN information, these packets can also contain a priority level specifying how important (delay sensitive) a packet is in comparison to other packets. It is this number that the switch refers to when determining a packet's priority level.

The 802.1p Class of Service (CoS) feature is configured on a per port basis. The following examples show how to set this feature.

To assign a CoS ingress value to port 18 with a user-priority of 4, use the following commands:

```
switch# configure terminal
switch(config)# interface ge18
switch(config-if)# user-priority 4
```

For more information about this command, see “USER-PRIORITY” on page 484.

To assign a weight of 10 to queue 3, use the following commands:

```
switch# configure terminal
switch(config)# mls qos 0 0 0 0 0 0 10 0 0 0 0 0 0 0 0 0
```

Note

Repeat the MLS QOS command for each queue.

For more information about this command, see “MLS QOS” on page 406.

To set CoS mapping on port 12 with a user priority of 7 and a traffic class of 8, enter the following commands:

```
switch# configure terminal
switch(config)# interface ge12
switch(config-if)# traffic-class-table user-priority 7
num-traffic-classes 8
```

For more information about this command, see “TRAFFIC-CLASS-TABLE USER-PRIORITY NUM-TRAFFIC-CLASSES” on page 483.

Section I

Command Modes

The chapters in this section provide information and procedures for basic switch setup using the AT-S100 Management Software. The following chapters are provided:

- ❑ Chapter 3, “View Mode Commands” on page 81
- ❑ Chapter 4, “Privileged Executive Mode Commands” on page 203
- ❑ Chapter 5, “Configuration Terminal Mode Commands” on page 369
- ❑ Chapter 6, “Log Server Commands” on page 435
- ❑ Chapter 7, “Interface Configuration Mode Commands” on page 449

Chapter 3

View Mode Commands

This chapter provides descriptions of the commands in the View mode which is the mode the operator user enters automatically.

This chapter describes the following commands:

- ❑ “CLEAR COUNTERS” on page 84
- ❑ “CLEAR GMRP STATISTICS” on page 85
- ❑ “CLEAR GVRP STATISTICS” on page 86
- ❑ “CLEAR LACP COUNTERS” on page 87
- ❑ “CLEAR MAC ADDRESS-TABLE DYNAMIC” on page 88
- ❑ “CLEAR MAC ADDRESS-TABLE MULTICAST” on page 90
- ❑ “CLEAR MAC ADDRESS-TABLE STATIC” on page 92
- ❑ “CLEAR SPANNING-TREE DETECTED PROTOCOL” on page 94
- ❑ “CLOCK SET” on page 95
- ❑ “ENABLE” on page 96
- ❑ “EXIT” on page 97
- ❑ “HELP” on page 98
- ❑ “LOGOUT” on page 100
- ❑ “QUIT” on page 101
- ❑ “SHOW CLOCK” on page 102
- ❑ “SHOW DOT1X” on page 104
- ❑ “SHOW DOT1X ALL” on page 105
- ❑ “SHOW DOT1X INTERFACE” on page 108
- ❑ “SHOW DOT1X SESSIONSTATISTICS Command” on page 110
- ❑ “SHOW DOT1X STATISTICS INTERFACE” on page 112
- ❑ “SHOW ETHERCHANNEL” on page 114
- ❑ “SHOW ETHERCHANNEL DETAIL” on page 115
- ❑ “SHOW ETHERCHANNEL SUMMARY” on page 117
- ❑ “SHOW FLOWCONTROL INTERFACE” on page 118
- ❑ “SHOW GMRP CONFIGURATION” on page 119
- ❑ “SHOW GMRP MACHINE” on page 120
- ❑ “SHOW GMRP STATISTICS” on page 121

- ❑ “SHOW GMRP TIMER” on page 122
- ❑ “SHOW GVRP CONFIGURATION” on page 123
- ❑ “SHOW GVRP STATISTICS” on page 125
- ❑ “SHOW GVRP STATISTICS” on page 125
- ❑ “SHOW GVRP TIMER” on page 127
- ❑ “SHOW HISTORY” on page 129
- ❑ “SHOW INTERFACE” on page 130
- ❑ “SHOW INTERFACE STATUS ALL” on page 132
- ❑ “SHOW INTERFACE SWITCHPORT ALL” on page 135
- ❑ “SHOW IP ARP” on page 137
- ❑ “SHOW IP IGMP GROUPS” on page 139
- ❑ “SHOW IP IGMP INTERFACE” on page 141
- ❑ “SHOW IP IGMP SNOOPING STATISTICS” on page 143
- ❑ “SHOW IP INTERFACE BRIEF” on page 144
- ❑ “SHOW INTERFACE SWITCHPORT ALL” on page 146
- ❑ “SHOW IP ROUTE” on page 148
- ❑ “SHOW IP ARP” on page 137
- ❑ “SHOW LACP-COUNTER” on page 150
- ❑ “SHOW LACP SYS-ID” on page 152
- ❑ “SHOW LIST” on page 153
- ❑ “SHOW LOG” on page 155
- ❑ “SHOW MAC ADDRESS-TABLE” on page 156
- ❑ “SHOW MIRROR” on page 158
- ❑ “SHOW MIRROR INTERFACE” on page 159
- ❑ “SHOW MLS QOS INTERFACE” on page 160
- ❑ “SHOW NTP ASSOCIATIONS” on page 161
- ❑ “SHOW NTP STATUS” on page 163
- ❑ “SHOW PORT ETHERCHANNEL” on page 164
- ❑ “SHOW PORT-SECURITY ADDRESS” on page 166
- ❑ “SHOW PORT-SECURITY INTERFACE” on page 168
- ❑ “SHOW PRIVILEGE” on page 171
- ❑ “SHOW RMON ALARM” on page 172
- ❑ “SHOW RMON EVENT” on page 173
- ❑ “SHOW RMON HISTORY” on page 174
- ❑ “SHOW RMON STATISTICS” on page 176
- ❑ “SHOW SNMP COMMUNITY” on page 178

- ❑ “SHOW SNMP HOST” on page 179
- ❑ “SHOW SNMP STATUS” on page 180
- ❑ “SHOW SPANNING-TREE” on page 181
- ❑ “SHOW SSHFINGERPRINT” on page 184
- ❑ “SHOW SSHSERVER STATUS” on page 185
- ❑ “SHOW STATIC-CHANNEL-GROUP” on page 187
- ❑ “SHOW NTP STATUS” on page 163
- ❑ “SHOW STORM-CONTROL” on page 188
- ❑ “SHOW UPLINK INTERFACE” on page 189
- ❑ “SHOW USER-PRIORITY” on page 191
- ❑ “SHOW USER-PRIORITY-REGEN-TABLE” on page 192
- ❑ “SHOW USERS” on page 193
- ❑ “SHOW VERSION” on page 194
- ❑ “SHOW VLAN ALL” on page 195
- ❑ “SHOW VLAN BRIEF” on page 197
- ❑ “SHOW VLAN DYNAMIC” on page 199
- ❑ “SHOW VLAN STATIC” on page 200
- ❑ “TERMINAL LENGTH” on page 202

CLEAR COUNTERS

Syntax

```
clear counters IFNAME ge<1-52>
```

Parameters

IFNAME Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”

Description

Use the CLEAR COUNTERS command to delete the counters for the specified interface.

Note

You cannot use this command to clear counters for a VLAN interface.

Command Mode

View and Privileged Executive modes

Example

To clear the counters for port 1, enter the following command:

```
switch>clear counters ge1
```

Related Commands

none

CLEAR GMRP STATISTICS

Syntax

```
clear gmrp statistics all|vlanid <1-4094>
```

Parameters

all Indicates all VLANs.

VLANID Specifies the VLAN ID. Use a value between 1 and 4094.

Description

Use the CLEAR GMRP STATISTICS command to delete GVRP statistics from all VLANs or the specified interface VLANs. For detailed information about GMRP, see IEEE specification 802.1q.

Command Mode

View and Privileged Executive modes

Example

To clear the GMRP statistics on VLAN ID 3, enter the following command:

```
switch>clear gmrp statistics vlanid 3
```

Related Commands

“SHOW GMRP CONFIGURATION” on page 119

CLEAR GVRP STATISTICS

Syntax

```
clear gvrp statistics IFNAME ge<1-52>|all
```

Parameters

IFNAME Specifies the name of the interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”

all Indicates all bridges.

Description

Use the CLEAR GVRP STATISTICS command to delete GVRP statistics from either the specified interface or all of the bridges. For detailed information about GVRP, see IEEE specifications 802.1d and 802.1q.

Command Mode

View and Privileged Executive modes

Example

To clear the GVRP statistics on port 2, enter the following command:

```
switch>clear gvrp statistics 2
```

Related Commands

“SHOW GVRP STATISTICS” on page 125

CLEAR LACP COUNTERS

Syntax

```
clear lacp <1-65535> counters
```

Parameters

<1-65535> Indicates the channel-group number.

Description

Use the CLEAR LACP COUNTERS to clear all counters of all present LACP aggregators, or channel group, or a given LACP aggregator.

Command Mode

View and Privileged Executive modes

Examples

To clear channel group 2, enter the following command:

```
switch>clear lacp 2 counters
```

To clear all counters of all present LACP aggregators, enter the following command:

```
switch>clear lacp 2 counters
```

Related Commands

none

CLEAR MAC ADDRESS-TABLE DYNAMIC

Syntax

```
clear mac address-table dynamic |address HHHH.HHHH.HHHH
|interface ge<1-52>|vlan VID
```

Parameters

address	Specifies a MAC address in the following format: HHHH.HHHH.HHHH
interface	Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”
VID	Specifies the VLAN ID. Use a value between 1 and 4094.

Description

Use the CLEAR MAC ADDRESS-TABLE DYNAMIC command to remove a dynamic MAC address from the switch. You can remove all of the dynamic MAC addresses, specific MAC addresses, or all MAC addresses assigned to an VLAN.

For procedures to configure and display the MAC addresses, see “Displaying and Setting MAC Addresses” on page 40.

Command Mode

View and Privileged Executive modes

Examples

To remove dynamic MAC address 0030.846e.bac7 from the MAC address table, use the following command:

```
switch>clear mac address-table dynamic address
0030.846e.bac7
```

To remove all dynamic MAC addresses from the MAC address table, enter the following command:

```
switch>clear mac address-table dynamic
```

Related Commands

“CLEAR MAC ADDRESS-TABLE MULTICAST” on page 220

“CLEAR MAC ADDRESS-TABLE STATIC” on page 222

CLEAR MAC ADDRESS-TABLE MULTICAST

Syntax

```
clear mac address-table multicast | address MACADDR
| interface ge<1-52> | vlan VID
```

Parameters

address	Specifies a multicast MAC address in the following format: HHHH.HHHH.HHHH
interface	Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”
VID	Specifies the VLAN ID. Use a value between 1 and 4094.

Description

Use the CLEAR MAC ADDRESS-TABLE MULTICAST command to remove a multicast MAC address from the switch. You can remove all of the multicast MAC addresses, specific multicast MAC addresses, or all multicast MAC addresses assigned to an VLAN.

For procedures to configure and display the MAC addresses, see “Displaying and Setting MAC Addresses” on page 40.

Command Mode

View and Privileged Executive modes

Examples

To remove multicast MAC address 0100.5100.0001 from the MAC address table, enter the following command:

```
switch>clear mac address-table multicast address
0100.5100.0001
```

To remove all multicast MAC addresses from the MAC address table, enter the following command:

```
switch>clear mac address-table multicast
```

Related Commands

“CLEAR MAC ADDRESS-TABLE DYNAMIC” on page 88

“CLEAR MAC ADDRESS-TABLE STATIC” on page 92

CLEAR MAC ADDRESS-TABLE STATIC

Syntax

```
clear mac address-table static [address HHHH.HHHH.HHHH
|interface ge<1-52>|vlan VID
```

Parameters

address	Specifies a MAC address in the following format: HHHH.HHHH.HHHH
interface	Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”
VID	Specifies the VLAN ID. Use a value between 1 and 4094.

Description

Use the CLEAR MAC ADDRESS-TABLE STATIC command remove static MAC addresses from the switch. You can remove all of the static MAC addresses, specific MAC addresses, or all MAC addresses assigned to an VLAN.

For procedures to configure and display the MAC addresses, see “Displaying and Setting MAC Addresses” on page 40.

Command Mode

View and Privileged Executive modes

Examples

To remove static MAC address 0000.cd28.0752 from the MAC address table, enter the following command:

```
switch>clear mac address-table static address
0000.cd28.0752
```

To remove all static MAC addresses from the MAC address table, enter the following command:

```
switch>clear mac address-table static
```

Related Commands

“CLEAR MAC ADDRESS-TABLE DYNAMIC” on page 88

“CLEAR MAC ADDRESS-TABLE MULTICAST” on page 90

CLEAR SPANNING-TREE DETECTED PROTOCOL

Syntax

```
clear spanning-tree detected protocol interface ge<1-52>
```

Parameters

interface Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”

Description

Use the CLEAR SPANNING-TREE DETECTED PROTOCOL command to remove the Spanning-Tree protocol configured on the specified port. After you have entered this command, use the SHOW SPANNING-TREE command in the Privileged Executive mode to display the current Spanning Tree settings.

Command Mode

View and Privileged Executive modes

Example

To remove the spanning-tree protocol configured on port 7, enter the following command:

```
switch>clear spanning-tree detected protocol interface ge7
```

Related Commands

“SHOW SPANNING-TREE” on page 345

CLOCK SET

Syntax

```
clock set hh:mm:ss day month year
```

Parameters

hh:mm:ss	Indicates the local time in 24-hour format.
day	Indicates the day of the current month. Choose a value between 1 and 31.
month	Indicates the first three letters of the current month.
year	Indicates the current year.

Description

Use the CLOCK SET command to set the date and time for the system clock.

Command Mode

View and Privileged Executive modes

Example

To set the current date time to 2 pm on April 2, 2009, enter the following command:

```
switch>clock set 14:00:00 2 apr 2009
```

Related Commands

“CLOCK SUMMER-TIME RECURRING” on page 374

“CLOCK TIMEZONE” on page 376

ENABLE

Syntax

`enable`

Parameters

none

Description

Use the ENABLE command to enter the Privileged Executive mode from the View mode. After you enter this command, you are prompted for a password. This password must be set by someone with administrative privileges granted by the manager login (using the ENABLE SECRET command).

After you enter the password, the prompt changes to indicate the Privileged Executive mode.

Command Mode

View mode

Example

To enter the View mode from the Privileged Executive mode, enter the following command and supply a password:

```
switch>enable
```

```
password:
```

```
switch#
```

Related Commands

“EXIT” on page 97

“ENABLE SECRET” on page 384

EXIT

Syntax

`exit`

Parameters

none

Description

Use the EXIT command to quit the View mode and end your current session.

Command Mode

View and Configuration Terminal modes

Example

The following command exits the View mode and end your current session:

```
switch>exit
```

Related Commands

“LOGOUT” on page 100

“QUIT” on page 101

HELP

Syntax

help

Parameters

none

Description

Use this command to display information about the CLI. The HELP command provides information about the current parameter. There are two forms of the HELP command:

- ❑ Full help is available when you enter a command followed by a space and the question mark (?). This displays all of the parameters for the command.
- ❑ Partial help is available when you enter an abbreviated command or argument immediately followed by the question mark (?) without a space. For example, “show con?” In this case, the software responds by displaying, “SHOW CONFIGURE.”

Note

You can abbreviate this command by typing “h.”

Command Mode

All modes

Examples

The following is an example of full help and the resulting display:

```
switch>clear?
ip                Internet Protocol (IP)
mac               Clear layer 2 MAC entries
spanning-tree    spanning-tree
```

The following is an example of the partial help and the resulting display:

```
switch>snmp-server u?
switch#snmp-server user
```

Related Commands

none

LOGOUT

Syntax

logout

Parameters

none

Description

Use the LOGOUT command to exit the View mode and end your current session.

Note

You can abbreviate this command by typing “l.”

Command Mode

View, Privileged Executive, and Configuration Terminal modes

Example

The following command exits the View mode and end your current session:

```
switch>logout
```

Related Commands

“EXIT” on page 97

“QUIT” on page 101

QUIT

Syntax

`quit`

Parameters

none

Description

Use the EXIT command to quit the View mode and end your current session.

Command Mode

View and Configuration Terminal mode

Example

The following command exits the View mode and end your current session:

```
switch>quit
```

Related Commands

“EXIT” on page 97

“LOGOUT” on page 100

SHOW CLOCK

Syntax

```
show clock
```

Parameters

none

Description

Use the SHOW CLOCK command to display the system's current configured local time and date. It also displays other clock related information such as the time zone and summertime configuration. See Table 9 for a definition of the SHOW CLOCK parameters.

Table 9. SHOW CLOCK Parameters

Parameter	Meaning
Local Time	Indicates the current local time.
UTC Time	Indicates the current UTC time.
Timezone	Specifies the current configured time zone name.
Timezone Offset	Indicates the number of hours offset to UTC.
Summer time zone	Specifies the currently configured summer time zone name.
Summer time starts	Indicates the date and time as the start of summer time.
Summer time end	Indicates the date and time as the end of summer time.
Summer time off	Specifies the number of minutes that summer time is offset from the system's timezone.
Summer time recurring	Indicates whether the device applies the summer time settings every year or only once.

Command Mode

View and Privileged Executive modes

Example

To display the current boot configuration, enter the following command:

```
switch>show clock
```

See Figure 3 for example output from the SHOW CLOCK command.

```
switch>show clock  
Timezone: PST  
Time: * Fri May 22 16:00:58 2009
```

Figure 3. SHOW CLOCK Command

Related Commands

“CLOCK SUMMER-TIME RECURRING” on page 374

“CLOCK TIMEZONE” on page 376

SHOW DOT1X

Syntax

```
show dot1x
```

Parameters

none

Description

Use this command to display the status of the 802.1x feature on the switch.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

The following example shows the SHOW DOT1X command and the resulting display:

```
switch>show dot1x
```

See Figure 4 for a sample display.

```
switch>show dot1x
% 802.1x authentication enabled
% Radius server address: 192.168.1.1.1812
% Radius client address: dhcp128.ipinfusion.com.12103
% Next radius message id: 0
```

Figure 4. SHOW DOT1X Command

Related Commands

“SHOW DOT1X ALL” on page 105

“SHOW DOT1X INTERFACE” on page 108

SHOW DOT1X ALL

Syntax

```
show dot1x all
```

Parameters

none

Description

Use this command to display detailed 802.1x information about all of the interfaces. To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

The following example shows the SHOW DOT1X ALL command and the resulting display in Figure 5:

```
switch>show dot1x all
```

```
switch>show dot1x all
% 802.1x authentication enabled
% Radius server address: 192.168.1.1.1812
% Radius client address: dhcp128.ipinfusion.com.12103
% Next radius message id: 0
% Dot1x info for interface eth1 - 3
% portEnabled: true - portControl: auto
% portStatus: unauthorized - currentId: 11
% reAuthenticate: disabled
% abort:F fail:F start:F timeout:F success:F
% PAE: state: connecting - portMode: auto
% PAE: reAuthCount: 2 - rxRespId: 0
% PAE: quietPeriod: 60 - reauthMax: 2 - txPeriod: 30
% BE: state: idle - reqCount: 0 - idFromServer: 0
% BE: suppTimeout: 30 - serverTimeout: 30 - maxReq: 2
% CD: adminControlledDirections: in - operControlledDirections: in
% CD: bridgeDetected: false
% KR: rxKey: false
% KT: keyAvailable: false - keyTxEnabled: false
```

Figure 5. SHOW DOT1X ALL Command

Table 10 provides a description of the parameters of the SHOW DOT1X ALL and SHOW DOT1X INTERFACE commands.

Table 10. SHOW DOT1X ALL Parameter Description

Parameter	Description
portEnabled	Indicates the interface operational status (up-true/down-false).
portControl	Indicates the current control status of the port for 802.1x control.
portStatus	Indicates the 802.1x status of the port (authorized or unauthorized).
reAuthenticate	Indicates the status of reauthentication on an interface.
reAuthPeriod	Indicates the time period of reauthentication.
Supplicant PAE related global variables:	
abort	Indicates that authentication should be aborted when this variable is set to true.
fail	Indicates failed authentication attempt when this variable is set to false.
start	Indicates authentication should be started when this variable is set to true.
timeout	Indicates an authentication attempt timed out when this variable is set to true.
success	Indicates authentication is successful when this variable is set to true.
PAE: state Current 802.1x operational state of the interface	
mode	Indicates the mode is set to 802.1x.
reAuthMax	Indicates the maximum number of reauthentication attempts.
BE Backend Authentication state	
state	Indicates the status of the state machine.
reqCount	Indicates the number of requests sent to the server.
suppTimeout	Indicates the supplicant timeout period.
serverTimeout	Indicates the server timeout period.

Table 10. SHOW DOT1X ALL Parameter Description (Continued)

Parameter	Description
maxReq	Specifies the maximum number of requests that can be sent.
CD	Specifies the Controlled Directions State machine.
adminControlledDirections	Indicates the administrative value (Both/In).
operControlledDirections	Indicates the operational Value (Both/In).
KR	Specifies the key receive state machine.
rxKey	Indicates true when EAPOL-Key message is received by supplicant or authenticator. Indicates false when a key is transmitted.
KT	Specifies the Key Transmit State machine.
keyAvailable	Indicates false when key has been transmitted by authenticator. Indicates true when a new key is available for key exchange.
keyTxEnabled	Indicates the key transmission status.

Related Commands

“SHOW DOT1X INTERFACE” on page 108

SHOW DOT1X INTERFACE

Syntax

```
show dot1x interface IFNAME ge<1-52>
```

Parameters

IFNAME Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”

Description

Use this command to display the state of a particular interface.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

The following command displays the state of port 6.

```
switch>show dot1x interface ge6
```

See Figure 6 for a sample display.

```
switch>show dot1x interface ge6
% 802.1X info for interface ge6
% portEnabled: true - portControl: Force Unauthorized
% portStatus: Unauthorized - currentId: 2
% reAuthenticate: disabled
% reAuthPeriod: 3600
% abort:F fail:F start:F timeout:F success:F
% PAE: state: Force Unauthorized - portMode: Force Unauthorized
% PAE: reAuthCount: 1 - rxRespId: 0
% PAE: quietPeriod: 60 - reauthMax: 2 - txPeriod: 30
BE: state: Idle - reqCount: 0 - idFromServer: 0
BE: supptimeout: 30 - serverTimeout: 30 - maxReq: 2
CD: adminControlledDirections: in - operControlledDirections: in
CD: bridgeDetected: false
KR: rxKey: false
KT: keyAvailable: false - keyTxEnabled: falseExample
```

Figure 6. SHOW DOT1X INTERFACE Command

See Table 10 on page 106 for a description of the command parameters shown in Figure 6.

Related Commands

“SHOW DOT1X ALL” on page 105

SHOW DOT1X SESSIONSTATISTICS

Syntax

```
show dot1x sessionstatistics interface IFNAME ge<1-52>
```

Parameters

IFNAME Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”

Description

Use the SHOW DOT1X SESSIONSTATISTICS command to display the authentication session statistics for the specified interface.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View mode

Example

The following command displays the session statistics for interface 5:

```
switch>show dot1x sessionstatistics interface ge5
```

See Figure 7 for a sample display.

```
switch>show dot1x interface ge5
Authentication session statistics for interface ge5
session user name: manager
session authentication method: Remote server
session time: 19440 secs
session terminal cause: Not terminated yet
```

Figure 7. SHOW DOT1X SESSIONSTATISTICS Command

Related Commands

“SHOW DOT1X” on page 104

SHOW DOT1X STATISTICS INTERFACE

Syntax

```
show dot1x statistics interface IFNAME ge<1-52>
```

Parameters

IFNAME Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”

Description

Use the SHOW DOT1X STATISTICS INTERFACE command to display the authentication statistics of the specified interface.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

The following command displays the statistics for interface 5:

```
switch>show dot1x statistics interface ge5
```

See Figure 8 for a sample display.

```
switch>show dot1x interface ge5
% Dot1x statistics for interface ge5
% EAPOL Frames Rx: 5 - EAPOL Frames Tx: 16
% EAPOL Start Frames Rx: 0 - EAPOL Logoff Frames Rx: 0
% EAP Rsp/Id Frames Rx: 3 - EAP Response Frames Rx: 2
% EAP Req/Id Frames Tx: 8 - EAP Request Frames Tx: 2
% Invalid EAPOL Frames Rx: 0 - EAP Length Error Frames Rx: 0
% EAPOL Last Frame Version Rx: 1 - EAPOL Last Frame Src:
0000.0000.0000
```

Figure 8. SHOW DOT1X INTERFACE STATISTICS Command

Related Commands

“SHOW DOT1X” on page 104

SHOW ETHERCHANNEL

Syntax

```
show etherchannel <1-65535>
```

Parameters

none

Description

Use the SHOW ETHERCHANNEL command to display information about an LACP etherchannel specified by the channel-group number.

Command Mode

View and Privileged Executive modes

Example

To display information about an LACP etherchannel 5, enter the following command:

```
switch#show etherchannel 5
```

See Figure 9 for example output from the SHOW ETHERCHANNEL command.

```
switch>show etherchannel 5  
Lacp Aggregator: po1  
  
Member:  
ge23
```

Figure 9. SHOW ETHERCHANNEL Command

Related Commands

“SHOW ETHERCHANNEL DETAIL” on page 115

SHOW ETHERCHANNEL DETAIL

Syntax

```
show etherchannel detail
```

Parameters

none

Description

Use the SHOW ETHERCHANNEL DETAIL command to display detailed information about all LACP channels.

Command Mode

View and Privileged Executive modes

Example

To display information about all LACP channels, enter the following command:

```
switch>show etherchannel detail
```

See Figure 10 for example output from the SHOW ETHERCHANNEL DETAIL command.

```
switch>show etherchannel detail
Aggregator: po1 (4501)
  MAC address: 00:00:cd:24:fd:29
  Admin Key: 0001 - Oper key 0001
  Receive link count: 1 - Transmit link count: 0
  Individual: 0 - Ready: 1
  Partner LAG: 0x8000,00-00-cd-24-da-a7
    Link: ge30 (5001) disabled
    Link: ge32 (5002) sync: 1
Aggregator: po2 (4502)
  MAC address: 00:00:cd:24:fd:29
  Admin Key: 0002 - Oper key 0002
  Receive link count: 1 - Transmit link count: 0
  Individual: 0 - Ready: 1
  Partner LAG: 0x8000,00-00-cd-24-da-a7
    Link: ge40 (5007) disabled
```

Figure 10. SHOW ETHERCHANNEL DETAIL Command

Related Commands

“SHOW ETHERCHANNEL” on page 114

SHOW ETHERCHANNEL SUMMARY

Syntax

```
show etherchannel summary
```

Parameters

none

Description

Use the SHOW ETHERCHANNEL SUMMARY command to display a summary of all LACP channels.

Command Mode

View and Privileged Executive modes

Example

To display a summary of all LACP channels, enter the following command:

```
switch>show etherchannel summary
```

See Figure 11 for example output from the SHOW ETHERCHANNEL SUMMARY command.

```
switch>show etherchannel summary
Aggregator: po1 (4501)
  Admin Key: 0001 - Oper key 0001
  Link: ge30 (5001) disabled
  Link: ge32 (5002) sync: 1
Aggregator: po2 (4502)
  Admin Key: 0002 - Oper key 0002
  Link: ge40 (5007) disabled
```

Figure 11. SHOW ETHERCHANNEL SUMMARY Command

Related Commands

“SHOW ETHERCHANNEL” on page 114

SHOW FLOWCONTROL INTERFACE

Syntax

```
show flowcontrol interface IFNAME ge<1-52>
```

Parameters

IFNAME Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”

Description

Use the SHOW FLOWCONTROL INTERFACE command to display flow control information for the specified interface. If you do not specify an interface, this command displays the status of all the interfaces.

Command Mode

View and Privileged Executive modes

Example

The following is an example of the SHOW FLOWCONTROL INTERFACE command on port 40:

```
switch>show flowcontrol interface ge40
```

See Figure 12 for example output from the SHOW FLOWCONTROL INTERFACE command.

Port	Send admin	FlowControl oper	Receive admin	FlowControl oper	RxPause	TxPause
----	-----	-----	-----	-----	-----	-----
ge40	on	on	on	on	0	0

Figure 12. SHOW FLOWCONTROL INTERFACE Command

Related Commands

“SHOW INTERFACE” on page 130

SHOW GMRP CONFIGURATION

Syntax

```
show gmrp configuration
```

Parameters

none

Description

Use the SHOW GMRP CONFIGURATION command to display configuration information about GMRP for all of the ports on the switch. For a detailed explanation of the GMRP, see IEEE specification 802.1q.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

The following is an example of the SHOW GMRP CONFIGURATION command:

```
switch>show gmrp configuration
```

Related Commands

“SHOW GMRP STATISTICS” on page 121

“SHOW GMRP TIMER” on page 122

SHOW GMRP MACHINE

Syntax

```
show gmrp machine
```

Parameters

none

Description

Use the SHOW GMRP MACHINE command to display the GMRP state machine for each port on the switch. For a detailed explanation GMRP, see IEEE specification 802.1q.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

The following is an example of the SHOW GMRP MACHINE command:

```
switch>show gmrp machine
```

Related Commands

“SHOW GMRP CONFIGURATION” on page 119

“SHOW GVRP STATISTICS” on page 125

SHOW GMRP STATISTICS

Syntax

```
show gmrp statistics VLANID <1-4094>
```

Parameters

none

Description

Use the SHOW GMRP STATISTICS command to statistics information about GMRP for all of the ports on the switch.

For a detailed explanation of GMRP, see IEEE specification 802.1d 802.1q.

Command Mode

View and Privileged Executive modes

Example

To display GMRP statistics on a VLAN with a VLAN ID of 4, enter the following command:

```
switch>show gmrp statistics VLANID 4
```

Related Commands

“CLEAR GMRP STATISTICS” on page 85

“SHOW GMRP CONFIGURATION” on page 119

SHOW GMRP TIMER

Syntax

```
show gmrp timer IF_NAME ge<1-52>
```

Parameters

IF_NAME Specifies the name of an interface. This is an optional parameter. To specify a port, precede the port number with “ge.” There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch.

Description

Use the SHOW GMRP TIMER command to display information about the GMRP Timer settings for the specified port. For a detailed explanation of GMRP, see IEEE specification 802.1q.

Command Mode

View and Privileged Executive modes

Example

The following is an example of the SHOW GMRP TIMER command on port 1:

```
switch>show gmrp timer ge1
```

Related Commands

“SET GMRP TIMER” on page 535

“SHOW GMRP CONFIGURATION” on page 119

SHOW GVRP CONFIGURATION

Syntax

```
show gvrp configuration
```

Parameters

none

Description

Use the SHOW GVRP CONFIGURATION command to display configuration information about GVRP for all of the ports on the switch. For a detailed explanation of the parameters of this command, see IEEE specifications 802.1d and 802.1q.

Command Mode

View and Privileged Executive modes

Example

The following is an example of the SHOW GVRP CONFIGURATION command:

```
switch>show gvrp configuration
```

See Figure 13 for example output from the SHOW GVRP CONFIGURATION command.

```
Dynamic Vlan Creation: Enabled
Port based GVRP Configuration:
```

Port	GVRP Status	Registration	Applicant	Timers (centiseconds)		
				Join	Leave	LeaveAll
ge1	Enabled	Normal	Normal	20	60	1000
ge2	Enabled	Normal	Normal	20	60	1000
ge3	Enabled	Normal	Active	20	60	1000
ge4	Enabled	Normal	Normal	20	60	1000
ge5	Enabled	Normal	Normal	20	60	1000
ge6	Enabled	Normal	Normal	20	60	1000
ge7	Enabled	Normal	Normal	20	60	1000
ge8	Enabled	Normal	Normal	20	60	1000
ge9	Enabled	Normal	Normal	20	60	1000
ge10	Enabled	Normal	Normal	20	60	1000

Figure 13. SHOW GVRP CONFIGURATION Command

Related Commands

“SHOW GVRP STATISTICS” on page 125

“SHOW GVRP STATISTICS” on page 125

“SHOW GVRP TIMER” on page 127

SHOW GVRP STATISTICS

Syntax

```
show gvrp statistics VLANID <1-4094>
```

Parameters

VLANID Specifies the VLAN ID. Use a value between 1 and 4094.

Description

Use the SHOW GVRP STATISTICS command to statistics information about GVRP for all of the ports on the switch. This command displays the current values for the following GARP application parameters:

- Port number
- GVRP Join Empty
- GVRP JoinIn
- GVRP Leave Empty
- GVRP LeaveIn
- GVRP Empty

For a detailed explanation of the parameters of this command, see IEEE specifications 802.1d and 802.1q.

Command Mode

View and Privileged Executive modes

Example

The following is an example of the SHOW GVRP STATISTICS command:

```
switch>show gvrp statistics
```

See Figure 14 for example output from the SHOW GVRP STATISTICS command.

Port		JoinEmpty	JoinIn	LeaveEmpty	LeaveIn	Empty
ge1	RX	0	0	0	0	0
	TX	4614	0	0	0	3732
ge2	RX	0	0	0	0	0
	TX	4630	0	0	0	3734
ge3	RX	0	0	0	0	0
	TX	4620	0	0	0	1865
ge4	RX	0	0	0	0	0
	TX	4616	0	0	0	1864
ge5	RX	0	0	0	0	0
--More--						

Figure 14. SHOW GVRP STATISTICS Command

Related Commands

“CLEAR GVRP STATISTICS” on page 86

“SHOW GVRP CONFIGURATION” on page 123

SHOW GVRP TIMER

Syntax

```
show gvrp timer INTERFACE ge<1-52>
```

Parameters

INTERFACE Specifies the name of an interface. This is an optional parameter. To specify a port, precede the port number with "ge." There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch.

Description

Use the SHOW GVRP TIMER command to display information about the GVRP Timer settings for the specified port. For a detailed explanation of the parameters of this command, see IEEE specifications 802.1d and 802.1q.

Command Mode

View and Privileged Executive modes

Example

The following is an example of the SHOW GVRP TIMER command on port 1:

```
switch>show gvrp timer ge1
```

See Figure 15 for example output from the SHOW GVRP TIMER command.

Timer	Timer value (centiseconds)
Join	20
Leave	60
LeaveAll	1000

Figure 15. SHOW GVRP TIMER Command

Related Commands

“SET GVRP TIMER” on page 527

“SHOW GVRP CONFIGURATION” on page 123

“SHOW GVRP STATISTICS” on page 125

“SHOW GVRP TIMER” on page 127

SHOW HISTORY

Syntax

```
show history
```

Parameters

none

Description

Use the SHOW HISTORY command to display the commands entered in the current session. The display lists all command line entries including commands that returned an error. The history buffer is cleared upon reboot automatically.

Command Mode

View and Privileged Executive modes

Example

The following command displays the history of the commands entered in this session.

```
switch>show history
```

See Figure 16 for example output from the SHOW HISTORY command.

```
switch>show history
1 en
2 show ru
3 con t
4 route-map er deny 3
5 exit
6 ex
7 di
```

Figure 16. SHOW HISTORY Command

Related Commands

none

SHOW INTERFACE

Syntax

```
show interface IFNAME <1-52>|vlan<1-4096>
```

Parameters

- IFNAME Specifies the name of an interface. This is an optional parameter. Choose from the following:
- To specify a port, precede the port number with “ge.” There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch.
 - To specify a VLAN, enter “vlan” followed by a VLAN ID.

Description

Use the SHOW INTERFACE command to display interface configuration and status for a port or vlan. To list the status of all the ports, enter the command without the IFNAME parameter.

Command Mode

View mode

Example

The following command displays the status of the VLAN 1 interface.

```
switch>show interface vlan1
```

See Figure 17 for example output from the SHOW INTERFACE command.

```
switch>show interface vlan1
Interface vlan1
  Hardware is VLAN, address is 0015.77c9.a577 (bia 0015.77c9.a577)
  index 5 metric 1 mtu 1518 duplex-unknown arp ageing timeout 600
  <UP, BROADCAST, RUNNING, MULTICAST>
  VRF Binding: Not bound
  inet 192.186.8.10/8 broadcast 255.255.255.255
  input packets 049, bytes 08207, multicast packets 024 broadcast packets
  019
    64-byte packets 036, 65-127 packets 030, 128-255 packets 01
    256-511 packets 03, 512-1023 packets 06, >1024 packets 00
    dropped 00, jabber 00 CRC error 06 undersize frames 00
    oversize frames 00, fragments 00 collision 00
  output packets 027, bytes 01778, multicast packets 027 broadcast packets
  80
```

Figure 17. SHOW INTERFACE Command

Related Commands

“SHOW INTERFACE STATUS ALL” on page 132

SHOW INTERFACE STATUS ALL

Syntax

```
show interface status all
```

Parameters

none

Description

Use the SHOW INTERFACE STATUS ALL command to display the following information about interfaces —both ports and VLANs:

- Port name
- Administrative status
- Operating status
- Speed
- Duplex
- Type
- Medium

Command Mode

View and Privileged Executive modes

Example

To display information about ports and vlans on the switch, enter the following command:

```
switch>show interface status all
```

See Figure 18 for example output from the SHOW INTERFACE STATUS ALL command.

```
switch>show interface status all
```

Port Name	Admin Status	Oper Status	Speed	Duplex	Type	Medium
ge1	up	down	N/A	N/A	1000T	N/A
ge2	up	down	N/A	N/A	1000T	N/A
ge3	up	up	100M	full	1000T	copper
ge4	up	up	100M	full	1000T	copper
ge5	up	up	100M	full	1000T	copper
ge6	up	up	100M	full	1000T	copper
ge7	up	up	100M	full	1000T	copper
ge8	up	up	100M	full	1000T	copper
ge9	up	up	100M	full	1000T	copper
ge10	up	up	100M	full	1000T	copper
ge11	up	up	100M	full	1000T	copper
ge12	up	up	100M	full	1000T	copper
ge13	up	up	100M	full	1000T	copper
ge14	up	up	100M	full	1000T	copper
ge15	up	up	100M	full	1000T	copper
ge16	up	up	100M	full	1000T	copper
ge17	up	up	100M	full	1000T	copper
ge18	up	up	100M	full	1000T	copper
ge19	up	up	100M	full	1000T	copper

Figure 18. SHOW INTERFACE STATUS ALL Command, Screen 1

See Figure 19 for Screen 2 of the example output from the SHOW INTERFACE STATUS ALL command, including VLAN 1.

```
switch>show interface status all
```

Port Name	Admin Status	Oper Status	Speed	Duplex	Type	Medium
ge20	up	down	N/A	N/A	1000T	N/A
ge21	up	down	N/A	N/A	1000T	N/A
ge23	up	up	100M	full	1000T	copper
ge24	up	up	100M	full	1000T	copper
ge25	up	up	1000T	full	SFP/1000T	N/A
ge26	up	up	1000T	full	SFP/1000T	N/A
ge27	up	up	1000T	full	SFP/1000T	N/A
ge28	up	up	1000T	full	SFP/1000T	N/A
vlan1	up	up	N/A	N/A	N/A	N/A

Figure 19. SHOW INTERFACE STATUS ALL Command, Screen 2

Related Commands

“SHOW INTERFACE” on page 130

“SHOW INTERFACE SWITCHPORT ALL” on page 146

SHOW INTERFACE SWITCHPORT ALL

Syntax

```
show interface switchport all
```

Parameters

none

Description

Use the SHOW INTERFACE SWITCHPORT ALL command to display information about interfaces—both ports and VLANs.

Command Mode

View and Privileged Executive modes

Example

To display information about interfaces on the switch, enter the following command:

```
switch>show interface switchport all
```

See Figure 25 for example output from the SHOW INTERFACE SWITCHPORT ALL, command.

```
switch>show interface switchport all
Interface name       : ge1
Switchport mode     : access
Ingress filer       : enable
Acceptable frame types : all
Default Vlan        : 1
Configured Vlans    : 1
Interface name       : ge2
Switchport mode     : access
Ingress filer       : enable
Acceptable frame types : all
Default Vlan        : 1
Configured Vlans    : 1
Interface name       : ge3
Switchport mode     : access
Ingress filer       : enable
Acceptable frame types : all
Default Vlan        : 1
Configured Vlans    : 1
Interface name       : ge4
Switchport mode     : access
Ingress filer       : enable
Acceptable frame types : all
Default Vlan        : 1
Configured Vlans    : 1
--More--
```

Figure 20. SHOW INTERFACE SWITCHPORT ALL Command

Related Commands

“SHOW INTERFACE STATUS ALL” on page 132

SHOW IP ARP

Syntax

```
show ip arp
```

Parameters

none

Description

Use the SHOW IP ARP command to display the dynamic and static ARP entries in the ARP cache. The ARP cache contains mappings of IP addresses to physical addresses for hosts. To have a dynamic entry in the ARP cache, a host must have use the ARP protocol to access another host.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

To display the ARP entries in the ARP cache, enter the following command:

```
switch>show ip arp
```

See Figure 21 for example output from the SHOW IP ARP command.

```
switch>show ip arp
IP Address      MAC Address      Interface      Port      Type
192.168.2.4     0013.4078.3b98   vlan3         ge7       dynamic
192.168.15.20   0030.940e.136b   vlan3         ge7       dynamic
192.168.17.1    00d0.6b04.2a42   vlan2         ge8       static
```

Figure 21. SHOW IP ARP Command

Table 11 describes the fields shown in Figure 21 on page 137.

Table 11. SHOW IP ARP Field Descriptions

Field	Description
IP Address	Specifies the IP address of the network device this entry maps to.
MAC Address	Indicates the hardware address of the network device.
Interface	Indicates the interface over which the network device is accessed.
Port	Indicates the physical port that the network device is attached to.
Type	Specifies if the entry is a static or dynamic entry. Static entries are created with the ARP command. Dynamic entries are learned from ARP request or reply message exchanges.

Related Commands

“ARP” on page 371

SHOW IP IGMP GROUPS

Syntax

```
show ip igmp groups IP-ADDRESS|IFNAME <1-52> detail
```

Parameters

IP-ADDRESS Indicates an IP address of the multicast group. This is an optional parameter. Enter the IP address in the following format:

```
xxx.xxx.xxx.xxx
```

IFNAME Specifies the name of an interface. This is an optional parameter. To specify a port, precede the port number with "ge." There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch.

Note

The detail parameter is not supported in this release.

Description

Use the SHOW IP IGMP GROUPS command to display the multicast groups with receivers directly connected to the router and learned through IGMP. If you do not specify an IP address or an interface, then the command displays the local-membership information for all ports.

Command Mode

View and Privileged Executive modes

Example

The following command displays the local-membership information for port 1:

```
switch>show ip igmp groups ge1
```

See Figure 22 for example output from the SHOW IP IGMP GROUPS command.

```
switch>show ip igmp groups ge1
IGMP Connected Group Membership
Group Address      Interface  Uptime    Expires   Last Reporter
224.0.1.1         ge1       00:00:09  00:04:17  10.10.0.82
```

Figure 22. SHOW IP IGMP GROUPS Command

Table 12 describes the fields shown in Figure 22.

Table 12. SHOW IP IGMP GROUPS Field Descriptions

Field	Description
Group Address	Specifies the IP address of the multicast group.
Interface	Indicates the port through which the group is reachable.
Uptime	Indicates the time in weeks, days, hours, minutes, and seconds that this multicast group has been known to the device.
Expires	Indicates the time in hours, minutes and seconds until the entry expires.
Last Reporter	Specifies the last host that reports being a member of the multicast group.

Related Commands

“SHOW IP IGMP INTERFACE” on page 141

SHOW IP IGMP INTERFACE

Syntax

```
show ip igmp interface INTERFACE <1-4096>
```

Parameters

INTERFACE Specifies the name of a VLAN interface. This is an optional parameter. Enter “vlan” followed by a VLAN ID.

Description

Use the SHOW IP IGMP INTERFACE command to display the status of IGMP and IGMP Snooping for a specified interface or for all interfaces. If you do not specify an IP address or an interface, then the command displays the local-membership information for all ports.

Command Mode

View and Privileged Executive modes

Example

The following command displays the status of IGMP and IGMP Snooping information for VLAN 1:

```
switch>show ip igmp interface vlan1
```

See Figure 23 for example output from the SHOW IP IGMP INTERFACE command.

```
switch>show ip igmp interface vlan1
Interface vlan1 (Index 5)
  IGMP Active, Non-Querier, Version 4 (default)
  Internet address is 10.10.10.4
  IGMP interface has 1 group-record states
  IGMP activity: 972 joins, 1 leaves
  IGMP querying router is 10.10.10.10
  IGMP query interval is 125 seconds
  IGMP querier timeout is 255 seconds
  IGMP max query response time is 10 seconds
  Last member query response interval is 1000 milliseconds
  Group Membership interval is 260 seconds
  IGMP Snooping is globally enabled
  IGMP Snooping is enabled on this interface
  IGMP Snooping fast-leave is not enabled
  IGMP Snooping querier is not enabled
  IGMP Snooping report suppression is enabled
```

Figure 23. SHOW IP IGMP INTERFACE Command

Related Commands

“SHOW IP IGMP GROUPS” on page 139

SHOW IP IGMP SNOOPING STATISTICS

Syntax

```
show ip igmp snooping statistics INTERFACE <1-52>
```

Parameters

INTERFACE Specifies the name of an interface. This is an optional parameter. To specify a port, precede the port number with "ge." There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch.

Description

Use the SHOW IP IGMP SNOOPING STATISTICS command to display IGMP Snooping statistics data.

Command Mode

View mode

Example

The following command displays the local-membership information for all interfaces enabled for IGMP:

```
switch>show ip igmp interface
```

SHOW IP INTERFACE BRIEF

Syntax

```
show ip interface INTERFACE-LIST brief
```

Parameters

- INTERFACE-LIST Specifies the name of an interface. Choose from the following:
- To specify a port, precede the port number with “ge.” There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch.
 - To specify a VLAN, enter “vlan” followed by a VLAN ID. Enter a value between 1 and 4,094.

Description

Use the SHOW IP INTERFACE BRIEF command to display brief information about interfaces and the IP addresses assigned to them. To display information about a specific interface, specify the interface name with the command.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

To display brief information about VLAN 1, enter the following command:

```
switch>show ip interface brief vlan1
```

See Figure 24 for example output from the SHOW IP INTERFACE BRIEF command.

```
switch>show ip interface brief
Interface  IP-Address  Status      Protocol
vlan1     192.168.1.1  admin up    running
```

Figure 24. SHOW IP INTERFACE BRIEF Command

Related Commands

“SHOW VLAN BRIEF” on page 197

SHOW INTERFACE SWITCHPORT ALL

Syntax

```
show interface switchport all
```

Parameters

none

Description

Use the SHOW INTERFACE SWITCHPORT ALL command to display information about interfaces—both ports and VLANs.

Command Mode

View and Privileged Executive modes

Example

To display information about interfaces on the switch, enter the following command:

```
switch>show interface switchport all
```

See Figure 25 for example output from the SHOW INTERFACE SWITCHPORT ALL, command.

```
switch>show interface switchport all
Interface name      : ge1
Switchport mode    : access
Ingress filer      : enable
Acceptable frame types : all
Default Vlan       : 1
Configured Vlans   : 1
Interface name      : ge2
Switchport mode    : access
Ingress filer      : enable
Acceptable frame types : all
Default Vlan       : 1
Configured Vlans   : 1
Interface name      : ge3
Switchport mode    : access
Ingress filer      : enable
Acceptable frame types : all
Default Vlan       : 1
Configured Vlans   : 1
Interface name      : ge4
Switchport mode    : access
Ingress filer      : enable
Acceptable frame types : all
Default Vlan       : 1
Configured Vlans   : 1
--More--
```

Figure 25. SHOW INTERFACE SWITCHPORT ALL Command

Related Commands

“SHOW INTERFACE STATUS ALL” on page 132

SHOW IP ROUTE

Syntax

```
show ip route connected|static|<ip-address/m>
```

Parameters

connected	Displays the routes learned from connected interfaces.
static	Displays the static routes you have configured.
ip-address/m	Displays the routes for the specified network. Enter an IP address and subnet mask in the following format: xxx.xxx.xxx.xxx/m

Description

Use the SHOW IP ROUTE command to display the current state of the routing table.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

To display brief information about VLAN 1, enter the following command:

```
switch>show ip route
```

See Figure 26 for example output from the SHOW IP ROUTE command.

```
switch>show ip route
Codes: C - connected, S - static
C      3.3.3.0/24 is directly connected, vlan1
C      10.10.31.0/24 is directly connected, vlan2
C      10.70.0.0/24 is directly connected, vlan4
```

Figure 26. SHOW IP ROUTE Command

Each entry in Figure 26 on page 148 has a code preceding it, indicating the source of the routing entry. Typically, entries are composed of:

- ❑ code
- ❑ network or host ip address

For example, the “C 10.10.31.0/24 is directly connected, vlan2 denotes:”

- ❑ The route entries for network 10.10.31.0/24 are derived from the IP address of local interface vlan2.
- ❑ These routes are marked as Connected routes (C) and always preferred over routes for the same network learned from other routing protocols.

Related Commands

none

SHOW LACP-COUNTER

Syntax

```
show lacp-counter <1-65535>
```

Parameters

none

Description

Use the SHOW LACP-COUNTER command to display the packet traffic on all ports LACP aggregators of a given LACP aggregator. Specify a channel-group number to display information about one channel group. If you do not specify a channel-group number, the software displays information about all of the channel groups.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

To display information about all of the channel groups on the switch, enter the following command:

```
switch>show lacp-counter
```

See Figure 27 for example output from the SHOW LACP-COUNTER command.

```
switch>show lacp-counter
% Traffic statistics
Port          LACPDUS          Marker          Pckt err
             Sent   Recv          Sent   Recv          Sent   Recv
% Aggregator po4 (4604)
port ge5      0      0            0      0            0      0
```

Figure 27. SHOW LACP-COUNTER Command

Related Commands

“SHOW LACP SYS-ID” on page 152

SHOW LACP SYS-ID

Syntax

```
show lacp sys-id
```

Parameters

none

Description

Use the SHOW LACP SYS-ID command to display the LACP system identifier and priority.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

To brief information about LACP system identifier and priority, enter the following command:

```
switch>show lacp sys-id
```

See Figure 28 for example output from the SHOW LACP SYS-ID command.

```
switch>show lacp sys-id
% System Priority: 0x8000 (32768)
% MAC Address: 00-00-cd-24-fd-29
```

Figure 28. SHOW LACP SYS-ID Command

Related Commands

“SHOW LACP-COUNTER” on page 150

SHOW LIST

Syntax

```
show list
```

Parameters

none

Description

Use the SHOW LIST command to display a list of all the commands available in the current mode.

The display of the SHOW LIST command is often more than one page. To advance the display to the next line, press ENTER. To advance the display to the next page, press ESC. To quit the display and return to the prompt, type "q."

Command Mode

All modes

Example

Use the following commands to display the commands available in the current mode:

```
switch>show list
```

See Figure 29 for a sample display of the SHOW LIST command in the View mode.

```
clear counters IFNAME
clear gmrp statistics all
clear gmrp statistics vlanid <1-4094>
clear gvrp statistics
clear gvrp statistics IFNAME
clear gvrp statistics all
clear lacp <1-65535> counters
clear lacp counters
clear mac address-table dynamic
clear mac address-table dynamic (address MADDR|interface
IFNAME|vlan VID)
clear mac address-table (static|multicast)
--More--
```

Figure 29. SHOW LIST Command

Related Commands

“SHOW RUNNING-CONFIG” on page 420

“SHOW RUNNING-CONFIG INTERFACE” on page 426

SHOW LOG

Syntax

```
show log
```

Parameters

none

Description

Use the SHOW LOG command to display the maximum file size of log files and the level of log files. To set the maximum allowable buffer size (in bytes), use the LOG BUFFERED command. You set the level of log files with the LOG CONSOLE command.

Command Mode

View mode

Example

To display information about log files, enter the following command:

```
switch>show log
```

See Figure 30 for example output from the SHOW LOG command.



```
switch>show log
log file system max-file-size 4096 level 7
```

Figure 30. SHOW LOG Command

Related Commands

“LOG BUFFERED” on page 437

“LOG CONSOLE” on page 438

SHOW MAC ADDRESS-TABLE

Syntax

```
show mac address-table
```

Parameters

none

Description

Use the SHOW MAC ADDRESS-TABLE command to display the status of the static and dynamic MAC addresses assigned to the switch.

For procedures to configure and display the MAC addresses, see “Displaying and Setting MAC Addresses” on page 40.

Command Mode

View and Privileged Executive modes

Example

The following command displays the settings of the MAC address table:

```
switch>show mac address-table
```

See Figure 31 for an example display.

```
switch>show mac address-table
                Mac Address Table
-----
Vlan    MAC Address      Type      Ports      Forward
-----
1       0100.5e7f.ffffa  STATIC    ge1         1
1       0000.cd14.6448   DYNAMIC   ge1         1
1       0000.f4d8.3534   DYNAMIC   ge1         1
1       0004.5a5e.6fd3   DYNAMIC   ge1         1
1       0006.5ba3.67d6   DYNAMIC   ge1         1
5       0006.5bb2.6589   DYNAMIC   ge8         1
5       0006.5bdd.6c69   DYNAMIC   ge8         1
5       0008.749c.101a   DYNAMIC   ge8         1
5       0008.74a2.04c2   DYNAMIC   ge8         1
5       0008.74cb.5fc6   DYNAMIC   ge8         1
5       0008.74d3.f02c   DYNAMIC   ge8         1
10      0008.74dd.87f7   DYNAMIC   ge12        1
10      0008.74df.29d8   DYNAMIC   ge12        1
MAC Address count: 13
```

Figure 31. SHOW MAC ADDRESS-TABLE Command

The fields in Figure 31 are defined in the following list:

- ❑ **vlan.** This field indicates the VLAN ID.
- ❑ **MAC Address.** This field indicates the MAC address in the format: HHHH.HHHH.HHHH.
- ❑ **Type.** This field indicates a static or dynamic MAC address.
- ❑ **Ports.** This field indicates the name of the port.
- ❑ **Forward.** This field indicates if data is forwarded to a MAC address or not. A value of 1 indicates data is forwarded to a MAC address. A value of 0 indicates that data is discarded and is not forwarded to a MAC address.
- ❑ **MAC Address Count.** This field indicates the total number of MAC addresses on the switch.

Related Commands

“SHOW MAC ADDRESS-TABLE AGING-TIME” on page 307

“SHOW VLAN DYNAMIC” on page 199

“SHOW MAC ADDRESS-TABLE INTERFACE” on page 311

“SHOW MAC ADDRESS-TABLE STATIC” on page 313

“SHOW MAC ADDRESS-TABLE VLAN” on page 315

SHOW MIRROR

Syntax

```
show mirror
```

Parameters

none

Description

Use the SHOW MIRROR command to display the status of all mirrored ports.

Command Mode

View and Privileged Executive modes

Example

The following command displays the status of all mirrored ports:

```
switch>show mirror
```

See Figure 32 for an example display.

```
switch>show mirror
Mirror Test Port Name: ge1
Mirror option: Enabled
Mirror direction: both
Monitored Port Name: ge2
Mirror Test Port Name: ge3
Mirror option: Enabled
Mirror direction: receive
Monitored Port Name: ge4
```

Figure 32. SHOW MIRROR Command

Related Commands

“SHOW MIRROR INTERFACE” on page 159

SHOW MIRROR INTERFACE

Syntax

```
show mirror interface ge<1-52>
```

Parameters

INTERFACE Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with "ge."

Description

Use the SHOW MIRROR INTERFACE command to display port mirroring configuration for a mirrored port.

Command Mode

View and Privileged Executive modes

Example

The following command displays the port mirroring configuration of port 13:

```
switch>show mirror interface ge13
```

See Figure 33 for an example display.

```
switch>show mirror interface ge13
Mirror Test Port Name: ge13
Mirror option: Enabled
Mirror direction: both
Monitored Port Name: ge15
```

Figure 33. SHOW MIRROR Interface Command

Related Commands

"SHOW MIRROR" on page 158

SHOW MLS QOS INTERFACE

Syntax

```
show mls qos interface ge<1-52>
```

Parameters

INTERFACE Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”

Description

Use the SHOW MLS QOS INTERFACE command to display the current settings for the interface. This information includes the default Cost Of Service (CoS), queue, scheduling use for each queue, and any attached policies or maps.

Command Mode

View and Privileged Executive modes

Example

The following command displays the CoS configuration and queue settings for port 1:

```
switch>show mls qos interface ge1
```

See Figure 34 for an example display.

```
switch>show mls qos interface ge1
Schedule mode: weighted round-robin
The number of egress queue: 8
weights (priority): 0(0), 0(0), 0(0), 0(0), 0(0), 0(0), 0(0),
0(0)
```

Figure 34. SHOW MLS QOS Interface Command

Related Commands

“MLS QOS” on page 406

SHOW NTP ASSOCIATIONS

Syntax

```
show ntp associations DETAIL
```

Parameters

DETAIL Specifies to display more detail about Network Time Protocol (NTP) associations. This is an optional parameter.

Description

Use the SHOW NTP ASSOCIATIONS command to display the status of NTP associations.

Command Mode

View and Privileged Executive modes

Example

The following command displays the status of NTP associations:

```
switch>show ntp associations
```

See Figure 35 for an example display.

```
switch>show ntp associations
address      ref clock    st    when    poll    reach    delay    offset    disp
~ 127.127.1.0 127.127.1.0 5     22     64     377     0.0     0.0     1.0
~ configured
```

Figure 35. SHOW NTP ASSOCIATIONS Command

See Table 13 for definitions of the parameters.

Table 13. SHOW NTP ASSOCIATIONS Command

Parameter	Definition
address	Specifies the peer IP address.
ref clock	Specifies the IP address of the reference clock.

Table 13. SHOW NTP ASSOCIATIONS Command (Continued)

Parameter	Definition
st	Represents stratum. Indicates the number of hops between the server and the accurate time source.
poll	Indicates the time between NTP requests from the device to the server.
reach	Indicates whether or not the NTP server responded to the last request.
delay	Specifies the round trip delay between the switch and the server.
offset	Indicates the difference between the device clock and the server clock.
disp	Specifies the lowest measure of error associated with the peer offset based on delay.

See Figure 36 for an example display of the SHOW NTP ASSOCIATIONS DETAIL command.

```
switch>show ntp associations detail
172.80.1.1 configured, sane, valid, leap_sub, stratum 16
ref ID, time 00000000.00000000 (06:28:16.000 UTC Thu Feb 7 2036)
our mode active, peer mode unspec, our pool intvl 1024, peer poll intvl 1024
root delay 0.00 msec, root disp 0.00, reach 000,
delay 0.00 msec, offset 0.0000 msec, dispersion 0.00
precision 2-20
org time cba7db00.e2da554b (00:17:04.886 UTC Thu Apr 10 2008)
rcv time cba7db63.0d33f423 (00:18:43.051 UTC Thu Apr 10 2008)
xmt time cba7d9df.5ccb8e08 (00:12:15.0362 UTC Thu Apr 10 2008)
filtdelay = 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
filtoffset = 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
filtererror = 16000.00 16000.00 16000.00 16000.00 16000.00 16000.00 16000.00
16000.00
```

Figure 36. SHOW NTP ASSOCIATIONS DETAIL Command

Related Commands

“SHOW NTP STATUS” on page 163

SHOW NTP STATUS

Syntax

```
show ntp status
```

Parameters

none

Description

Use the SHOW NTP STATUS command to display the status of NTP.

Command Mode

View mode

Example

The following command displays the status of NTP:

```
switch>show ntp status
```

See Figure 37 for an example display.

```
switch>show ntp status
Clock is synchronized, stratum 6 reference is 127.127.1.0
actual frequency is 51.2010 Hz, precision is 2-15
reference time is c389fad6.a9a8ac5c (13:42:46.662 UTC wed Dec 16 2003)
clock offset is 0.000 msec, root delay is 0.000 msec
root dispersion is 11201.000 msec,
switch>
```

Figure 37. SHOW NTP STATUS Command

Related Commands

“SHOW NTP ASSOCIATIONS” on page 161

SHOW PORT ETHERCHANNEL

Syntax

```
show port etherchannel INTERFACE ge<1-52>
```

Parameters

INTERFACE Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”

Description

Use the SHOW PORT ETHERCHANNEL command to display LACP details of the specified port.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

The following command displays LACP information about port 1:

```
switch>show port etherchannel ge1
```

See Figure 38 on page 165 for an example display of the SHOW PORT ETHERCHANNEL command.

```

switch>show port etherchannel ge1
% Link: ge1 (5001)
% Aggregator: po1 (4501)
% Receive machine state: Current
% Periodic Transmission machine state: Fast periodic
% Mux machine state: Collecting/Distributing
% Actor Information:
  Selected.....Selected
  Physical Admin Key.....1
  Port Key.....5
  Port Priority.....32768
  Port Number.....5001
  Mode.....Active
  Timeout.....Long
  Individual.....Yes
  Synchronized.....Yes
  Collecting.....Yes
  Distributing.....Yes
  Defaulted.....Yes
  Expired.....No
  Partner Information:
  Partner Sys Priority.....0
  Partner System....00-00-00-00-00-00
  Port Key.....0
  Port Priority.....0
  Port Number.....0
  Mode.....Passive
  Timeout.....Short
  Individual.....Yes
  Synchronized.....Yes
  Collecting.....Yes
  Distributing.....Yes
  Defaulted.....Yes
  Expired.....No

```

Figure 38. SHOW PORT ETHERCHANNEL Command

Related Commands

none

SHOW PORT-SECURITY ADDRESS

Syntax

```
show port-security address
```

Parameters

none

Description

Use the SHOW PORT-SECURITY ADDRESS command to display the secure MAC addresses. There are three types of secure MAC addresses:

- ❑ Secure Configured—This type of MAC address is added manually.
- ❑ Secure Dynamic— This type of MAC address is learned dynamically by the switch.
- ❑ Secure Sticky— This type of MAC address is learned when the Sticky MAC address feature is enabled with the SWITCHPORT PORT-SECURITY MAC-ADDRESS command.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

To display the port-security address, enter the following command:

```
switch>show port-security address
```

See Figure 39 for an example display.

Secure Mac Address Table				
Vlan	Mac Address	Type	Ports	Remaining Age (mins)
1	000c.46b2.ee15	SecureDynamic	ge1	

Figure 39. SHOW PORT-SECURITY ADDRESS Command

Note

In Figure 39 on page 166, the Remaining Age (mins) column is not supported in this software release.

Related Commands

“SHOW PORT-SECURITY INTERFACE” on page 168

“SWITCHPORT PORT-SECURITY MAC-ADDRESS” on page 540

“SWITCHPORT PORT-SECURITY MODE” on page 543

SHOW PORT-SECURITY INTERFACE

Syntax

```
show port-security interface ge<1-52>
```

Parameters

INTERFACE Specifies the name of an interface. This is an optional parameter. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”

Description

Use the SHOW PORT-SECURITY INTERFACE command to display the port-security configuration and status of the specified port.

Command Mode

View and Privileged Executive modes

Example

The following command displays the port-security status of port 22:

```
switch>show port-security interface ge22
```

See Figure 40 for an example display.

Port Security Status					
Secure Port	Maximum SecAddr (count)	Current SecAddr (count)	Security Violation (count)	Security Mode	Security Action
ge22	10	1	0	LIMITED	PROTECT

Figure 40. SHOW PORT-SECURITY INTERFACE Command

See Table 14 for definitions of the options in Figure 40 on page 168.

Table 14. Port Security Status Definitions

Option	Definition
Secure port	Lists the port you specified in the SHOW PORT-SECURITY INTERFACE command.
Maximum SecAddr (count)	Indicates the maximum number of secure MAC addresses that the switch is permitted to learn. Use the SWITCHPORT PORT-SECURITY MAXIMUM command to set this value.
Current SecAddr (count)	Displays entries that are associated with port-security.
Security Violation (count)	Indicates the number of times a security violation has been detected. This value is set with the SWITCHPORT PORT-SECURITY VIOLATION command.
Security Mode	<p>This value is set with the SWITCHPORT PORT-SECURITY MODE command. There are 3 possible settings:</p> <p>Limited—Sets the port to the Limited security mode. The port learns a limited number of dynamic MAC addresses. This is the least secure option.</p> <p>Locked—Sets the switch to the Locked security mode. The port stops learning new dynamic MAC addresses. The port forwards frames based on static MAC addresses and on those dynamic addresses it has already learned.</p> <p>Secured—Sets the port to the Secured security mode. The port accepts frames based only on static MAC addresses. You must enter the static MAC addresses of the nodes with frames the port is to accept after you have activated this security mode on a port. To add static MAC addresses, use the SWITCHPORT PORT-SECURITY MAC-ADDRESS command.</p>

Table 14. Port Security Status Definitions (Continued)

Option	Definition
Security Action	<p>This value is set with the SWITCHPORT PORT-SECURITY VIOLATION command. There are 3 possible settings:</p> <p>PROTECT— Permits traffic from a secure port only. Drops packets from insecure ports. This is the least secure option.</p> <p>RESTRICT— Sends an alert when security violation is detected.</p> <p>SHUTDOWN— Shuts down a port if a security violation is detected.</p>

Related Commands

“SHOW PORT-SECURITY ADDRESS” on page 166

“SWITCHPORT PORT-SECURITY MAXIMUM” on page 542

“SWITCHPORT PORT-SECURITY MODE” on page 543

“SWITCHPORT PORT-SECURITY VIOLATION” on page 545

SHOW PRIVILEGE

Syntax

```
show privilege
```

Parameters

none

Description

Use the SHOW PRIVILEGE command to display the current privilege level of the user. The privilege level is either 1 which represents the limited access of the Operator login or 15 which represents the full access of the Manager login.

For more information about the Operator and Manager logins, see "Introducing the Command Modes" on page 22.

Command Mode

View and Privileged Executive modes

Example

The following command displays the user privilege value:

```
switch>show privilege
```

The following is an example display:

```
Current privilege level is 1
```

Related Commands

none

SHOW RMON ALARM

Syntax

```
show rmon alarm
```

Parameters

none

Description

Use the SHOW RMON ALARM command to display the alarms and threshold configured for the RMON probe.

Command Mode

View and Privileged Executive modes

Example

To display the alarms and threshold configured for the RMON probe, enter the following command:

```
switch>show rmon alarm
```

Related Commands

“SHOW RMON EVENT” on page 173

SHOW RMON EVENT

Syntax

```
show rmon event
```

Parameters

none

Description

Use the SHOW RMON EVENT command to display the events configured for the RMON probe.

Command Mode

View and Privileged Executive modes

Example

To display the events configured for the RMON probe, enter the following command:

```
switch>show rmon event
```

See Figure 41 for example output from the SHOW RMON EVENT command.

```
switch>show rmon event
event Index = 7
  Description condition3
    Event community name
  Last Time Sent = 0
  Owner RMON_SNMP

event Index = 8
  Description TRAP
    Event type log & trap
    Event community name gopher
  Last Time Sent = 0
  Owner RMON_SNMP
```

Figure 41. SHOW RMON EVENT Command

Related Commands

“RMON EVENT” on page 550

SHOW RMON HISTORY

Syntax

```
show rmon history
```

Parameters

none

Description

Use the SHOW RMON HISTORY command to display the parameters specified on all the currently defined RMON history collections on the switch.

Command Mode

View and Privileged Executive modes

Example

To display the events configured for the RMON probe, enter the following command:

```
switch>show rmon history
```

See Figure 42 for example output from the SHOW RMON HISTORY command.

```
switch>show rmon history
history index = 56
  data source ifindex = 4501
  buckets requested = 34
buckets granted = 34
Interval = 2000
Owner Andrew

history index = 458
  data source ifindex = 5004
  buckets requested = 400
buckets granted = 400
Interval = 1500
Owner trev
```

Figure 42. SHOW RMON HISTORY Command

Related Commands

“SHOW RMON ALARM” on page 172

SHOW RMON STATISTICS

Syntax

```
show rmon statistics
```

Parameters

none

Description

Use the SHOW RMON STATISTICS command to display the current values of the statistics for all of the RMON statistics collections currently defined on the switch.

Command Mode

View and Privileged Executive modes

Example

To display the RMON statistics, enter the following command:

```
switch>show rmon statistics
```

See Figure 43 for example output from the SHOW RMON STATISTICS command.

```
switch>show rmon statistics
  rmon collection index 45
  stats ->ifindex = 4501
  input packets 1279340, bytes 85858960, dropped 00,multicast packets
1272100
  output packets 7306090, bytes 268724, multicast packets 7305660
broadcast packets 290
  rmon collection index 679
  stats ->ifindex = 5013
  input packets 00, bytes 00, dropped 00,multicast packets 00
  output packets 8554550, bytes 26777324, multicast packets 8546690
broadcast packets 7720
```

Figure 43. SHOW RMON STATISTICS Command

Related Commands

“SHOW RMON ALARM” on page 172

“SHOW RMON EVENT” on page 173

“SHOW RMON HISTORY” on page 174

SHOW SNMP COMMUNITY

Syntax

```
show snmp community
```

Parameters

none

Description

Use the SHOW SNMP COMMUNITY command to display the SNMP server communities configured on the device.

Command Mode

View mode

Example

To display the SNMP server communities, enter the following command:

```
switch>show snmp community
```

See Figure 44 for example output from the SHOW SNMP COMMUNITY command.

```
switch>show snmp community
Community Name      Read/Write
=====
atieng              rw
```

Figure 44. SHOW SNMP COMMUNITY Command

Related Commands

“SHOW SNMP COMMUNITY” on page 178

“SHOW SNMP HOST” on page 179

SHOW SNMP HOST

Syntax

```
show snmp host
```

Parameters

none

Description

Use the SHOW SNMP HOST command to display information about the SNMP host.

Command Mode

View mode

Example

To display information about the SNMP host, enter the following command:

```
switch>show snmp host
```

See Figure 45 for example output from the SHOW SNMP HOST command.

```
switch>show snmp host
Host IP      Type      Version   Trap Community
=====
192.34.10.1  informs  v2c      public
```

Figure 45. SHOW SNMP HOST Command

Related Commands

“SHOW SNMP COMMUNITY” on page 178

“SHOW SNMP STATUS” on page 180

SHOW SNMP STATUS

Syntax

```
show snmp status
```

Parameters

none

Description

Use the SHOW SNMP STATUS command to display information about the status of SNMP on the switch as well as the system name, system location, and system contact.

Command Mode

View mode

Example

To display the SNMP server communities, enter the following command:

```
switch>show snmp status
```

See Figure 46 for example output from the SHOW SNMP STATUS command.

```
switch>show snmp status
SNMP status is enabled

System Name:      Switch3
System Location:  server room 5
System Contact:   info@alliedtelesis.com
```

Figure 46. SHOW SNMP STATUS Command

Related Commands

“SHOW SNMP COMMUNITY” on page 178

“SHOW SNMP HOST” on page 179

SHOW SPANNING-TREE

Syntax

```
show spanning-tree interface INTERFACE ge<1-52>
```

Parameters

INTERFACE Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with "ge."

Description

Use the SHOW SPANNING-TREE command to display the status of the active spanning tree protocol on the specified port.

Command Mode

View and Privileged Executive modes

Example

The following command displays the spanning tree configuration on port 1:

```
switch>show spanning-tree interface ge1
```

This command displays a variety of parameters. An example of Screen 1 of the display is shown in Figure 47.

```

switch>show spanning-tree interface ge1
% 1: Bridge up - Spanning Tree Disabled
% 1: Root Path Cost 0 - Root Port 0 - Bridge Priority 32768
% 1: Forward Delay 15 - Hello Time 2 - Max Age 20
% 1: Root Id 80000012341212ab
% 1: Bridge Id 80000012341212ab
% 1: last topology change Sat Jan 1 00:00:18 2008
% 1: portfast bpdu-filter disabled
% 1: portfast bpdu-guard disabled
% 1: portfast errdisable timeout disabled
% 1: portfast errdisable timeout interval 300 sec
% 1:   ge1: Port 2001 - Id 87d1 - Role Disabled - State Fwd
% 1:   ge1: Designated Path Cost 0
% 1:   ge1: Configured Path Cost 200000 - Add type Explicit ref
count 1
% 1:   ge1: Designated Port Id 87d1 - Priority 128 -
% 1:   ge1: Root 80000012341212ab
% 1:   ge1: Designated Bridge 80000012341212ab
% 1:   ge1: Message Age 0 - Max Age 20
% 1:   ge1: Hello Time 2 - Forward Delay 15
% 1:   ge1: Forward Timer 0 - Msg Age Timer 0 - Hello Timer 0 -
topo change timer 0
% 1:   ge1: forward-transitions 2
% 1:   ge1: Version Rapid Spanning Tree Protocol - Received None
Send RSTP
--More--

```

Figure 47. SHOW SPANNING-TREE Command, Screen 1

See Figure 48 for Screen 2 of the display.

```

% 1:   ge1: No portfast configured - Current portfast off
% 1:   ge1: portfast bpdu-guard default - Current portfast bpdu-
guard off
% 1:   ge1: portfast bpdu-filter default - Current portfast bpdu-
guard off
% 1:   ge1: no root guard configured - Current root guard off
% 1:   ge1: Configured Link Type point-to-point - Current point-
to-point
%
switch>

```

Figure 48. SHOW SPANNING-TREE Command, Screen 2

Related Commands

“SPANNING-TREE MODE” on page 585

SHOW SSHFINGERPRINT

Syntax

```
show sshfingerprint
```

Parameters

none

Description

Use the SHOW SSHFINGERPRINT command to information about SSH, including the fingerprint. The switch acts as an SSH server.

Command Mode

View and Privileged Executive modes

Example

The following command displays the SSH configuration:

```
switch>show sshfingerprint
```

See Figure 49 for an example display.

```
switch>show sshfingerprint
SSH Version 1 RSA: 1024 35:95:6c:14:9d:33:5d:04:b3:4a:3c:28:6f:
OpenSSHdv1

SSH Version 2 RSA: 1024 ec:01:d9:15:7f:ce:6e:6b:56:d5:43:f5:f3:
sshd is running
```

Figure 49. SHOW SSHFINGERPRINT Command

Figure 49 displays the SSH version number, the number of bits in the SSH key, the fingerprint, and a note about which version of SSH is running on the server.

Related Commands

“SHOW SSHSERVER STATUS” on page 185

SHOW SSHSERVER STATUS

Syntax

```
show sshserver status
```

Parameters

none

Description

Use the SHOW SSHSERVER STATUS command to display information about the SSH server configuration.

Command Mode

View and Privileged Executive modes

Example

The following command displays the status of the SSH server:

```
switch>show sshserver status
```

See Figure 50 for an example display.

```
switch>show sshserver status
Secure Shell Server Configuration

Login Timeout..... 120
Max Authentication Tries..... 6
Server Port.....22
Authentication Available.....Password

ssh server is.....Running
```

Figure 50. SHOW SSHSERVER STATUS Command

See Table 15 for definitions of the parameters.

Table 15. SHOW SSHSERVER STATUS

Parameter	Definition
Login Timeout	Indicates the time, in seconds, before the SSH server times out during log in.

Table 15. SHOW SSHSERVER STATUS (Continued)

Parameter	Definition
Max Authentication Tries	Specifies the maximum number of authentication attempts that are permitted per connection. Once the number of failures reaches half this value, additional failures are logged. The default value is 6.
Server Port	Specifies the SSH server port that is connected to the switch.
Authentication Available	Indicates if there is a password is set for the SSH server.

Related Commands

“SHOW SSHFINGERPRINT” on page 184

SHOW STATIC-CHANNEL-GROUP

Syntax

```
show static-channel-group
```

Parameters

none

Description

Use the SHOW STATIC-CHANNEL-GROUP command to display the static-channel groups configured on the switch.

For a procedure to set create static port trunks, see “Creating Static Trunks” on page 58.

Command Mode

View and Privileged Executive modes

Example

The following example shows the SHOW STATIC-CHANNEL-GROUP command and a sample of the output:

```
switch>show static-channel-group
```

See Figure 51 for an example display.

```
switch>show static-channel-group
Static Aggregator: sa3
Type: src-dst-mac
Member: ge9
switch3>
```

Figure 51. SHOW STATIC-CHANNEL-GROUP

Related Commands

“STATIC-CHANNEL-GROUP” on page 475

SHOW STORM-CONTROL

Syntax

```
show storm-control IFNAME ge<1-52>
```

Parameters

IFNAME Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”

Description

Use the SHOW STORM-CONTROL command to display the storm-control information for the specified interface.

Command Mode

View and Privileged Executive modes

Example

To display the storm-control information for port 15, enter the following command:

```
switch>show storm-control ge15
```

See Figure 52 for an example display.

```
switch>show storm-control ge15
Port    BcastLevel  BcastDiscards  McastLevel  McastDiscards  DlfLevel
DlfDiscards
ge35    100.0%      0               100.0%      0               100.0%      0
```

Figure 52. SHOW STORM-CONTROL Command

Related Commands

none

SHOW UPLINK INTERFACE

Syntax

```
show uplink interface IFNAME ge<1-52>
```

Parameters

IFNAME Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with "ge."

Description

Use the SHOW UPLINK INTERFACE command to display the information about an SFP transceiver connected to a port on the switch.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

To display information about an SFP transceiver connected to port 25, enter the following command:

```
switch>show uplink interface ge25
```

See Figure 53 on page 190 for an example display.

```
switch>show uplink interface ge25
SFP ge25 information:
  Transceiver Identifier.....SFP
  Extended Transceiver Identifier.....Function defined by serial ID
  Connector Type.....SC
  Encoding Algorithm.....8B10B
  Nominal Bit Rate.....2100M Bits/sec
  Link Length Supported For 9 um Fiber....0m
  Link Length Supported For 50 um Fiber...3000m
  Link Length Supported For 62.5 um Fiber.150m
  Link Length Supported For Copper.....0m
  Vendor Name.....AGILENT
  Vendor OUI.....00-00-00
  Vendor Part Number.....HFBR-5720L
  Vendor Product Revision.....0000
  Vendor Serial Number.....010202137111252
  Upper Bit Rate Margin.....0
  Lower Bit Rate Margin.....0
  Manufacturing Date Code.....02022300
  Gigabit Ethernet Compliance Code.....
```

Figure 53. SHOW UPLINK INTERFACE Command

Related Commands

none

SHOW USER-PRIORITY

Syntax

```
show user-priority interface INTERFACE
```

Parameters

INTERFACE Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with "ge."

Description

Use the SHOW USER-PRIORITY command to display the user priority value on the specified port.

Command Mode

View and Privileged Executive modes

Example

The following command displays the user-priority value on port 8:

```
switch>show user-priority interface ge8
```

The following is an example display:

```
Default user priority: 7
```

Related Commands

"USER-PRIORITY" on page 484

SHOW USER-PRIORITY-REGEN-TABLE

Syntax

```
show user-priority-regen-table INTERFACE ge<1-52>
```

Parameters

IFNAME Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”

Description

Use the SHOW USER-PRIORITY-REGEN-TABLE command to display the regenerated user-priority value on the specified port. Set these values with the USER-PRIORITY-REGEN-TABLE comand.

Command Mode

View and Privileged Executive modes

Example

The following command displays the user-priority value on port 8:

```
switch>show user-priority-regen-table ge8
```

See Figure 54 contains an example display:

```
switch>show user-priority-regen-table interface ge8
User Priority      Regenerated User Priority
  0                0
  1                1
  2                2
  3                5
  4                4
  5                5
  6                6
  7                0
```

Figure 54. SHOW USER-PRIORITY-REGEN-TABLE Command

Related Commands

“USER-PRIORITY-REGEN-TABLE” on page 485

SHOW USERS

Syntax

show users

Parameters

none

Description

Use the SHOW USERS command to display information about the users who are currently logged into the switch.

Command Mode

View and Privileged Executive modes

Example

Use the following command to display the users who are currently logged onto the switch:

```
switch>show users
```

See Figure 55 for an example display.

```
switch> show users
Line   User      Host(s)      Idle      Location
con 0  manager  idle         00:00:00  ttyS0
vty 0   bob      idle         00:00:03  172.16.11.1
```

Figure 55. SHOW USERS Command

Related Commands

none

SHOW VERSION

Syntax

```
show version
```

Parameters

none

Description

Use the SHOW VERSION command to display the current version of the software.

Command Mode

View and Privileged Executive modes

Example

The following command displays the current version of the software:

```
switch>show version
```

The following is an example display:

```
switch>show version
    Product ID=ATS100
    Application Version=1.0.4
    Application BuildTime=18:02:47
    Application BuildDate=May 15 2009
    Serial Number= A04149A083700041
    Model=AT-9000/28
    Ethaddr=00-15-77-C9-A5-77
    Baudrate=9600
    Uptime= 16:01:02 up 1 min, load average:
    0.21, 0.08, 0.02

    HWRev=b
```

Related Commands

“SHOW BOOT” on page 249

SHOW VLAN ALL

Syntax

```
show vlan all
```

Parameters

none

Description

Use the SHOW VLAN ALL command to display information about all of the VLANs, both static and dynamic, configured on the switch.

Command Mode

View and Privileged Executive modes

Example

The following example shows the SHOW VLAN ALL command and a sample of the output:

```
switch>show vlan all
```

See Figure 56 for an example display.

```
switch>show vlan all
VLAN ID      Name          Type      State      Member ports
=====      =====      =====      =====      =====
1            default      STATIC    ACTIVE     ge1(u) ge2(u) ge3(u) ge4(u) ge6(u)
              ge8(u) ge9(u) ge10(u) ge11(u) ge12(u)
              ge13(u) ge14(u) ge15(u) ge16(u)
              ge17(u) ge18(u) ge19(u) ge20(u)
              ge21(u) ge22(u) ge23(u) ge24(u)
              ge25(u) ge26(u) ge27(u) ge28(u) ge7(u)
3            VLAN0003     STATIC    ACTIVE     ge5(u) ge7(t)
4            VLAN0004     STATIC    ACTIVE     ge7(t)
```

Figure 56. SHOW VLAN ALL

Related Commands

“SHOW MAC ADDRESS-TABLE VLAN” on page 315

“SHOW VLAN BRIEF” on page 197

“SHOW VLAN DYNAMIC” on page 199

“SHOW VLAN STATIC” on page 200

SHOW VLAN BRIEF

Syntax

```
show vlan brief <2-4094>
```

Parameters

<2-4094> This is an optional parameter. Enter a VLAN ID in the range from 2 to 4094.

Description

Use the SHOW VLAN BRIEF command to display information about the VLANs, both static and dynamic, configured on the switch. To display information about a specific VLAN, enter a VLAN ID. If you do not specify a VLAN ID, then information is displayed about all of the configured VLANs on the switch.

Command Mode

View and Privileged Executive modes

Example

The following example shows the SHOW VLAN BRIEF command and a sample of the output:

```
switch>show vlan brief
```

See Figure 57 for an example display.

```
switch> show vlan brief
VLAN ID    Name           Type      State      Member ports
=====    =====
1          default       STATIC    ACTIVE    ge1(u) ge2(u) ge3(u) ge4(u) ge6(u)
           ge8(u) ge9(u) ge10(u) ge11(u) ge12(u)
           ge13(u) ge14(u) ge15(u) ge16(u)
           ge17(u) ge18(u) ge19(u) ge20(u)
           ge21(u) ge22(u) ge23(u) ge24(u)
           ge25(u) ge26(u) ge27(u) ge28(u) ge7(u)
3          VLAN0003     STATIC    ACTIVE    ge5(u) ge7(t)
4          VLAN0004     STATIC    ACTIVE    ge7(t)
```

Figure 57. SHOW VLAN BRIEF Command

Related Commands

“SHOW MAC ADDRESS-TABLE VLAN” on page 315

“SHOW VLAN ALL” on page 195

“SHOW VLAN BRIEF” on page 197

“SHOW VLAN DYNAMIC” on page 199

“SHOW VLAN STATIC” on page 200

SHOW VLAN DYNAMIC

Syntax

```
show vlan dynamic
```

Parameters

none

Description

Use the SHOW VLAN DYNAMIC command to display information about dynamic VLANs on the switch.

Command Mode

View and Privileged Executive modes

Example

The following example shows the SHOW VLAN DYNAMIC command and a sample of the output:

```
switch>show vlan dynamic
```

See Figure 58 for an sample display.

```
switch> show vlan dynamic
VLAN ID      Name          Type          State          Member ports
=====      =====      =====      =====      =====
9            VLAN0009     DYNAMIC      ACTIVE         ge11(u) ge12(u) ge33(u) ge14(u)
```

Figure 58. SHOW VLAN DYNAMIC Command

Related Commands

“SHOW VLAN ALL” on page 195

“SHOW VLAN BRIEF” on page 197

“SHOW VLAN STATIC” on page 200

SHOW VLAN STATIC

Syntax

```
show vlan static
```

Parameters

none

Description

Use the SHOW VLAN STATIC command to display information about all of the VLANs, both static and dynamic, configured on the switch.

Command Mode

View and Privileged Executive modes

Example

The following example shows the SHOW VLAN STATIC command and a sample of the output:

```
switch>show vlan static
```

See Figure 59 for an sample display.

```
switch>show vlan static
VLAN ID   Name           Type      State      Member ports
=====   =====
1         default       STATIC    ACTIVE    ge1(u) ge2(u) ge3(u) ge4(u) ge6(u)
          ge8(u) ge9(u) ge10(u) ge11(u) ge12(u)
          ge13(u) ge14(u) ge15(u) ge16(u)
          ge17(u) ge18(u) ge19(u) ge20(u)
          ge21(u) ge22(u) ge23(u) ge24(u)
          ge25(u) ge26(u) ge27(u) ge28(u) ge7(u)
3         VLAN0003      STATIC    ACTIVE    ge5(u) ge7(t)
4         VLAN0004      STATIC    ACTIVE    ge7(t)
```

Figure 59. SHOW VLAN STATIC Command

Related Commands

“SHOW VLAN ALL” on page 195

“SHOW VLAN BRIEF” on page 197

“SHOW VLAN DYNAMIC” on page 199

TERMINAL LENGTH

Syntax

```
terminal length <0-512>
```

```
terminal no length
```

Parameters

length Indicates the number of rows that the switch displays on the currently-active terminal before pausing. Choose a value between 0 and 512. Select 0 to specify no pausing.

Description

Use this command to set the number of rows of output that the switch displays before pausing. This setting applies to the currently-active terminal only.

Use the no form of the command to remove the number of rows of output specified by this command.

Command Mode

View mode

Examples

The following command sets the number of lines to 15:

```
switch>terminal length 15
```

The following command removes the terminal length set previously:

```
switch>terminal no length
```

Related Commands

none

Chapter 4

Privileged Executive Mode Commands

This chapter describes the commands in the Privileged Executive mode which are used to perform general switch functions such as copying configuration file and displaying interface and MAC address table information. This chapter contains the following commands:

- ❑ “BOOT CONFIG-FILE” on page 207
- ❑ “CAT” on page 208
- ❑ “CLEAR ARP CACHE” on page 209
- ❑ “CLEAR COUNTERS” on page 210
- ❑ “CLEAR GMRP STATISTICS” on page 211
- ❑ “CLEAR GVRP STATISTICS” on page 212
- ❑ “CLEAR IP IGMP” on page 213
- ❑ “CLEAR IP IGMP GROUP” on page 214
- ❑ “CLEAR IP IGMP INTERFACE” on page 215
- ❑ “CLEAR LACP COUNTERS” on page 216
- ❑ “CLEAR LINE VTY” on page 217
- ❑ “CLEAR MAC ADDRESS-TABLE DYNAMIC” on page 218
- ❑ “CLEAR MAC ADDRESS-TABLE MULTICAST” on page 220
- ❑ “CLEAR MAC ADDRESS-TABLE STATIC” on page 222
- ❑ “CLEAR SPANNING-TREE DETECTED PROTOCOLS” on page 224
- ❑ “CLOCK SET” on page 225
- ❑ “CONFIGURE TERMINAL” on page 226
- ❑ “COPY” on page 228
- ❑ “COPY A.B.C.D” on page 229
- ❑ “COPY DEFAULT.CFG” on page 231
- ❑ “COPY WORD XMODEM” on page 233
- ❑ “COPY XMODEM WORD” on page 234
- ❑ “CP” on page 235
- ❑ “DISABLE” on page 236
- ❑ “DOT1X INITIALIZE INTERFACE” on page 237
- ❑ “DOWNLOAD SERIAL XMODEM” on page 238

- ❑ “DOWNLOAD TFTP” on page 240
- ❑ “EXIT” on page 241
- ❑ “HELP” on page 242
- ❑ “LOGOUT” on page 243
- ❑ “LS” on page 244
- ❑ “PING” on page 245
- ❑ “MV” on page 247
- ❑ “RM” on page 248
- ❑ “SHOW BOOT” on page 249
- ❑ “SHOW CLOCK” on page 250
- ❑ “SHOW DOT1X” on page 252
- ❑ “SHOW DOT1X ALL” on page 253
- ❑ “SHOW DOT1X INTERFACE” on page 256
- ❑ “SHOW DOT1X SESSIONSTATISTICS” on page 258
- ❑ “SHOW DOT1X STATISTICS INTERFACE” on page 260
- ❑ “SHOW ETHERCHANNEL” on page 262
- ❑ “SHOW ETHERCHANNEL DETAIL” on page 263
- ❑ “SHOW ETHERCHANNEL SUMMARY” on page 266
- ❑ “SHOW FLOWCONTROL INTERFACE” on page 267
- ❑ “SHOW GMRP CONFIGURATION” on page 269
- ❑ “SHOW GMRP MACHINE” on page 270
- ❑ “SHOW GMRP STATISTICS” on page 271
- ❑ “SHOW GMRP TIMER” on page 272
- ❑ “SHOW GVRP CONFIGURATION” on page 273
- ❑ “SHOW GVRP MACHINE” on page 275
- ❑ “SHOW GVRP STATISTICS” on page 277
- ❑ “SHOW GVRP TIMER” on page 279
- ❑ “SHOW HISTORY” on page 281
- ❑ “SHOW INTERFACE” on page 282
- ❑ “SHOW INTERFACE STATUS” on page 284
- ❑ “SHOW INTERFACE SWITCHPORT ALL” on page 287
- ❑ “SHOW IP ARP” on page 289
- ❑ “SHOW IP IGMP GROUPS” on page 291
- ❑ “SHOW IP IGMP INTERFACE” on page 293
- ❑ “SHOW IP INTERFACE BRIEF” on page 295
- ❑ “SHOW IP ROUTE” on page 297

- ❑ “SHOW LACP-COUNTER” on page 299
- ❑ “SHOW LACP SYS-ID” on page 301
- ❑ “SHOW LIST” on page 302
- ❑ “SHOW LOG” on page 304
- ❑ “SHOW MAC ADDRESS-TABLE” on page 305
- ❑ “SHOW MAC ADDRESS-TABLE AGING-TIME” on page 307
- ❑ “SHOW MAC ADDRESS-TABLE DYNAMIC” on page 309
- ❑ “SHOW MAC ADDRESS-TABLE INTERFACE” on page 311
- ❑ “SHOW MAC ADDRESS-TABLE STATIC” on page 313
- ❑ “SHOW MAC ADDRESS-TABLE VLAN Command” on page 316
- ❑ “SHOW MIRROR” on page 317
- ❑ “SHOW MIRROR INTERFACE” on page 318
- ❑ “SHOW MLS QOS INTERFACE” on page 319
- ❑ “SHOW NTP ASSOCIATIONS” on page 320
- ❑ “SHOW NTP STATUS” on page 322
- ❑ “SHOW PORT-SECURITY ADDRESS” on page 323
- ❑ “SHOW PORT-SECURITY INTERFACE” on page 325
- ❑ “SHOW PRIVILEGE” on page 328
- ❑ “SHOW RMON ALARM” on page 329
- ❑ “SHOW RMON EVENT” on page 330
- ❑ “SHOW RMON HISTORY” on page 331
- ❑ “SHOW RMON STATISTICS” on page 333
- ❑ “SHOW RUNNING-CONFIG FULL” on page 335
- ❑ “SHOW RUNNING-CONFIG INTERFACE” on page 337
- ❑ “SHOW RUNNING-CONFIG IP IGMP SNOOPING” on page 339
- ❑ “SHOW RUNNING-CONFIG SWITCH” on page 340
- ❑ “SHOW SSHFINGERPRINT” on page 342
- ❑ “SHOW SSHSERVER STATUS” on page 343
- ❑ “SHOW SPANNING-TREE” on page 345
- ❑ “SHOW STARTUP-CONFIG” on page 347
- ❑ “SHOW STATIC-CHANNEL-GROUP” on page 349
- ❑ “SHOW STORM-CONTROL” on page 350
- ❑ “SHOW UPLINK INTERFACE” on page 351
- ❑ “SHOW USER-PRIORITY” on page 353
- ❑ “SHOW USER-PRIORITY-REGEN-TABLE” on page 354
- ❑ “SHOW USERS” on page 355

- ❑ “SHOW VERSION” on page 356
- ❑ “SYSTEM FACTORY-RESET” on page 357
- ❑ “SYSTEM REBOOT” on page 358
- ❑ “TELENET” on page 359
- ❑ “TRACEROUTE” on page 360
- ❑ “UPLOAD SERIAL XMODEM” on page 361
- ❑ “UPLOAD TFTP” on page 363
- ❑ “WRITE FILE” on page 365
- ❑ “WRITE TERMINAL” on page 366

Note

For SNMP-specific commands, see Chapter 13, “Simple Network Management Protocol (SNMP) Commands” on page 547.

Note

For VLAN-specific commands, see Chapter 15, “Virtual Local Area Networks (VLAN) Commands” on page 591.

BOOT CONFIG-FILE

Syntax

```
boot config-file FILENAME
```

Parameters

FILENAME Indicates the name of a configuration file. Valid configuration files must have a .cfg extension.

Description

Use the BOOT CONFIG-FILE command to set the configuration file to use during the next boot cycle.

Command Mode

Privileged Executive mode

Examples

In the following example, the configuration file, "frank2.cfg," will be used during the next boot cycle:

```
switch#boot config-file frank2.cfg
```

You can confirm the file has been copied into the current directory with the LS command. See the following example of the output of the LS command:

```
switch#ls
```

```
default.cfg
```

```
frank2.cfg
```

```
ssh_host_key
```

```
ssh_host_key.pub
```

```
ssh_host_rsa_key
```

Related Commands

"LS" on page 244

CAT

Syntax

```
cat WORD
```

Parameters

WORD Indicates the name of the file that will be concatenated. Valid configuration files must have a .cfg extension.

Description

Use the CAT command to display the contents of a file on the screen. This command applies to configuration files as well as to SSH key files. Before you enter this command, you may want to use the LS command to list the files in the local directory.

Command Mode

Privileged Executive mode

Examples

In the following example, the contents of the configuration file, "jill.cfg," is displayed on the screen:

```
switch#cat jill.cfg
```

In the following example, the contents of the SSH key file, "ssh_host_key.pub," is displayed on the screen:

```
switch#cat ssh_host_key.pub
```

Related Commands

"LS" on page 244

CLEAR ARP CACHE

Syntax

```
clear arp cache
```

Parameters

none

Description

Use the CLEAR ARP CACHE command to delete the dynamic ARP entries from the ARP cache.

Command Mode

Privileged Executive mode

Example

To delete the dynamic ARP entries from the ARP cache, enter the following command:

```
switch#clear arp cache
```

Related Commands

“ARP” on page 371

CLEAR COUNTERS

Syntax

```
clear counters IFNAME ge<1-52>
```

Parameters

IFNAME Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”

Description

Use the CLEAR COUNTERS command to delete the counters for the specified interface.

Note

You cannot use this command to clear counters for a VLAN interface.

Command Mode

View and Privileged Executive modes

Example

To clear the counters for port 1, enter the following command:

```
switch#clear counters ge1
```

Related Commands

none

CLEAR GMRP STATISTICS

Syntax

```
clear gmrp statistics all|vlanid <1-4094>
```

Parameters

all Indicates all VLANs.

VLANID Specifies the VLAN ID. Use a value between 1 and 4094.

Description

Use the CLEAR GMRP STATISTICS command to delete GVRP statistics from all VLANs or the specified interface VLANs. For detailed information about GMRP, see IEEE specification 802.1q.

Command Mode

View and Privileged Executive modes

Example

To clear the GMRP statistics on VLAN ID 3, enter the following command:

```
switch#clear gmrp statistics vlanid 3
```

Related Commands

“SHOW GMRP CONFIGURATION” on page 269

CLEAR GVRP STATISTICS

Syntax

```
clear gvrp statistics IFNAME ge<1-52>|all
```

Parameters

IFNAME Specifies the name of the interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”

all Indicates all bridges.

Description

Use the CLEAR GVRP STATISTICS command to delete GVRP statistics from either the specified interface or all of the bridges. For detailed information about GVRP, see IEEE specifications 802.1d and 802.1q.

Command Mode

View and Privileged Executive modes

Example

To clear the statistics on port 2, enter the following command:

```
switch#clear gvrp statistics 2
```

Related Commands

“SHOW GVRP STATISTICS” on page 277

CLEAR IP IGMP

Syntax

```
clear ip igmp
```

Parameters

none

Description

Use the CLEAR IP IGMP command to clear all IGMP group membership records on all interfaces.

Command Mode

Privileged Executive mode

Example

To clear all IGMP group membership records on all interfaces, enter the following command:

```
switch#clear ip igmp
```

Related Commands

“CLEAR IP IGMP GROUP” on page 214

CLEAR IP IGMP GROUP

Syntax

```
clear ip igmp group *|IP-ADDRESS INTERFACE
```

Parameters

- * Clears all groups on all interfaces. This is an alias to the CLEAR IP IGMP command.
- IP-ADDRESS Indicates an IP address of the group whose membership records will be cleared from all interfaces, entered in the following format:

 xxx.xxx.xxx.xxx
- INTERFACE This is an optional parameter. Within an IGMP group, you can specify an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”

Description

Use the CLEAR IP IGMP command to clear IGMP group membership records on all interfaces or for a specific group.

Command Mode

Privileged Executive mode

Examples

To clear IGMP group membership records on group 224.67.8.1, enter the following command:

```
switch#clear ip igmp group 224.67.8.1
```

To clear IGMP group membership records on all interfaces, enter the following command:

```
switch#clear ip igmp group *
```

Related Commands

“CLEAR IP IGMP” on page 213

CLEAR IP IGMP INTERFACE

Syntax

```
clear ip igmp INTERFACE
```

Parameters

INTERFACE Specifies the name of the port. All groups learned on this interface are deleted. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with "ge."

Description

Use the CLEAR IP IGMP command to clear IGMP group membership entries on the specified port. This command applies to interfaces configured for IGMP or IGMP Snooping.

Command Mode

Privileged Executive mode

Example

To clear IGMP group membership records on port 12, enter the following command:

```
switch#clear ip igmp interface ge12
```

Related Commands

"CLEAR IP IGMP" on page 213

"CLEAR IP IGMP GROUP" on page 214

CLEAR LACP COUNTERS

Syntax

```
clear lacp <1-65535> counters
```

Parameters

<1-65535> Indicates the channel-group number.

Description

Use the CLEAR LACP COUNTERS to clear all counters of all present LACP aggregators, or channel group, or a given LACP aggregator.

Command Mode

View and Privileged Executive modes

Examples

To clear channel group 2, enter the following command:

```
switch#clear lacp 2 counters
```

To clear all counters of all present LACP aggregators, enter the following command:

```
switch#clear lacp 2 counters
```

Related Commands

none

CLEAR LINE VTY

Syntax

```
clear line vty <0-871>
```

Parameters

vtly Specifies the line number.

Description

Use command to instruct the switch to reset the line number of a virtual terminal in a Telnet session. If a session exists on the line specified, then the Telnet session is closed.

Command Mode

Privileged Executive mode

Example

To reset the first line number, enter the following command:

```
switch#clear line vty 1
```

Related Commands

“LINE CONSOLE” on page 400

“LINE VTY” on page 491

CLEAR MAC ADDRESS-TABLE DYNAMIC

Syntax

```
clear mac address-table dynamic |address HHHH.HHHH.HHHH
|interface ge<1-52>|vlan VID
```

Parameters

address	Specifies a MAC address in the following format: HHHH.HHHH.HHHH
interface	Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”
VID	Specifies the VLAN ID. Use a value between 1 and 4094.

Description

Use the CLEAR MAC ADDRESS-TABLE DYNAMIC command to remove a dynamic MAC address from the switch. You can remove all of the dynamic MAC addresses, specific MAC addresses, or all MAC addresses assigned to an VLAN.

For procedures to configure and display the MAC addresses, see “Displaying and Setting MAC Addresses” on page 40.

Command Mode

Privileged Executive mode

Examples

To remove dynamic MAC address 0030.846e.bac7 from the MAC address table, use the following command:

```
switch#clear mac address-table dynamic address
0030.846e.bac7
```

To remove all dynamic MAC addresses from the MAC address table, enter the following command:

```
switch#clear mac address-table dynamic
```

Related Commands

“CLEAR MAC ADDRESS-TABLE MULTICAST” on page 220

“CLEAR MAC ADDRESS-TABLE STATIC” on page 222

CLEAR MAC ADDRESS-TABLE MULTICAST

Syntax

```
clear mac address-table multicast|address MACADDR
|interface ge<1-52>|vlan VID
```

Parameters

address	Specifies a multicast MAC address in the following format: HHHH.HHHH.HHHH
interface	Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”
VID	Specifies the VLAN ID. Use a value between 1 and 4094.

Description

Use the CLEAR MAC ADDRESS-TABLE MULTICAST command to remove a multicast MAC address from the switch. You can remove all of the multicast MAC addresses, specific multicast MAC addresses, or all multicast MAC addresses assigned to an VLAN.

For procedures to configure and display the MAC addresses, see “Displaying and Setting MAC Addresses” on page 40.

Command Mode

Privileged Executive mode

Examples

To remove multicast MAC address 0100.5100.0001 from the MAC address table, enter the following command:

```
switch#clear mac address-table multicast address
0100.5100.0001
```

To remove all multicast MAC addresses from the MAC address table, enter the following command:

```
switch#clear mac address-table multicast
```

Related Commands

“CLEAR MAC ADDRESS-TABLE DYNAMIC” on page 218

“CLEAR MAC ADDRESS-TABLE STATIC” on page 222

CLEAR MAC ADDRESS-TABLE STATIC

Syntax

```
clear mac address-table static|address HHHH.HHHH.HHHH
|interface ge<1-52>|vlan VID
```

Parameters

address	Specifies a MAC address in the following format: HHHH.HHHH.HHHH
interface	Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”
VID	Specifies the VLAN ID. Use a value between 1 and 4094.

Description

Use the CLEAR MAC ADDRESS-TABLE STATIC command remove static MAC addresses from the switch. You can remove all of the static MAC addresses, specific MAC addresses, or all MAC addresses assigned to an VLAN.

For procedures to configure and display the MAC addresses, see “Displaying and Setting MAC Addresses” on page 40.

Command Mode

Privileged Executive mode

Examples

To remove static MAC address 0000.cd28.0752 from the MAC address table, enter the following command:

```
switch#clear mac address-table static address
0000.cd28.0752
```

To remove all static MAC addresses from the MAC address table, enter the following command:

```
switch#clear mac address-table static
```

Related Commands

“CLEAR MAC ADDRESS-TABLE DYNAMIC” on page 218

“CLEAR MAC ADDRESS-TABLE MULTICAST” on page 220

CLEAR SPANNING-TREE DETECTED PROTOCOLS

Syntax

```
clear spanning-tree detected protocols INTERFACE
```

Parameters

INTERFACE This is an optional parameter. Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”

Description

Use the CLEAR SPANNING-TREE DETECTED PROTOCOLS command to clear the detected protocols for a specific port.

Command Mode

Privileged Executive mode

Examples

To clear the detected spanning tree protocol on the switch, enter the following command:

```
switch#clear spanning-tree detected protocols
```

To clear the detected spanning tree protocol on port 13, enter the following command:

```
switch#clear spanning-tree detected protocols  
interface ge13
```

Related Commands

none

CLOCK SET

Syntax

```
clock set hh:mm:ss day month year
```

Parameters

hh:mm:ss	Indicates the local time in 24-hour format.
day	Indicates the day of the current month. Choose a value between 1 and 31.
month	Indicates the first three letters of the current month.
year	Indicates the current year.

Description

Use the CLOCK SET command to set the date and time for the system clock.

Command Mode

Privileged Executive mode

Example

To set the current date time to 2 pm on April 2, 2009, enter the following command:

```
switch#clock set 14:00:00 2 apr 2009
```

Related Commands

“CLOCK SUMMER-TIME RECURRING” on page 374

“CLOCK TIMEZONE” on page 376

CONFIGURE TERMINAL

Syntax

```
configure terminal
```

Parameters

none

Description

Use this command to enter the Configuration Terminal command mode. After you enter this command, the command prompt changes to “(config)#” to indicate the new mode.

To exit the Configure Terminal command mode, enter EXIT or CTRL Z.

For a description of the Configuration Terminal mode, see “Configuration Terminal Mode” on page 27. For information about the commands in the Configuration Terminal mode, see Chapter 5, “Configuration Terminal Mode Commands” on page 369.

Note

It is not necessary to enter the full command. You can abbreviate this command to “config t.”

Command Mode

Privileged Executive mode

Examples

To enter the Configure Terminal command mode, enter the following command:

```
switch#configure terminal
```

The prompt changes to:

```
switch(config)#
```

To use the abbreviated form of the CONFIGURE TERMINAL command mode, enter the following command:

```
switch#config t
```

The prompt changes to:

```
Switch(config)#
```

Related Commands

none

COPY

Syntax

```
copy running-config startup-config
```

Parameters

running-config Indicates the running configuration file.

startup-config Indicates the start-up configuration file.

Description

Use the COPY command to save your current configuration to the start-up configuration file, called “startup-config,” on the switch.

Command Mode

Privileged Executive mode

Examples

In the following example, the running configuration file is copied to the startup configuration file which is named “startup-config:”

```
switch#copy running-config startup-config
```

The software displays the following:

```
Building configuration...  
[OK]
```

Enter the abbreviated form of the COPY command to save the current configuration on the switch to the start-up configuration file called “startup-config:”

```
switch# copy run start
```

The software displays the following:

```
Building configuration...  
[OK]
```

Related Commands

“WRITE FILE” on page 365

COPY A.B.C.D

Syntax

```
copy A.B.C.D SRCFILENAME DESTFILENAME
```

Parameters

A.B.C.D	Indicates an IP address in the following format: xxx.xxx.xxx.xxx
SRCFILENAME	Indicates the name of the source configuration file. This file name must end with the “.cfg” suffix.
DESTFILENAME	Indicates the name of the destination configuration file. This file name must end with the “.cfg” suffix.

Description

Use the COPY A.B.C.D command to download a configuration file from the switch onto an TFTP server. For example, you may want to download a configuration file from a backup server onto your switch. You must have the IP address of the TFTP server to set this command.

Command Mode

Privileged Executive mode

Examples

Enter the following command to download a configuration file called “jenny3.cfg” from a TFTP server with an IP address of 192.58.48.1 onto your switch. The name of the new configuration file on the switch is “at100v104.cfg:”

```
switch# copy 192.58.48.1 jenny.cfg at100v104.cfg
```

Enter the following command to download a configuration file called “test.cfg” from a TFTP server with an IP address of 192.58.48.5 onto your switch. The name of the new configuration file on the switch is “master100v104.cfg:”

```
switch# copy 192.58.48.5 test.cfg master100v104.cfg
```

Related Commands

“COPY” on page 228

“COPY DEFAULT.CFG” on page 231

“DOWNLOAD TFTP” on page 240

“UPLOAD TFTP” on page 363

COPY DEFAULT.CFG

Syntax

```
copy default.cfg A.B.C.D FILENAME
```

Parameters

default.cfg	Indicates the name of the source configuration file. This file name must end with the “.cfg” suffix.
A.B.C.D	Indicates an IP address in the following format: xxx.xxx.xxx.xxx
FILENAME	Indicates the name of the destination configuration file. This file name must end with the “.cfg” suffix.

Description

Use the COPY DEFAULT.CFG command to upload a configuration file from the switch onto an TFTP server. You may want to upload a configuration file from your switch onto a backup server. Or, you may want to upload a configuration file from your switch to a TFTP server and then download it to other AT-9000 Series switches with the COPY A.B.C.D command. In addition, you must have the IP address of the TFTP server to set this command.

Command Mode

Privileged Executive mode

Examples

Enter the following command to upload a file called “may.cfg” from the switch onto a TFTP server with an IP address of 192.58.48.1. The new filename is “at100v104.cfg.”

```
switch# copy may.cfg 192.58.48.1 at100v104.cfg
```

Enter the following command to upload a text file called “june.cfg” from the switch onto a TFTP server with an IP address of 192.58.48.5. The new file name is “s100v104.cfg.”

```
switch# copy june.cfg 192.58.48.5 s100v104.cfg
```

Related Commands

“COPY” on page 228

“COPY A.B.C.D” on page 229

COPY WORD XMODEM

Syntax

copy WORD xmodem

Parameters

WORD Specifies the name of a configuration file which has a suffix of ".cfg."

Description

Use the COPY WORD XMODEM command to upload a configuration file from the switch's file system to a terminal or computer with a terminal emulator program connected to the serial terminal port on the switch using the Xmodem utility.

Note

When performing an Xmodem upload, use a local management session.

Command Mode

Privileged Executive mode

Example

To upload the configuration file, keywest.cfg, with the XMODEM utility, enter the following command:

```
switch# copy keywest.cfg xmodem
```

Related Commands

"COPY" on page 228

COPY XMODEM WORD

Syntax

```
copy xmodem WORD
```

Parameters

WORD Specifies the name of a configuration file which has a suffix of “.cfg.”

Description

Use the COPY XMODEM WORD command to download a configuration file onto a switch to a terminal or computer with a terminal emulator program connected to the serial terminal port on the switch using the Xmodem utility.

Command Mode

Privileged Executive mode

Example

To download the configuration file, asuka.cfg, onto the switch with the XMODEM utility, enter the following command:

```
switch# copy xmodem asuka.cfg
```

Related Commands

“COPY” on page 228

CP

Syntax

```
cp source-file new-file
```

Parameters

source-file	Indicates the source configuration file.
new-file	Indicates the new file which becomes a copy of the source file.

Description

Use the CP command to make a copy of a configuration file and save it in the current directory on the switch.

Command Mode

Privileged Executive mode

Examples

In the following example, the running configuration file is copied to the startup configuration file which is named "frank2.cfg:"

```
switch#copy default.cfg frank2.cfg
```

You can confirm the file has been copied into the current directory with the LS command. See the following example of the output of the LS command:

```
default.cfg
```

```
frank2.cfg
```

```
ssh_host_key
```

```
ssh_host_key.pub
```

```
ssh_host_rsa_key
```

Related Commands

"COPY A.B.C.D" on page 229

"LS" on page 244

DISABLE

Syntax

`disable`

Parameters

none

Description

Use the DISABLE command to exit the Privileged Executive mode, returning the prompt to the View mode. To end a session, use the EXIT command.

Command Mode

View and Privileged Executive modes

Example

To exit the Privileged Executive mode and enter the View mode, enter the following command:

```
switch#disable
```

```
switch>
```

Related Commands

“EXIT” on page 241

DOT1X INITIALIZE INTERFACE

Syntax

```
dot1x initialize interface
```

Parameters

INTERFACE Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. The AT-9000/52 switch has 52 ports. To specify a port, precede the port number with "ge."

Description

Use the DOT1X INITIALIZE INTERFACE command to initialize the dot1x status on the specified interface and attempts reauthentication.

Command Mode

Privileged Executive mode

Example

To initialize the dot1x status on port 20 and attempt reauthentication, enter the following command.

```
switch#dot1x initialize interface ge20
```

Related Commands

See Chapter 9, "802.1x Access Control Commands" on page 499 for more dot1x commands.

DOWNLOAD SERIAL XMODEM

Syntax

```
download serial xmodem
```

Parameters

none

Description

Use the DOWNLOAD SERIAL XMODEM command to download an image file from the switch onto to a terminal or computer.

Note

Since the AT-9000/XX switch runs at a speed of 9600 and the image file is over 10MB, using the DOWNLOAD SERIAL XMODEM command requires many hours. Allied Telesis recommends using the DOWNLOAD TFTP command. See “DOWNLOAD TFTP” on page 240.

Command Mode

Privileged Executive mode

Example

Enter the following command to download an image file from the switch onto to a terminal or computer with a terminal emulator program:

```
switch# download serial xmodem
```

Give your local XMODEM send command now.

From your XMODEM utility, do the following:

- Select the Send File option.
- Use the Browse button to select the directory where you want to select the file.
- Select the “1K XMODEM” option.
- Select Send.

A confirmation message is displayed on the screen.

Related Commands

“COPY” on page 228

“COPY DEFAULT.CFG” on page 231

“DOWNLOAD TFTP” on page 240

“UPLOAD SERIAL XMODEM” on page 361

DOWNLOAD TFTP

Syntax

```
download tftp A.B.C.D FILENAME
```

Parameters

A.B.C.D Indicates the IP address of an TFTP server. Specify the IP address in the following format:

xxx.xxx.xxx.xxx

FILENAME Specifies the filename of an image (.img) file.

Description

Use this command to download an image file from an TFTP server onto the switch. For example, you may want to use this command to download the latest version of the AT-S100 software onto your switch. You must have the IP address of the TFTP server to set this command.

Command Mode

Privileged Executive mode

Example

The following command uses a TFTP server, with an IP address of 189.11.1.1, to download the file called "ATS100_v104.img" onto the switch:

```
switch#download tftp 189.11.1.1 ATS100_v104.img
```

Related Commands

"COPY" on page 228

"COPY DEFAULT.CFG" on page 231

"UPLOAD TFTP" on page 363

EXIT

Syntax

`exit`

Parameters

none

Description

Use the EXIT command to quit the Configuration Terminal mode and enter the Privileged Executive mode. After you enter this command, the prompt changes to "Switchname#" to indicate the Privileged Executive mode.

Command Mode

Configuration Terminal mode

Example

Enter the following commands to exit the Configuration Terminal mode and return the software to the Privileged Executive mode:

```
switch#configure terminal
```

```
switch(config)#exit
```

The software displays the following prompt:

```
switch#
```

Related Commands

none

HELP

Syntax

help

Parameters

none

Description

Use the HELP command to display a description of the help system. You can abbreviate this command by typing “h.”

Command Mode

Privileged Executive mode

Example

The following is an example of the HELP command and the resulting display:

```
switch#help
```

```
(switch3)#help
```

When you need help at the command line, press ‘?’.

If nothing matches, the help list will be empty. Delete characters until entering a ‘?’ shows the available options.

Enter ‘?’ after a complete parameter to show remaining valid command parameters (e.g. ‘show ?’).

Enter ‘?’ after part of a parameter to show parameters that complete the typed letters (e.g. ‘show ip?’).

```
(switch3)#
```

Figure 60. HELP Command

Related Commands

none

LOGOUT

Syntax

logout

Parameters

none

Description

Use the LOGOUT command to quit the Privileged Executive mode and end the session. You can abbreviate this command by typing "l."

Command Mode

Privileged Executive mode

Examples

The following is an example of the LOGOUT command:

```
switch#logout
```

The following is an example of the LOGOUT command:

```
switch#l
```

Related Commands

"EXIT" on page 241

LS

Syntax

ls

Parameters

none

Description

Use the LS command to list the directory contents.

Command Mode

Privileged Executive mode

Example

The following is an example of the LS command and the resulting display:

switch#ls

```
(switch3)#ls  
backup.cfg  
default.cfg  
frank2.cfg  
jenny.cfg  
ssh_host_key  
ssh_host_key.pub  
(switch3)#
```

Figure 61. LS Command

Related Commands

“CP” on page 235

“MV” on page 247

“RM” on page 248

PING

Syntax

```
ping ipaddress xxx.xxx.xxx.xxx
```

Parameters

ipaddress Specifies the IP address of an end node that is pinged. This is an optional parameter.

Description

Use command to instruct the switch to ping an end node. You can use this command to determine whether an active link exists between the switch and another network device.

Note

You can abbreviate this command by entering “p.”

Command Mode

Privileged Executive mode

Examples

The following command pings an end node with the IP address of 149.245.22.22:

```
switch#ping 149.245.22.22
```

The results of the ping are displayed on the screen.

The following command pings an end node with the IP address of 149.245.22.1:

```
switch#p 149.245.22.1
```

The results of the ping are displayed on the screen.

The following command pings an end node with the IP address of 149.245.35.7:

```
switch#ping ipaddress 149.245.35.7
```

The results of the ping are displayed on the screen.

Related Commands

none

MV

Syntax

```
mv OLDFILE NEWFILE
```

Parameters

OLDFILE	Indicates the name of the file that you want to change. Include a period and the three letter suffix, such as “.cfg” or “.key,” in the file name.
NEWFILE	Indicates the new name of the file. Include a period and the three letter suffix, such as “.cfg” or “.key,” in the file name.

Description

Use the MV command to rename or move a file.

Command Mode

Privileged Executive mode

Example

To rename the configuration file “jenny.cfg” to “jill.cfg,” enter the following command:

```
switch#mv jenny.cfg jill.cfg
```

Related Commands

“CP” on page 235

“LS” on page 244

“RM” on page 248

RM

Syntax

rm FILE

Parameters

FILE Indicates the name of the file that you want to remove. Include a period and the three letter suffix, such as “.cfg” or “.key,” in the file name.

Description

Use the RM command to rename a file. After you enter this command, the system prompts you with a confirmation message.

Note

Before you enter this command, you may want to use the LS command to list the current files.

Command Mode

Privileged Executive mode

Example

To remove the configuration file “frank2.cfg,” enter the following command:

```
switch#rm frank2.cfg
```

The system responds with a confirmation message:

```
rm: remove '/cfg/frank2.cfg'?
```

Enter “y” to remove the file.

Related Commands

“CP” on page 235

“LS” on page 244

SHOW BOOT

Syntax

show boot

Parameters

none

Description

Use the SHOW BOOT command to display the current boot configuration. The file displayed here is currently configured as the startup-config file. The switch loads this file during the next boot cycle.

Command Mode

Privileged Executive mode

Example

To display the current boot configuration, enter the following command:

```
switch#show boot
```

See Figure 62 for example output from the SHOW BOOT command.

```
(switch3)#show boot  
Config file: /cfg/default.cfg
```

Figure 62. SHOW BOOT Command

Related Commands

none

SHOW CLOCK

Syntax

```
show clock
```

Parameters

none

Description

Use the SHOW CLOCK command to display the system's current configured local time and date. It also displays other clock-related information such as the time zone and summertime configuration. See Table 16 for a definition of the SHOW CLOCK parameters.

Table 16. SHOW CLOCK Parameters

Parameter	Meaning
Local Time	Indicates the current local time.
UTC Time	Indicates the current UTC time.
Timezone	Specifies the current configured time zone name.
Timezone Offset	Indicates the number of hours offset to UTC.
Summer time zone	Specifies the currently configured summer time zone name.
Summer time starts	Indicates the date and time as the start of summer time.
Summer time end	Indicates the date and time as the end of summer time.
Summer time off	Specifies the number of minutes that summer time is offset from the system's timezone.
Summer time recurring	Indicates whether the device applies the summer time settings every year or only once.

Command Mode

Privileged Executive and View modes

Example

To display the current boot configuration, enter the following command:

```
switch#show clock
```

See Figure 63 for example output from the SHOW CLOCK command.

```
(switch3)#show clock  
Timezone: PST  
Time: * Fri May 22 16:00:58 2009
```

Figure 63. SHOW CLOCK Command

Related Commands

“CLOCK SUMMER-TIME RECURRING” on page 374

“CLOCK TIMEZONE” on page 376

SHOW DOT1X

Syntax

```
show dot1x
```

Parameters

none

Description

Use this command to display the status of the 802.1x feature on the switch.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

Privileged Executive mode

Example

The following example shows the SHOW DOT1X command and the resulting display:

```
switch#show dot1x
```

See Figure 64 for a sample display.

```
switch# show dot1x
% 802.1x authentication enabled
% Radius server address: 192.168.1.1.1812
% Radius client address: dhcp128.ipinfusion.com.12103
% Next radius message id: 0
```

Figure 64. SHOW DOT1X Command

Related Commands

“SHOW DOT1X ALL” on page 253

“SHOW DOT1X INTERFACE” on page 256

SHOW DOT1X ALL

Syntax

```
show dot1x all
```

Parameters

none

Description

Use this command to display detailed 802.1x information about all of the interfaces. To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

The following example shows the SHOW DOT1X ALL command and the resulting display in Figure 65:

```
switch#show dot1x all
```

```
switch#show dot1x all
% 802.1x authentication enabled
% Radius server address: 192.168.1.1.1812
% Radius client address: dhcp128.ipinfusion.com.12103
% Next radius message id: 0
% Dot1x info for interface eth1 - 3
% portEnabled: true - portControl: auto
% portStatus: unauthorized - currentId: 11
% reAuthenticate: disabled
% abort:F fail:F start:F timeout:F success:F
% PAE: state: connecting - portMode: auto
% PAE: reAuthCount: 2 - rxRespId: 0
% PAE: quietPeriod: 60 - reauthMax: 2 - txPeriod: 30
% BE: state: idle - reqCount: 0 - idFromServer: 0
% BE: suppTimeout: 30 - serverTimeout: 30 - maxReq: 2
% CD: adminControlledDirections: in - operControlledDirections: in
% CD: bridgeDetected: false
% KR: rxKey: false
% KT: keyAvailable: false - keyTxEnabled: false
```

Figure 65. SHOW DOT1X ALL Command

Table 17 provides a description of the parameters of the SHOW DOT1X ALL and SHOW DOT1X INTERFACE commands.

Table 17. SHOW DOT1X Parameter Description

Parameter	Description
portEnabled	Indicates the interface operational status (up-true/down-false).
portControl	Indicates the current control status of the port for 802.1x control.
portStatus	Indicates the 802.1x status of the port (authorized or unauthorized).
reAuthenticate	Indicates the status of reauthentication on an interface.
reAuthPeriod	Indicates the time period of reauthentication.
Supplicant PAE related global variables:	
abort	Indicates that authentication should be aborted when this variable is set to true.
fail	Indicates failed authentication attempt when this variable is set to false.
start	Indicates authentication should be started when this variable is set to true.
timeout	Indicates an authentication attempt timed out when this variable is set to true.
success	Indicates authentication is successful when this variable is set to true.
PAE: state Current 802.1x operational state of the interface	
mode	Indicates the mode is set to 802.1x.
reAuthMax	Indicates the maximum number of reauthentication attempts.
BE Backend Authentication state	
state	Indicates the status of the state machine.
reqCount	Indicates the number of requests sent to the server.
suppTimeout	Indicates the supplicant timeout period.
serverTimeout	Indicates the server timeout period.

Table 17. SHOW DOT1X Parameter Description (Continued)

Parameter	Description
maxReq	Specifies the maximum number of requests that can be sent.
CD	Specifies the Controlled Directions State machine.
adminControlledDirections	Indicates the administrative value (Both/In).
operControlledDirections	Indicates the operational Value (Both/In).
KR	Specifies the key receive state machine.
rxKey	Indicates true when EAPOL-Key message is received by supplicant or authenticator. Indicates false when a key is transmitted.
KT	Specifies the Key Transmit State machine.
keyAvailable	Indicates false when key has been transmitted by authenticator. Indicates true when a new key is available for key exchange.
keyTxEnabled	Indicates the key transmission status.

Related Commands

“SHOW DOT1X INTERFACE” on page 256

SHOW DOT1X INTERFACE

Syntax

```
show dot1x interface IFNAME ge<1-52>
```

Parameters

IFNAME Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”

Description

Use this command to display the state of a particular interface.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

The following command displays the state of port 6.

```
switch#show dot1x interface ge6
```

See Figure 66 for a sample display.

```
switch#show dot1x interface
% 802.1X info for interface xe6
% portEnabled: true - portControl: Force Unauthorized
% portStatus: Unauthorized - currentId: 2
% reAuthenticate: disabled
% reAuthPeriod: 3600
% abort:F fail:F start:F timeout:F success:F
% PAE: state: Force Unauthorized - portMode: Force Unauthorized
% PAE: reAuthCount: 1 - rxRespId: 0
% PAE: quietPeriod: 60 - reauthMax: 2 - txPeriod: 30
BE: state: Idle - reqCount: 0 - idFromServer: 0
BE: supptimeout: 30 - serverTimeout: 30 - maxReq: 2
CD: adminControlledDirections: in - operControlledDirections: in
CD: bridgeDetected: false
KR: rxKey: false
KT: keyAvailable: false - keyTxEnabled: falseExample
```

Figure 66. SHOW DOT1X INTERFACE Command

See Table 17 on page 254 for a description of the command parameters shown in Figure 66.

Related Commands

“SHOW DOT1X ALL” on page 253

SHOW DOT1X SESSIONSTATISTICS

Syntax

```
show dot1x sessionstatistics interface IFNAME ge<1-52>
```

Parameters

IFNAME Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”

Description

Use the SHOW DOT1X SESSIONSTATISTICS command to display the authentication session statistics for the specified interface.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View mode

Example

The following command displays the session statistics for interface 5:

```
switch#show dot1x sessionstatistics interface ge5
```

See Figure 67 for a sample display.

```
switch#show dot1x interface ge5
Authentication session statistics for interface ge5
session user name: manager
session authentication method: Remote server
session time: 19440 secs
session terminal cause: Not terminated yet
```

Figure 67. SHOW DOT1X SESSIONSTATISTICS Command

Related Commands

“SHOW DOT1X ALL” on page 253

SHOW DOT1X STATISTICS INTERFACE

Syntax

```
show dot1x statistics interface IFNAME ge<1-52>
```

Parameters

IFNAME Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”

Description

Use the SHOW DOT1X STATISTICS INTERFACE command to display the vital statistics of an interface.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

The following command displays the statistics for interface 5:

```
switch# show dot1x statistics interface ge5
```

See Figure 68 for a sample display.

```
switch#show dot1x interface
% Dot1x statistics for interface xe5 - 3
% EAPOL Frames Rx: 0 - EAPOL Frames Tx: 0
% EAPOL Start Frames Rx: 0 - EAPOL Logoff Frames Rx: 0
% EAP Rsp/Id Frames Rx: 0 - EAP Response Frames Rx: 0
% EAP Req/Id Frames Tx: 35 - EAP Request Frames Tx: 0
% Invalid EAPOL Frames Rx: 0 - EAP Length Error Frames Rx: 0
% EAPOL Last Frame Version Rx: 0 - EAPOL Last Frame Src:
0000.0000.0000
```

Figure 68. SHOW DOT1X STATISTICS INTERFACE Command

Related Commands

“SHOW DOT1X” on page 252

SHOW ETHERCHANNEL

Syntax

```
show etherchannel <1-65535>
```

Parameters

none

Description

Use the SHOW ETHERCHANNEL command to display information about an LACP etherchannel specified by the channel-group number.

Command Mode

View and Privileged Executive modes

Example

To display information about an LACP etherchannel 5, enter the following command:

```
switch#show etherchannel 5
```

See Figure 69 for example output from the SHOW ETHERCHANNEL command.

```
switch#show etherchannel 5
Lacp Aggregator: po1

Member:
ge23
```

Figure 69. SHOW ETHERCHANNEL Command

Related Commands

“SHOW ETHERCHANNEL DETAIL” on page 263

“SHOW ETHERCHANNEL SUMMARY” on page 266

SHOW ETHERCHANNEL DETAIL

Syntax

```
show etherchannel detail
```

Parameters

none

Description

Use the SHOW ETHERCHANNEL DETAIL command to display information about all LACP channels.

Command Mode

Privileged Executive

Example

To display information about all LACP channels, enter the following command:

```
switch#show etherchannel detail
```

See Figure 70 for example output from the SHOW ETHERCHANNEL DETAIL command.

```
switch#show etherchannel detail
Aggregator: po1 (4501)
  MAC address: 00:00:cd:24:fd:29
  Admin Key: 0001 - Oper key 0001
  Receive link count: 1 - Transmit link count: 0
  Individual: 0 - Ready: 1
  Partner LAG: 0x8000,00-00-cd-24-da-a7
    Link: ge30 (5001) disabled
    Link: ge32 (5002) sync: 1
Aggregator: po2 (4502)
  MAC address: 00:00:cd:24:fd:29
  Admin Key: 0002 - Oper key 0002
  Receive link count: 1 - Transmit link count: 0
  Individual: 0 - Ready: 1
  Partner LAG: 0x8000,00-00-cd-24-da-a7
    Link: ge40 (5007) disabled
```

Figure 70. SHOW ETHERCHANNEL DETAIL Command

Related Commands

“SHOW ETHERCHANNEL” on page 262

“SHOW ETHERCHANNEL SUMMARY” on page 266

SHOW ETHERCHANNEL LOAD-BALANCE

Syntax

```
show etherchannel load-balance
```

Parameters

none

Description

Use the SHOW ETHERCHANNEL LOAD-BALANCE command to display information about an LACP etherchannel specified by the channel-group number.

Command Mode

Privileged Executive mode

Example

To display information about an LACP etherchannel 5, enter the following command:

```
switch#show etherchannel loadbalance
```

See Figure 71 for example output from the SHOW ETHERCHANNEL LOAD-BALANCE command.

```
switch#show etherchannel loadbalance
Lacp Aggregator: po1

Member:
ge23
```

Figure 71. SHOW ETHERCHANNEL LOAD-BALANCE Command

Related Commands

“SHOW ETHERCHANNEL” on page 262

SHOW ETHERCHANNEL SUMMARY

Syntax

```
show etherchannel summary
```

Parameters

none

Description

Use the SHOW ETHERCHANNEL SUMMARY command to display a summary of all LACP channels.

Command Mode

View and Privileged Executive modes

Example

To display a summary of all LACP channels, enter the following command:

```
switch#show etherchannel summary
```

See Figure 72 for example output from the SHOW ETHERCHANNEL SUMMARY command.

```
switch#show etherchannel summary
Aggregator: po1 (4501)
  Admin Key: 0001 - Oper key 0001
  Link: ge30 (5001) disabled
  Link: ge32 (5002) sync: 1
Aggregator: po2 (4502)
  Admin Key: 0002 - Oper key 0002
  Link: ge40 (5007) disabled
```

Figure 72. SHOW ETHERCHANNEL SUMMARY Command

Related Commands

“SHOW ETHERCHANNEL” on page 262

“SHOW ETHERCHANNEL DETAIL” on page 263

SHOW FLOWCONTROL INTERFACE

Syntax

```
show flowcontrol interface IFNAME ge<1-52>
```

Parameters

IFNAME Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with "ge."

Description

Use the SHOW FLOWCONTROL INTERFACE command to display flow control information for the specified interface. If you do not specify an interface, this command displays the status of all the interfaces.

Command Mode

View and Privileged Executive modes

Example

The following is an example of the SHOW FLOWCONTROL INTERFACE command on port 40:

```
switch#show flowcontrol interface ge40
```

See Figure 73 for example output from the SHOW FLOWCONTROL INTERFACE command.

Port	Send admin	FlowControl oper	Receive admin	FlowControl oper	RxPause	TxPause
----	-----	-----	-----	-----	-----	-----
ge40	on	on	on	on	0	0

Figure 73. SHOW FLOWCONTROL INTERFACE Command

Related Commands

“SHOW INTERFACE” on page 282

SHOW GMRP CONFIGURATION

Syntax

```
show gmrp configuration
```

Parameters

none

Description

Use the SHOW GMRP CONFIGURATION command to display configuration information about GMRP for all of the ports on the switch. For a detailed explanation of the GMRP, see IEEE specification 802.1q.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

The following is an example of the SHOW GMRP CONFIGURATION command:

```
switch#show gmrp configuration
```

Related Commands

“SHOW GMRP STATISTICS” on page 271

“SHOW GMRP TIMER” on page 272

SHOW GMRP MACHINE

Syntax

```
show gmrp machine
```

Parameters

none

Description

Use the SHOW GMRP MACHINE command to display the GMRP state machine for each port on the switch. For a detailed explanation GMRP, see IEEE specification 802.1q.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

The following is an example of the SHOW GMRP MACHINE command:

```
switch#show gmrp machine
```

Related Commands

“SHOW GMRP CONFIGURATION” on page 269

“SHOW GMRP STATISTICS” on page 271

SHOW GMRP STATISTICS

Syntax

```
show gmrp statistics VLANID <1-4094>
```

Parameters

none

Description

Use the SHOW GMRP STATISTICS command to statistics information about GMRP for all of the ports on the switch.

For a detailed explanation of GMRP, see IEEE specification 802.1d 802.1q.

Command Mode

View and Privileged Executive modes

Example

To display GMRP statistics on a VLAN with a VLAN ID of 4, enter the following command:

```
switch#show gmrp statistics VLANID 4
```

Related Commands

“CLEAR GMRP STATISTICS” on page 211

“SHOW GMRP CONFIGURATION” on page 269

SHOW GMRP TIMER

Syntax

```
show gmrp timer IF_NAME ge<1-52>
```

Parameters

IF_NAME Specifies the name of an interface. This is an optional parameter. To specify a port, precede the port number with “ge.” There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch.

Description

Use the SHOW GMRP TIMER command to display information about the GMRP Timer settings for the specified port. For a detailed explanation of GMRP, see IEEE specification 802.1q.

Command Mode

View and Privileged Executive modes

Example

The following is an example of the SHOW GMRP TIMER command on port 1:

```
switch#show gmrp timer ge1
```

Related Commands

“SET GMRP TIMER” on page 535

“SHOW GMRP CONFIGURATION” on page 269

SHOW GVRP CONFIGURATION

Syntax

```
show gvrp configuration
```

Parameters

none

Description

Use the SHOW GVRP CONFIGURATION command to display configuration information about GVRP for all of the ports on the switch. For a detailed explanation of the parameters of this command, see IEEE specifications 802.1d and 802.1q.

Command Mode

View and Privileged Executive modes

Example

The following is an example of the SHOW GVRP CONFIGURATION:

```
switch#show gvrp configuration
```

See Figure 74 for example output from the SHOW GVRP CONFIGURATION command.

```
Dynamic Vlan Creation: Enabled
Port based GVRP Configuration:
```

Port	GVRP Status	Registration	Applicant	Timers (centiseconds)		
				Join	Leave	LeaveAll
ge1	Enabled	Normal	Normal	20	60	1000
ge2	Enabled	Normal	Normal	20	60	1000
ge3	Enabled	Normal	Active	20	60	1000
ge4	Enabled	Normal	Normal	20	60	1000
ge5	Enabled	Normal	Normal	20	60	1000
ge6	Enabled	Normal	Normal	20	60	1000
ge7	Enabled	Normal	Normal	20	60	1000
ge8	Enabled	Normal	Normal	20	60	1000
ge9	Enabled	Normal	Normal	20	60	1000
ge10	Enabled	Normal	Normal	20	60	1000

Figure 74. SHOW GVRP CONFIGURATION Command

Related Commands

“SHOW GVRP MACHINE” on page 275

“SHOW GVRP STATISTICS” on page 277

“SHOW GVRP TIMER” on page 279

SHOW GVRP MACHINE

Syntax

```
show gvrp machine
```

Parameters

none

Description

Use the SHOW GVRP MACHINE command to display the GVRP state machine for each port on the switch. For a detailed explanation of the parameters of this command, see IEEE specifications 802.1d and 802.1q.

Command Mode

View and Privileged Executive modes

Example

The following is an example of the SHOW GVRP MACHINE:

```
switch#show gvrp machine
```

See Figure 75 for example output from the SHOW GVRP MACHINE command.

port = ge1	applicant state[0] = VO	registrar state[0]= MT
	applicant state[1] = VO	registrar state[1]= INR
	applicant state[3] = QA	registrar state[3]= MT
	applicant state[4] = QA	registrar state[4]= MT
port = ge2	applicant state[0] = VO	registrar state[0]= MT
	applicant state[2] = VO	registrar state[2]= INR
	applicant state[3] = QA	registrar state[3]= MT
	applicant state[4] = QA	registrar state[4]= MT
port = ge3	applicant state[0] = VO	registrar state[0]= INR
	applicant state[3] = QA	registrar state[3]= MT
	applicant state[4] = QA	registrar state[4]= MT
port = ge4	applicant state[0] = VO	registrar state[0]= INR
	applicant state[3] = QA	registrar state[3]= MT
	applicant state[4] = QA	registrar state[4]= MT
port = ge5	applicant state[0] = VO	registrar state[0]= INR

Figure 75. SHOW GVRP MACHINE Command

Related Commands

“SHOW GVRP CONFIGURATION” on page 273

“SHOW GVRP STATISTICS” on page 277

SHOW GVRP STATISTICS

Syntax

```
show gvrp statistics
```

Parameters

none

Description

Use the SHOW GVRP STATISTICS command to statistics information about GVRP for all of the ports on the switch. This command displays the current values for the following GARP application parameters:

- Port number
- GVRP Join Empty
- GVRP JoinIn
- GVRP Leave Empty
- GVRP LeaveIn
- GVRP Empty

For a detailed explanation of the parameters of this command, see IEEE specifications 802.1d and 802.1q.

Command Mode

View and Privileged Executive modes

Example

The following is an example of the SHOW GVRP STATISTICS command:

```
switch#show gvrp statistics
```

See Figure 76 for example output from the SHOW GVRP STATISTICS command.

Port		JoinEmpty	JoinIn	LeaveEmpty	LeaveIn	Empty
ge1	RX	0	0	0	0	0
	TX	4614	0	0	0	3732
ge2	RX	0	0	0	0	0
	TX	4630	0	0	0	3734
ge3	RX	0	0	0	0	0
	TX	4620	0	0	0	1865
ge4	RX	0	0	0	0	0
	TX	4616	0	0	0	1864
ge5	RX	0	0	0	0	0
--More--						

Figure 76. SHOW GVRP STATISTICS Command

Related Commands

“SHOW GVRP CONFIGURATION” on page 273

“SHOW GVRP MACHINE” on page 275

SHOW GVRP TIMER

Syntax

```
show gvrp timer INTERFACE ge<1-52>
```

Parameters

INTERFACE Specifies the name of an interface. This is an optional parameter. To specify a port, precede the port number with "ge." There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch.

Description

Use the SHOW GVRP TIMER command to display information about the GVRP Timer settings for the specified port. For a detailed explanation of the parameters of this command, see IEEE specifications 802.1d and 802.1q.

Command Mode

View and Privileged Executive modes

Example

The following is an example of the SHOW GVRP TIMER command on port 1:

```
switch#show gvrp timer ge1
```

See Figure 77 for example output from the SHOW GVRP TIMER command.

Timer	Timer value (centiseconds)
Join	20
Leave	60
LeaveAll	1000

Figure 77. SHOW GVRP TIMER Command

Related Commands

“SET GVRP TIMER” on page 527

“SHOW GVRP CONFIGURATION” on page 273

“SHOW GVRP MACHINE” on page 275

SHOW HISTORY

Syntax

```
show history
```

Parameters

none

Description

Use the SHOW HISTORY command to display the commands entered in the current session. The display lists all command line entries including commands that returned an error. The history buffer is cleared upon reboot automatically.

Command Mode

View and Privileged Executive modes

Example

The following command displays the history of the commands entered in this session.

```
switch#show history
```

See Figure 78 for example output from the SHOW HISTORY command.

```
switch#show history
1 en
2 show ru
3 con t
4 route-map er deny 3
5 exit
6 ex
7 di
```

Figure 78. SHOW HISTORY Command

Related Commands

none

SHOW INTERFACE

Syntax

```
show interface IFNAME vlan<1-4094>|ge<1-52>
```

Parameters

IFNAME Specifies the name of an interface. Choose one of the following:

vlan To specify a VLAN, precede the VLAN ID with “vlan.”

ge There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”

Description

Use the SHOW INTERFACE command to display the configuration and status of an interface. If you do not specify an interface, this command displays the status of all the interfaces.

Command Mode

Privileged Executive mode

Example

The following is an example of the SHOW INTERFACE command on port 1 and the sample output:

```
switch#show interface ge1

Interface ge1
  Hardware is Ethernet, address is 0004.2104.0801 (bia
004.2104.0801)
  index 2001 metric 1 mtu 1500 duplex-full arp aging
timeout 0
  speed unknown mdix mdi
  <UP,BROADCAST,MULTICAST>
  VRF Binding: Not bound
  input packets 013884, bytes 01642232, multicast
packets 07691 broadcast packets 06185
  64-byte packets 05968, 65-127 packets 05346, 128-255
packets 01293
  245-511 packets 01366, 512-1023 packets 03, >1024 packets
00
  dropped 00, jabber 00 CRC error 03 undersize frames 00
  oversize frames 00, fragments 00 collisions 00
```

output packets 092, bytes 05898, multicast packets 092
broadcast packets 00

Related Commands

“SHOW INTERFACE STATUS” on page 284

“SHOW MAC ADDRESS-TABLE INTERFACE” on page 311

SHOW INTERFACE STATUS

Syntax

```
show interface status all
```

Parameters

all Displays both the VLAN and port information.

Description

Use the SHOW INTERFACE STATUS command to display the configuration and status of a VLAN, port, or both.

Command Mode

Privileged Executive mode

Example

The following is an example of the SHOW INTERFACE STATUS command. See the sample output in Figure 79 on page 285:

```
switch#show interface status all
```

Port Name	Admin Status	Oper Status	Speed	Duplex	Type	Medium
ge1	up	down	N/A	N/A	1000/T	N/A
ge2	up	up	100M	full	1000/T	copper
ge3	up	up	100M	full	1000/T	copper
ge4	up	up	100M	full	1000/T	copper
ge5	up	up	100M	full	1000/T	copper
ge6	up	up	100M	full	1000/T	copper
ge7	up	up	100M	full	1000/T	copper
ge8	up	up	100M	full	1000/T	copper
ge9	up	up	100M	full	1000/T	copper
ge10	up	up	100M	full	1000/T	copper
ge11	up	up	100M	full	1000/T	copper
ge12	up	up	100M	full	1000/T	copper
ge13	up	down	N/A	N/A	1000/T	N/A
ge14	up	down	N/A	N/A	1000/T	N/A
ge15	up	down	N/A	N/A	1000/T	N/A
ge16	up	down	N/A	N/A	1000/T	N/A
ge17	up	down	N/A	N/A	1000/T	N/A

switch#

Figure 79. SHOW INTERFACE STATUS Command

See Figure 80 for Screen 2 of the example output from the SHOW INTERFACE STATUS ALL command, including VLAN 1.

```
switch>show interface status all
```

Port Name	Admin Status	Oper Status	Speed	Duplex	Type	Medium
ge20	up	down	N/A	N/A	1000T	N/A
ge21	up	down	N/A	N/A	1000T	N/A
ge23	up	up	100M	full	1000T	copper
ge24	up	up	100M	full	1000T	copper
ge25	up	up	1000T	full	SFP/1000T	N/A
ge26	up	up	1000T	full	SFP/1000T	N/A
ge27	up	up	1000T	full	SFP/1000T	N/A
ge28	up	up	1000T	full	SFP/1000T	N/A
vlan1	up	up	N/A	N/A	N/A	N/A

Figure 80. SHOW INTERFACE STATUS ALL Command, Screen 2

Related Commands

“SHOW INTERFACE” on page 282

“SHOW INTERFACE SWITCHPORT ALL” on page 287

SHOW INTERFACE SWITCHPORT ALL

Syntax

```
show interface switchport all
```

Parameters

none

Description

Use the SHOW INTERFACE SWITCHPORT ALL command to display information about interfaces—both ports and VLANs.

Command Mode

View and Privileged Executive modes

Example

To display information about interfaces on the switch, enter the following command:

```
switch#show interface switchport all
```

See Figure 81 for example output from the SHOW INTERFACE SWITCHPORT ALL, command.

```
switch#show interface switchport all
Interface name       : ge1
Switchport mode     : access
Ingress filer       : enable
Acceptable frame types : all
Default Vlan        : 1
Configured Vlans    : 1
Interface name       : ge2
Switchport mode     : access
Ingress filer       : enable
Acceptable frame types : all
Default Vlan        : 1
Configured Vlans    : 1
Interface name       : ge3
Switchport mode     : access
Ingress filer       : enable
Acceptable frame types : all
Default Vlan        : 1
Configured Vlans    : 1
Interface name       : ge4
Switchport mode     : access
Ingress filer       : enable
Acceptable frame types : all
Default Vlan        : 1
Configured Vlans    : 1
--More--
```

Figure 81. SHOW INTERFACE SWITCHPORT ALL Command

Related Commands

“SHOW INTERFACE STATUS” on page 284

SHOW IP ARP

Syntax

```
show ip arp
```

Parameters

none

Description

Use the SHOW IP ARP command to display the dynamic and static ARP entries in the ARP cache. The ARP cache contains mappings of IP addresses to physical addresses for hosts. To have a dynamic entry in the ARP cache, a host must have use the ARP protocol to access another host.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

To display the ARP entries in the ARP cache, enter the following command:

```
switch#show ip arp
```

See Figure 82 for example output from the SHOW IP ARP command.

```
switch#show ip arp
IP Address      MAC Address      Interface      Port      Type
192.168.2.4     0013.4078.3b98   vlan3         ge7       dynamic
192.168.15.20   0030.940e.136b   vlan3         ge7       dynamic
192.168.17.1    00d0.6b04.2a42   vlan2         ge8       static
```

Figure 82. SHOW IP ARP Command

Table 18 describes the fields shown in Figure 82 on page 289.

Table 18. SHOW IP ARP Field Descriptions

Field	Description
IP Address	Specifies the IP address of the network device this entry maps to.
MAC Address	Indicates the hardware address of the network device.
Interface	Indicates the interface over which the network device is accessed.
Port	Indicates the physical port that the network device is attached to.
Type	Specifies if the entry is a static or dynamic entry. Static entries are created with the ARP command. Dynamic entries are learned from ARP request or reply message exchanges.

Related Commands

“ARP” on page 371

SHOW IP IGMP GROUPS

Syntax

```
show ip igmp groups IP-ADDRESS|IFNAME <1-52> detail
```

Parameters

IP-ADDRESS Indicates an IP address of the multicast group. This is an optional parameter. Enter the IP address in the following format:

xxx.xxx.xxx.xxx

IFNAME Specifies the name of an interface. This is an optional parameter. To specify a port, precede the port number with "ge." There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch.

Note

The detail parameter is not supported in this release.

Description

Use the SHOW IP IGMP GROUPS command to display the multicast groups with receivers directly connected to the router and learned through IGMP. If you do not specify an IP address or an interface, then the command displays the local-membership information for all ports.

Command Mode

View and Privileged Executive modes

Example

The following command displays the local-membership information for port 1:

```
switch#show ip igmp groups ge1
```

See Figure 83 for example output from the SHOW IP IGMP GROUPS command.

```
switch#show ip igmp groups ge1
IGMP Connected Group Membership
Group Address      Interface  Uptime    Expires   Last Reporter
224.0.1.1         ge1       00:00:09  00:04:17  10.10.0.82
```

Figure 83. SHOW IP IGMP GROUPS Command

Table 19 describes the fields shown in Figure 83.

Table 19. SHOW IP IGMP GROUPS Field Descriptions

Field	Description
Group Address	Specifies the IP address of the multicast group.
Interface	Indicates the port through which the group is reachable.
Uptime	Indicates the time in weeks, days, hours, minutes, and seconds that this multicast group has been known to the device.
Expires	Indicates the time in hours, minutes and seconds until the entry expires.
Last Reporter	Specifies the last host that reports being a member of the multicast group.

Related Commands

“SHOW IP IGMP INTERFACE” on page 293

SHOW IP IGMP INTERFACE

Syntax

```
show ip igmp interface INTERFACE <1-4096>
```

Parameters

INTERFACE Specifies the name of a VLAN interface. This is an optional parameter. Enter “vlan” followed by a VLAN ID.

Description

Use the SHOW IP IGMP INTERFACE command to display the status of IGMP and IGMP Snooping for a specified interface or for all interfaces. If you do not specify an IP address or an interface, then the command displays the local-membership information for all ports.

Command Mode

View and Privileged Executive modes

Example

The following command displays the status of IGMP and IGMP Snooping information for VLAN 1:

```
switch>show ip igmp interface vlan1
```

See Figure 84 for example output from the SHOW IP IGMP INTERFACE command.

```
switch>show ip igmp interface v1an1
Interface v1an1 (Index 5)
  IGMP Active, Non-Querier, Version 4 (default)
  Internet address is 10.10.10.4
  IGMP interface has 1 group-record states
  IGMP activity: 972 joins, 1 leaves
  IGMP querying router is 10.10.10.10
  IGMP query interval is 125 seconds
  IGMP querier timeout is 255 seconds
  IGMP max query response time is 10 seconds
  Last member query response interval is 1000 milliseconds
  Group Membership interval is 260 seconds
  IGMP Snooping is globally enabled
  IGMP Snooping is enabled on this interface
  IGMP Snooping fast-leave is not enabled
  IGMP Snooping querier is not enabled
  IGMP Snooping report suppression is enabled
```

Figure 84. SHOW IP IGMP INTERFACE Command

Related Commands

“SHOW IP IGMP GROUPS” on page 291

SHOW IP INTERFACE BRIEF

Syntax

```
show ip interface INTERFACE-LIST brief
```

Parameters

- INTERFACE-LIST Specifies the name of an interface. Choose from the following:
- To specify a port, precede the port number with “ge.” There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch.
 - To specify a VLAN, enter “vlan” followed by a VLAN ID. Enter a value between 1 and 4,094.

Description

Use the SHOW IP INTERFACE BRIEF command to display brief information about interfaces and the IP addresses assigned to them. To display information about a specific interface, specify the interface name with the command.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

To display brief information about VLAN 1, enter the following command:

```
switch#show ip interface brief vlan1
```

See Figure 85 for example output from the SHOW IP INTERFACE BRIEF command.

```
switch#show ip interface brief
Interface  IP-Address  Status      Protocol
vlan1     192.168.1.1  admin up    running
```

Figure 85. SHOW IP INTERFACE BRIEF Command

Related Commands

“SHOW VLAN BRIEF” on page 197

SHOW IP ROUTE

Syntax

```
show ip route connected|static|<ip-address/m>
```

Parameters

connected	Displays the routes learned from connected interfaces.
static	Displays the static routes you have configured.
ip-address/m	Displays the routes for the specified network. Enter an IP address and subnet mask in the following format: xxx.xxx.xxx.xxx/m

Description

Use the SHOW IP ROUTE command to display the current state of the routing table.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

To display brief information about VLAN 1, enter the following command:

```
switch#show ip route
```

See Figure 86 for example output from the SHOW IP ROUTE command.

```
switch#show ip route
Codes: C - connected, S - static
C      3.3.3.0/24 is directly connected, vlan1
C      10.10.31.0/24 is directly connected, vlan2
C      10.70.0.0/24 is directly connected, vlan4
```

Figure 86. SHOW IP ROUTE Command

Each entry in Figure 86 on page 297 has a code preceding it, indicating the source of the routing entry. Typically, entries are composed of:

- ❑ codes (“C” indicates connected and “S” indicates static)
- ❑ network or host ip address

For example, the “C 10.10.31.0/24 is directly connected, vlan2 denotes:”

- ❑ The route entries for network 10.10.31.0/24 are derived from the IP address of local interface vlan2.
- ❑ These routes are marked as Connected routes (C) and always preferred over routes for the same network learned from other routing protocols.

Related Commands

none

SHOW LACP-COUNTER

Syntax

```
show lacp-counter <1-65535>
```

Parameters

none

Description

Use the SHOW LACP-COUNTER command to display the packet traffic on all ports LACP aggregators of a given LACP aggregator. Specify a channel-group number to display information about one channel group. If you do not specify a channel-group number, the software displays information about all of the channel groups.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

To display information about all of the channel groups on the switch, enter the following command:

```
switch#show lacp-counter
```

See Figure 87 for example output from the SHOW LACP-COUNTER command.

```
switch#show lacp-counter
% Traffic statistics
Port          LACPDUS          Marker          Pckt err
              Sent   Recv           Sent   Recv         Sent   Recv
% Aggregator po4 (4604)
port ge5     0      0             0      0             0      0
```

Figure 87. SHOW LACP-COUNTER Command

Related Commands

“SHOW LACP SYS-ID” on page 152

SHOW LACP SYS-ID

Syntax

```
show lacp sys-id
```

Parameters

none

Description

Use the SHOW LACP SYS-ID command to display the LACP system identifier and priority.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

To brief information about LACP system identifier and priority, enter the following command:

```
switch#show lacp sys-id
```

See Figure 88 for example output from the SHOW LACP SYS-ID command.

```
switch#show lacp sys-id
  % System Priority: 0x8000 (32768)
  % MAC Address: 00-00-cd-24-fd-29
```

Figure 88. SHOW LACP SYS-ID Command

Related Commands

“SHOW LACP-COUNTER” on page 299

SHOW LIST

Syntax

```
show list
```

Parameters

none

Description

Use the SHOW LIST command to display a list of all the commands available in the current mode.

The display of the SHOW LIST command is often more than one page. To advance the display to the next line, press ENTER. To advance the display to the next page, press ESC. To quit the display and return to the prompt, type “q.”

Command Mode

All modes

Example

Use the following commands to display the commands available in the current mode:

```
switch>show list
```

See Figure 89 for a sample display of the SHOW LIST command in the Privileged Executive mode.

```
boot config-file WORD
cat WORD
clear arp-cache
clear counters IFNAME
clear gmrp statistics all
clear gmrp statistics vlanid <1-4094>
clear gvrp statistics
clear gvrp statistics IFNAME
clear gmrp statistics all
clear ip igmp
clear ip igmp group *
clear ip igmp group A.B.C.D
--More--
```

Figure 89. SHOW LIST Command

Related Commands

“SHOW RUNNING-CONFIG” on page 420

“SHOW RUNNING-CONFIG INTERFACE” on page 426

SHOW LOG

Syntax

```
show log
```

Parameters

none

Description

Use the SHOW LOG command to display the maximum file size of log files and the level of log files. To set the maximum allowable buffer size (in bytes), use the LOG BUFFERED command. You set the level of log files with the LOG CONSOLE command.

Command Mode

View mode

Example

To display information about log files, enter the following command:

```
switch#show log
```

See Figure 90 for example output from the SHOW LOG command.



```
switch#show log
log file system max-file-size 4096 level 7
```

Figure 90. SHOW LOG Command

Related Commands

“LOG BUFFERED” on page 437

“LOG CONSOLE” on page 438

SHOW MAC ADDRESS-TABLE

Syntax

```
show mac address-table
```

Parameters

none

Description

Use the SHOW MAC ADDRESS-TABLE command to display the status of the static and dynamic MAC addresses assigned to the switch.

For procedures to configure and display the MAC addresses, see “Displaying and Setting MAC Addresses” on page 40.

Command Mode

View and Privileged Executive modes

Example

The following command displays the settings of the MAC address table:

```
switch#show mac address-table
```

See Figure 91 for an example display.

```
switch# show mac address-table
                Mac Address Table
-----
Vlan    MAC Address      Type      Ports      Forward
-----
1       0100.5e7f.ffffa  STATIC    ge1         1
1       0000.cd14.6448   DYNAMIC   ge1         1
1       0000.f4d8.3534   DYNAMIC   ge1         1
1       0004.5a5e.6fd3   DYNAMIC   ge1         1
1       0006.5ba3.67d6   DYNAMIC   ge1         1
5       0006.5bb2.6589   DYNAMIC   ge8         1
5       0006.5bdd.6c69   DYNAMIC   ge8         1
5       0008.749c.101a   DYNAMIC   ge8         1
5       0008.74a2.04c2   DYNAMIC   ge8         1
5       0008.74cb.5fc6   DYNAMIC   ge8         1
5       0008.74d3.f02c   DYNAMIC   ge8         1
10      0008.74dd.87f7   DYNAMIC   ge12        1
10      0008.74df.29d8   DYNAMIC   ge12        1
MAC Address count: 13
```

Figure 91. SHOW MAC ADDRESS-TABLE Command

The fields in Figure 91 are defined in the following list:

- ❑ **vlan.** This field indicates the VLAN ID.
- ❑ **MAC Address.** This field indicates the MAC address in the format: HHH.HHH.HHH.
- ❑ **Type.** This field indicates a static or dynamic MAC address.
- ❑ **Ports.** This field indicates the name of the port.
- ❑ **Forward.** This field indicates if data is forwarded to a MAC address or not. A value of 1 indicates data is forwarded to a MAC address. A value of 0 indicates that data is discarded and is not forwarded to a MAC address.
- ❑ **MAC Address Count.** This field indicates the total number of MAC addresses on the switch.

Related Commands

“SHOW MAC ADDRESS-TABLE AGING-TIME” on page 307

“SHOW MAC ADDRESS-TABLE DYNAMIC” on page 309

“SHOW MAC ADDRESS-TABLE INTERFACE” on page 311

“SHOW MAC ADDRESS-TABLE STATIC” on page 313

“SHOW MAC ADDRESS-TABLE VLAN” on page 315

SHOW MAC ADDRESS-TABLE AGING-TIME

Syntax

```
show mac address-table aging-time
```

Parameters

none

Description

Use the SHOW MAC ADDRESS-TABLE AGING-TIME command to display the aging time of MAC addresses assigned to the switch. By default, this value is set to 300 seconds (5 minutes).

The switch uses the aging timer to delete inactive dynamic MAC addresses from the MAC address table. When the switch detects that no packets have been sent to or received from a particular MAC address in the table after the period specified by the aging time, the switch deletes the address. Deleting aged-out MAC addresses prevents the table from becoming full of addresses of inactive nodes.

When the aging timer is set to 0, it disables the timer. No dynamic MAC addresses are aged out and the table stops learning new addresses after reaching its maximum capacity.

For procedures to configure and display the MAC addresses, see “Displaying and Setting MAC Addresses” on page 40.

Command Mode

Privileged Executive mode

Example

The following command displays the MAC address aging-time:

```
switch#show mac address-table aging-time
```

See Figure 92 for an example display.

```
switch# show mac address-table aging-time
Aging-time 300

switch#
```

Figure 92. SHOW MAC ADDRESS-TABLE AGING-TIME

Related Commands

“SHOW MAC ADDRESS-TABLE” on page 305

“SHOW MAC ADDRESS-TABLE DYNAMIC” on page 309

“SHOW MAC ADDRESS-TABLE INTERFACE” on page 311

“SHOW MAC ADDRESS-TABLE STATIC” on page 313

“SHOW MAC ADDRESS-TABLE VLAN” on page 315

SHOW MAC ADDRESS-TABLE DYNAMIC

Syntax

```
show mac address-table dynamic |  
begin|exclude|include|redirect
```

Parameters

dynamic	Indicates the dynamic MAC addresses.
	Specifies output variables. Choose from the following options:
begin	Indicates to begin with a line that matches.
exclude	Specifies to exclude lines that match.
include	Specifies to include lines that match.
redirect	Indicates to redirect the output.

Description

Use the SHOW MAC ADDRESS-TABLE DYNAMIC command to display the status of the static and dynamic MAC addresses assigned to the switch.

For procedures to configure and display the MAC addresses, see “Displaying and Setting MAC Addresses” on page 40.

Command Mode

Privileged Executive mode

Example

The following command displays the dynamic MAC addresses:

```
switch#show mac address-table dynamic
```

See Figure 93 for a sample display.

```
switch# show mac address-table dynamic
          Mac Address Table
-----
Vlan     MAC Address      Type      Ports      Forward
-----
1        0000.cd14.6448   DYNAMIC   ge3         1
1        0000.f4d8.3534   DYNAMIC   ge3         1
1        0004.5a5e.6fd3   DYNAMIC   ge3         1
1        0006.5ba3.67d6   DYNAMIC   ge3         1
1        0006.5bb2.6589   DYNAMIC   ge3         1
1        0006.5bdd.6c69   DYNAMIC   ge3         1
1        0008.749c.101a   DYNAMIC   ge3         1
1        0008.74a2.04c2   DYNAMIC   ge3         1
1        0008.74cb.5fc6   DYNAMIC   ge3         1
1        0008.74d3.f02c   DYNAMIC   ge3         1
1        0008.74dd.87f7   DYNAMIC   ge3         1
switch#
```

Figure 93. SHOW MAC ADDRESS-TABLE DYNAMIC Command

The fields in Figure 94 are defined in the following list:

- vlan. This field indicates the VLAN ID.
- MAC Address. This field indicates the MAC address in the format: HHHH.HHHH.HHHH.
- Type. This field indicates a static or dynamic MAC address.
- Ports. This field indicates the name of the port.
- Forward. This field indicates if data is forwarded to a MAC address or not. A value of 1 indicates data is forwarded to a MAC address. A value of 0 indicates that data is discarded and is not forwarded to a MAC address.

Related Commands

“SHOW MAC ADDRESS-TABLE” on page 305

“SHOW MAC ADDRESS-TABLE AGING-TIME” on page 307

“SHOW MAC ADDRESS-TABLE INTERFACE” on page 311

“SHOW MAC ADDRESS-TABLE STATIC” on page 313

“SHOW MAC ADDRESS-TABLE VLAN” on page 315

SHOW MAC ADDRESS-TABLE INTERFACE

Syntax

```
show mac address-table interface ge<1-52>
```

Parameters

interface Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with "ge."

Description

Use the SHOW MAC ADDRESS-TABLE INTERFACE command to display the status of the static and dynamic MAC addresses assigned to a port.

For procedures to configure and display the MAC addresses, see "Displaying and Setting MAC Addresses" on page 40.

Command Mode

Privileged Executive mode

Example

The following command displays the settings of the MAC address table on port 3:

```
switch#show mac address-table interface ge3
```

See Figure 94 for an example display.

```
switch# show mac address-table interface ge3
          Mac Address Table
-----
Vlan    MAC Address      Type      Ports      Forward
-----
1       0100.5e7f.ffffa  STATIC    ge3         1
1       0000.cd14.6448   DYNAMIC   ge3         1
1       0000.f4d8.3534   DYNAMIC   ge3         1
1       0004.5a5e.6fd3   DYNAMIC   ge3         1
1       0006.5ba3.67d6   DYNAMIC   ge3         1
1       0006.5bb2.6589   DYNAMIC   ge3         1
1       0006.5bdd.6c69   DYNAMIC   ge3         1
1       0008.749c.101a   DYNAMIC   ge3         1
1       0008.74a2.04c2   DYNAMIC   ge3         1
1       0008.74cb.5fc6   DYNAMIC   ge3         1
1       0008.74d3.f02c   DYNAMIC   ge3         1
1       0008.74dd.87f7   DYNAMIC   ge3         1
switch#
```

Figure 94. SHOW MAC ADDRESS-TABLE INTERFACE Command

The fields in Figure 94 are defined in the following list:

- ❑ vlan. This field indicates the VLAN ID.
- ❑ MAC Address. This field indicates the MAC address in the format: HHHH.HHHH.HHHH.
- ❑ Type. This field indicates a static or dynamic MAC address.
- ❑ Ports. This field indicates the name of the port.
- ❑ Forward. This field indicates if data is forwarded to a MAC address or not. A value of 1 indicates data is forwarded to a MAC address. A value of 0 indicates that data is discarded and is not forwarded to a MAC address.

Related Commands

“SHOW MAC ADDRESS-TABLE” on page 305

“SHOW MAC ADDRESS-TABLE AGING-TIME” on page 307

“SHOW MAC ADDRESS-TABLE DYNAMIC” on page 309

“SHOW MAC ADDRESS-TABLE STATIC” on page 313

“SHOW MAC ADDRESS-TABLE VLAN” on page 315

SHOW MAC ADDRESS-TABLE STATIC

Syntax

```
show mac address-table static |
(begin|exclude|include|redirect) > WORD
```

Parameters

<code>static</code>	Indicates the static MAC addresses.
<code> </code>	Specifies output variables. Choose from the following options:
<code>begin</code>	Indicates to begin with a line that matches.
<code>exclude</code>	Specifies to exclude lines that match.
<code>include</code>	Specifies to include lines that match.
<code>redirect</code>	Indicates to redirect the output.
<code>></code>	Redirects the output of the command to a file name.
<code>WORD</code>	Indicates the filename where output is directed.

Description

Use the SHOW MAC ADDRESS-TABLE STATIC command to display the status of the static MAC addresses assigned to the switch.

For procedures to configure and display the MAC addresses, see “Displaying and Setting MAC Addresses” on page 40.

Command Mode

Privileged Executive mode

Example

The following command displays the settings of the static MAC addresses:

```
switch#show mac address-table static
```

See Figure 95 for an example display.

```
switch# show mac address-table static
          Mac Address Table
-----
Vlan    MAC Address      Type      Ports    Forward
-----
1       0100.5e7f.ffffa  STATIC    ge3      1
switch#
```

Figure 95. SHOW MAC ADDRESS-TABLE STATIC

The fields in Figure 95 are defined in the following list:

- ❑ **vlan.** This field indicates the VLAN ID.
- ❑ **MAC Address.** This field indicates the MAC address in the format: HHHH.HHHH.HHHH.
- ❑ **Type.** This field indicates a static or dynamic MAC address.
- ❑ **Ports.** This field indicates the name of the port.
- ❑ **Forward.** This field indicates if data is forwarded to a MAC address or not. A value of 1 indicates data is forwarded to a MAC address. A value of 0 indicates that data is discarded and is not forwarded to a MAC address.

Related Commands

“SHOW MAC ADDRESS-TABLE” on page 305

“SHOW MAC ADDRESS-TABLE AGING-TIME” on page 307

“SHOW MAC ADDRESS-TABLE DYNAMIC” on page 309

“SHOW MAC ADDRESS-TABLE INTERFACE” on page 311

“SHOW MAC ADDRESS-TABLE VLAN” on page 315

SHOW MAC ADDRESS-TABLE VLAN

Syntax

```
show mac address-table vlan <1-4094>
```

Parameters

vlan Specifies a VLAN ID. Enter a value between 1 and 4094.

Description

Use the SHOW MAC ADDRESS-TABLE VLAN command to display the status of both the static and dynamic MAC addresses assigned to the switch.

For procedures to configure and display the MAC addresses, see “Displaying and Setting MAC Addresses” on page 40.

Command Mode

Privileged Executive mode

Example

The following command displays the MAC address configuration on VLAN 1:

```
switch#show mac address-table vlan 1
```

See Figure 96 on page 316 for a sample display.

```

switch# show mac address-table vlan 1
                Mac Address Table
-----
Vlan    MAC Address      Type      Ports      Forward
-----
1       0100.5e7f.ffffa  STATIC    ge1         1
1       0000.cd14.6448   DYNAMIC   ge1         1
1       0000.f4d8.3534   DYNAMIC   ge1         1
1       0004.5a5e.6fd3   DYNAMIC   ge1         1
1       0006.5ba3.67d6   DYNAMIC   ge1         1
1       0006.5bb2.6589   DYNAMIC   ge8         1
1       0006.5bdd.6c69   DYNAMIC   ge8         1
1       0008.749c.101a   DYNAMIC   ge8         1
1       0008.74a2.04c2   DYNAMIC   ge8         1
1       0008.74cb.5fc6   DYNAMIC   ge8         1
1       0008.74d3.f02c   DYNAMIC   ge8         1
1       0008.74dd.87f7   DYNAMIC   ge12        1
1       0008.74df.29d8   DYNAMIC   ge12        1
1       0008.74f0.9377   DYNAMIC   ge12        1
1       0008.74fe.f3f3   DYNAMIC   ge12        1

```

Figure 96. SHOW MAC ADDRESS-TABLE VLAN Command

The fields in Figure 96 are defined in the following list:

- ❑ vlan. This field indicates the VLAN ID.
- ❑ MAC Address. This field indicates the MAC address in the format: HHHH.HHHH.HHHH.
- ❑ Type. This field indicates a static or dynamic MAC address.
- ❑ Ports. This field indicates the name of the port.
- ❑ Forward. This field indicates if data is forwarded to a MAC address or not. A value of 1 indicates data is forwarded to a MAC address. A value of 0 indicates that data is discarded and is not forwarded to a MAC address.

Related Commands

“SHOW MAC ADDRESS-TABLE” on page 305

“SHOW MAC ADDRESS-TABLE AGING-TIME” on page 307

“SHOW MAC ADDRESS-TABLE DYNAMIC” on page 309

“SHOW MAC ADDRESS-TABLE INTERFACE” on page 311

“SHOW MAC ADDRESS-TABLE STATIC” on page 313

SHOW MIRROR

Syntax

```
show mirror
```

Parameters

none

Description

Use the SHOW MIRROR command to display the status of all mirrored ports.

Command Mode

View and Privileged Executive modes

Example

The following command displays the status of all mirrored ports:

```
switch#show mirror
```

See Figure 97 for an example display.

```
switch#show mirror
Mirror Test Port Name: ge1
Mirror option: Enabled
Mirror direction: both
Monitored Port Name: ge2
Mirror Test Port Name: ge3
Mirror option: Enabled
Mirror direction: receive
Monitored Port Name: ge4
```

Figure 97. SHOW MIRROR Command

Related Commands

“SHOW MIRROR INTERFACE” on page 318

SHOW MIRROR INTERFACE

Syntax

```
show mirror interface ge<1-52>
```

Parameters

INTERFACE Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”

Description

Use the SHOW MIRROR INTERFACE command to display port mirroring configuration for a mirrored port.

Command Mode

View and Privileged Executive modes

Example

The following command displays the port mirroring configuration of port 13:

```
switch#show mirror interface ge13
```

See Figure 98 for an example display.

```
switch#show mirror interface ge13  
Mirror Test Port Name: ge13  
Mirror option: Enabled  
Mirror direction: both  
Monitored Port Name: ge15
```

Figure 98. SHOW MIRROR Interface Command

Related Commands

“SHOW MIRROR” on page 317

SHOW MLS QOS INTERFACE

Syntax

```
show mls qos interface ge<1-52>
```

Parameters

INTERFACE Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with "ge."

Description

Use the SHOW MLS QOS INTERFACE command to display the current settings for the interface. This information includes the default Cost Of Service (CoS), queue, scheduling use for each queue, and any attached policies or maps.

Command Mode

View and Privileged Executive modes

Example

The following command displays the CoS configuration and queue settings for port 1:

```
switch#show mls qos interface ge1
```

See Figure 99 for an example display.

```
switch#show mls qos interface ge1
Schedule mode: weighted round-robin
  The number of egress queue: 8
  weights (priority): 0(0), 0(0), 0(0), 0(0), 0(0), 0(0), 0(0),
0(0)
```

Figure 99. SHOW MLS QOS Interface Command

Related Commands

"MLS QOS" on page 406

SHOW NTP ASSOCIATIONS

Syntax

```
show ntp associations DETAIL
```

Parameters

DETAIL Specifies to display more detail about Network Time Protocol (NTP) associations.

Description

Use the SHOW NTP ASSOCIATIONS command to display the status of NTP associations.

Command Mode

View and Privileged Executive modes

Examples

The following command displays the status of NTP associations:

```
switch#show ntp associations
```

See Figure 100 for an example display.

```
switch#show ntp associations
address      ref clock    st    when    poll    reach    delay    offset    disp
~ 127.127.1.0 127.127.1.0 5     22     64     377     0.0     0.0     1.0
~ configured
```

Figure 100. SHOW NTP ASSOCIATIONS Command

See Table 20 for definitions of the parameters.

Table 20. SHOW NTP ASSOCIATIONS Command

Parameter	Definition
address	Specifies the peer IP address.
ref clock	Specifies the IP address of the reference clock.
st	Represents stratum. Indicates the number of hops between the server and the accurate time source.

Table 20. SHOW NTP ASSOCIATIONS Command (Continued)

Parameter	Definition
poll	Indicates the time between NTP requests from the device to the server.
reach	Indicates whether or not the NTP server responded to the last request.
delay	Specifies the round trip delay between the switch and the server.
offset	Indicates the difference between the device clock and the server clock.
disp	Specifies the lowest measure of error associated with the peer offset based on delay.

See Figure 101 for an example display of the SHOW NTP ASSOCIATIONS DETAIL command.

```
switch#show ntp associations detail
172.80.1.1 configured, sane, valid, leap_sub, stratum 16
ref ID, time 00000000.00000000 (06:28:16.000 UTC Thu Feb 7 2036)
our mode active, peer mode unspec, our pool intvl 1024, peer poll intvl 1024
root delay 0.00 msec, root disp 0.00, reach 000,
delay 0.00 msec, offset 0.0000 msec, dispersion 0.00
precision 2-20
org time cba7db00.e2da554b (00:17:04.886 UTC Thu Apr 10 2008)
rcv time cba7db63.0d33f423 (00:18:43.051 UTC Thu Apr 10 2008)
xmt time cba7d9df.5ccb8e08 (00:12:15.0362 UTC Thu Apr 10 2008)
filtdelay = 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
filtoffset = 0.00 0.00 0.00 0.00 0.00 0.00 0.00 0.00
filterror = 16000.00 16000.00 16000.00 16000.00 16000.00 16000.00 16000.00
16000.00
```

Figure 101. SHOW NTP ASSOCIATIONS DETAIL Command

Related Commands

“SHOW NTP STATUS” on page 322

SHOW NTP STATUS

Syntax

```
show ntp status
```

Parameters

none

Description

Use the SHOW NTP STATUS command to display the status of NTP.

Command Mode

View and Privileged Executive modes

Example

The following command displays the status of NTP:

```
switch#show ntp status
```

See Figure 102 for an example display.

```
switch#show ntp status
Clock is synchronized, stratum 6 reference is 127.127.1.0
actual frequency is 51.2010 Hz, precision is 2-15
reference time is c389fad6.a9a8ac5c (13:42:46.662 UTC wed Dec 16 2003)
clock offset is 0.000 msec, root delay is 0.000 msec
root dispersion is 11201.000 msec,
switch>
```

Figure 102. SHOW NTP STATUS Command

Related Commands

“SHOW NTP ASSOCIATIONS” on page 320

SHOW PORT-SECURITY ADDRESS

Syntax

```
show port-security address
```

Parameters

none

Description

Use the SHOW PORT-SECURITY ADDRESS command to display the secure MAC addresses. There are three types of secure MAC addresses:

- ❑ Secure Configured—This type of MAC address is added manually.
- ❑ Secure Dynamic— This type of MAC address is learned dynamically by the switch.
- ❑ Secure Sticky— This type of MAC address is learned when the Sticky MAC address feature is enabled with the SWITCHPORT PORT-SECURITY MAC-ADDRESS command.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

To display the port-security address, enter the following command:

```
switch#show port-security address
```

See Figure 103 for an example display.

Secure Mac Address Table				
Vlan	Mac Address	Type	Ports	Remaining Age (mins)
1	000c.46b2.ee15	SecureDynamic	ge1	

Figure 103. SHOW PORT-SECURITY ADDRESS Command

Note

In Figure 103 on page 323, the Remaining Age (mins) column is not supported in this release.

Related Commands

“SHOW PORT-SECURITY INTERFACE” on page 325

“SWITCHPORT PORT-SECURITY MAC-ADDRESS” on page 540

“SWITCHPORT PORT-SECURITY MODE” on page 543

SHOW PORT-SECURITY INTERFACE

Syntax

```
show port-security interface ge<1-52>
```

Parameters

INTERFACE Specifies the name of an interface. This is an optional parameter. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with "ge."

Description

Use the SHOW PORT-SECURITY INTERFACE command to display the port-security configuration and status of the specified port.

Command Mode

View and Privileged Executive modes

Example

The following command displays the port-security status of port 22:

```
switch#show port-security interface ge22
```

See Figure 104 for an example display.

Port Security Status					
Secure Port	Maximum SecAddr (count)	Current SecAddr (count)	Security Violation (count)	Security Mode	Security Action
ge22	10	1	0	LIMITED	PROTECT

Figure 104. SHOW PORT-SECURITY INTERFACE Command

See Table 21 for definitions of the options in Figure 104 on page 325.

Table 21. Port Security Status Definitions

Option	Definition
Secure port	Lists the port you specified in the SHOW PORT-SECURITY INTERFACE command.
Maximum SecAddr (count)	Indicates the maximum number of secure MAC addresses that the switch is permitted to learn. Use the SWITCHPORT PORT-SECURITY MAXIMUM command to set this value.
Current SecAddr (count)	Displays entries that are associated with port-security.
Security Violation (count)	Indicates the number of times a security violation has been detected. This value is set with the SWITCHPORT PORT-SECURITY VIOLATION command.
Security Mode	<p>This value is set with the SWITCHPORT PORT-SECURITY MODE command. There are 3 possible settings:</p> <p>Limited—Sets the port to the Limited security mode. The port learns a limited number of dynamic MAC addresses. This is the least secure option.</p> <p>Locked—Sets the switch to the Locked security mode. The port stops learning new dynamic MAC addresses. The port forwards frames based on static MAC addresses and on those dynamic addresses it has already learned.</p> <p>Secured—Sets the port to the Secured security mode. The port accepts frames based only on static MAC addresses. You must enter the static MAC addresses of the nodes with frames the port is to accept after you have activated this security mode on a port. To add static MAC addresses, use the SWITCHPORT PORT-SECURITY MAC-ADDRESS command.</p>

Table 21. Port Security Status Definitions (Continued)

Option	Definition
Security Action	<p>This value is set with the SWITCHPORT PORT-SECURITY VIOLATION command. There are 3 possible settings:</p> <p>PROTECT— Permits traffic from a secure port only. Drops packets from insecure ports. This is the least secure option.</p> <p>RESTRICT— Sends an alert when security violation is detected.</p> <p>SHUTDOWN— Shuts down a port if a security violation is detected.</p>

Related Commands

“SHOW PORT-SECURITY ADDRESS” on page 323

“SWITCHPORT PORT-SECURITY MAXIMUM” on page 542

“SWITCHPORT PORT-SECURITY MODE” on page 543

“SWITCHPORT PORT-SECURITY VIOLATION” on page 545

SHOW PRIVILEGE

Syntax

```
show privilege
```

Parameters

none

Description

Use the SHOW PRIVILEGE command to display the current privilege level of the user. The privilege level is either 1 which represents the limited access of the Operator login or 15 which represents the full access of the Manager login.

For more information about the Operator and Manager logins, see “Introducing the Command Modes” on page 22.

Command Mode

View mode

Example

The following command displays the user privilege value:

```
switch#show privilege
```

The following is an example display:

```
Current privilege level is 1
```

Related Commands

none

SHOW RMON ALARM

Syntax

```
show rmon alarm
```

Parameters

none

Description

Use the SHOW RMON ALARM command to display the alarms and threshold configured for the RMON probe.

Command Mode

View and Privileged Executive modes

Example

To display the alarms and threshold configured for the RMON probe, enter the following command:

```
switch#show rmon alarm
```

Related Commands

“SHOW RMON EVENT” on page 330

“SHOW RMON HISTORY” on page 331

SHOW RMON EVENT

Syntax

```
show rmon event
```

Parameters

none

Description

Use the SHOW RMON EVENT command to display the events configured for the RMON probe.

Command Mode

View and Privileged Executive modes

Example

To display the events configured for the RMON probe, enter the following command:

```
switch#show rmon event
```

See Figure 105 for example output from the SHOW RMON EVENT command.

```
switch#show rmon event
event Index = 7
  Description condition3
    Event community name
  Last Time Sent = 0
  Owner RMON_SNMP

event Index = 8
  Description TRAP
    Event type log & trap
    Event community name gopher
  Last Time Sent = 0
  Owner RMON_SNMP
```

Figure 105. SHOW RMON EVENT Command

Related Commands

“SHOW RMON ALARM” on page 329

SHOW RMON HISTORY

Syntax

```
show rmon history
```

Parameters

none

Description

Use the SHOW RMON HISTORY command to display the parameters specified on all the currently defined RMON history collections on the switch.

Command Mode

View and Privileged Executive modes

Example

To display the events configured for the RMON probe, enter the following command:

```
switch#show rmon history
```

See Figure 106 for example output from the SHOW RMON HISTORY command.

```
switch#show rmon history
history index = 56
    data source ifindex = 4501
    buckets requested = 34
buckets granted = 34
Interval = 2000
Owner Andrew

history index = 458
    data source ifindex = 5004
    buckets requested = 400
buckets granted = 400
Interval = 1500
Owner trev
```

Figure 106. SHOW RMON HISTORY Command

Related Commands

“SHOW RMON ALARM” on page 329

“SHOW RMON EVENT” on page 330

SHOW RMON STATISTICS

Syntax

```
show rmon statistics
```

Parameters

none

Description

Use the SHOW RMON STATISTICS command to display the current values of the statistics for all of the RMON statistics collections currently defined on the switch.

Command Mode

View and Privileged Executive modes

Example

To display the RMON statistics, enter the following command:

```
switch#show rmon statistics
```

See Figure 107 for example output from the SHOW RMON STATISTICS command.

```
switch#show rmon statistics
  rmon collection index 45
  stats ->ifindex = 4501
  input packets 1279340, bytes 85858960, dropped 00,multicast packets
1272100
  output packets 7306090, bytes 268724, multicast packets 7305660
broadcast packets 290
  rmon collection index 679
  stats ->ifindex = 5013
  input packets 00, bytes 00, dropped 00,multicast packets 00
  output packets 8554550, bytes 26777324, multicast packets 8546690
broadcast packets 7720
```

Figure 107. SHOW RMON STATISTICS Command

Related Commands

“SHOW RMON ALARM” on page 329

“SHOW RMON EVENT” on page 330

“SHOW RMON HISTORY” on page 331

SHOW RUNNING-CONFIG FULL

Syntax

```
show running-config full
```

Parameters

none

Description

Use the SHOW RUNNING-CONFIG FULL command to display full configuration information about the system.

The display of the SHOW RUNNING-CONFIG FULL command is often more than one page. To advance the display to the next line, press ENTER. To advance the display to the next page, press ESC.

Command Mode

All modes

Example

The following is an example of the SHOW RUNNING-CONFIG FULL command and a sample of the output:

```
switch#show running-config full
```

This command displays a variety of switch parameters. An example of page one of the display is shown in Figure 108.

```
switch# show running-config full
!
no service password-encryption
!
log file system max-file-size 4096 level 7
username manager privilege 15 password friend
username operator password operator
!
interface lo
ip address 127.0.0.1/8
!
interface vlan1
ip address 127.0.0.5/8!
!
interface vlan2
ip address 127.0.0.7/8
!
ip route 5.5.5.0/24 10.10.16.2
!
line con 0
login
line vty 0 4
login
!
```

Figure 108. SHOW RUNNING-CONFIG FULL Command

Related Commands

“SHOW RUNNING-CONFIG” on page 420

“SHOW STARTUP-CONFIG” on page 347

SHOW RUNNING-CONFIG INTERFACE

Syntax

```
show running-config interface INTERFACE
bridge|dot1x|l2cp|rstp|stp
```

Parameters

INTERFACE	Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with "ge." To specify a VLAN, use the VLAN ID.
bridge	Displays the running configuration for a bridge for the specified interface.
dot1x	Displays the running configuration for 802.1X port authentication for the specified interface.
rstp	Displays the running configuration for RSTP (Rapid Spanning Tree Protocol) for the specified interface.
stp	Displays the running configuration for STP (Spanning Tree Protocol) for the specified interface.

Description

Use the SHOW RUNNING-CONFIG INTERFACE command to display the current configuration of an interface on the switch.

Note

Although the ip igmp and mstp parameters appear in the software for the SHOW RUNNING-CONFIG INTERFACE command, they are not supported in this release.

Command Mode

Privileged Executive, Configuration Terminal, Interface Configuration, VLAN Configuration, and Line modes

Examples

To display the status of the SHOW RUNNING-CONFIG INTERFACE command on VLAN 1, enter the following command:

```
switch#show running-config interface vlan1
```

See Figure 109 for an example display.

```
!
interface vlan1
  ip address 192.168.8.10/8
!
```

Figure 109. SHOW RUNNING-CONFIG INTERFACE Port Example

To display the status of the current running configuration of port 1 for a bridge, enter the following command:

```
switch#show running-config interface ge1 bridge
```

See Figure 110 for an example display.

```
!
interface ge1
  switchport mode trunk
  switchport trunk allowed vlan add2
  switchport trunk allowed vlan add3
!
```

Figure 110. SHOW RUNNING-CONFIG INTERFACE Bridge Example

To display the status of the current running configuration of port 2 for the 802.1x Access Control feature, enter the following command:

```
switch#show running-config interface ge2 dot1x
```

See Figure 111 for an example display.

```
!
interface ge2
  dot1x port-control force-authorized
  dot1x port-control dir both
!
```

Figure 111. SHOW RUNNING-CONFIG INTERFACE DOT1X Example

Related Commands

“SHOW RUNNING-CONFIG” on page 420

SHOW RUNNING-CONFIG IP IGMP SNOOPING

Syntax

```
show running-config ip igmp snooping
```

Parameters

ip igmp snooping Displays the running configuration for the IP IGMP snooping feature.

Description

Use the SHOW RUNNING-CONFIG IP IGMP SNOOPING command to display the running system status and configuration details for the IP IGMP snooping feature.

Command Mode

Configuration Terminal and Privileged Executive modes

Example

To display the status of the SHOW RUNNING-CONFIG IP IGMP SNOOPING command, enter the following command:

```
switch#show running-config ip igmp snooping
```

See Figure 112 for an example display.

```
!  
bridge 6 aging-time 45  
bridge 6 priority 4096  
bridge 6 max-age 7
```

Figure 112. SHOW RUNNING-CONFIG IP IGMP SNOOPING Example

Related Commands

“SHOW RUNNING-CONFIG FULL” on page 335

SHOW RUNNING-CONFIG SWITCH

Syntax

```
show running-config switch dot1x|rstp|stp
```

Parameters

dot1x	Displays the running configuration for 802.1X Port-Based Authentication.
gmrp	Displays the running configuration for GARP Multicast Registration Protocol.
gvrp	Displays the running configuration for GVRP GARP VLAN Registration Protocol.
rstp	Displays the running configuration for RSTP (Rapid Spanning Tree Protocol).
stp	Displays the running configuration for STP (Spanning Tree Protocol).

Description

Use the SHOW RUNNING-CONFIG SWITCH command to display the running system status and configuration details for a given switch.

Note

Although the mstp parameter appears in the software, it is not supported in this release.

Command Mode

Privileged Executive and Configuration Terminal modes

Example

To display the status of the SHOW RUNNING-CONFIG SWITCH command for STP, enter the following:

```
switch#show running-config switch stp
```

See Figure 113 for an example display.

```
!  
bridge 6 aging-time 45  
bridge 6 priority 4096  
bridge 6 max-age 7
```

Figure 113. SHOW RUNNING-CONFIG SWITCH STP Example

Related Commands

“SHOW RUNNING-CONFIG” on page 420

SHOW SSHFINGERPRINT

Syntax

```
show sshfingerprint
```

Parameters

none

Description

Use the SHOW SSHFINGERPRINT command to information about SSH, including the fingerprint. The switch acts as an SSH server.

Command Mode

View and Privileged Executive modes

Example

The following command displays the SSH configuration:

```
switch#show sshfingerprint
```

See Figure 114 for an example display.

```
switch#show sshfingerprint
SSH Version 1 RSA: 1024 35:95:6c:14:9d:33:5d:04:b3:4a:3c:28:6f:
OpenSSHdv1

SSH Version 2 RSA: 1024 ec:01:d9:15:7f:ce:6e:6b:56:d5:43:f5:f3:
sshd is running
```

Figure 114. SHOW SSHFINGERPRINT Command

Figure 114 displays the SSH version number, the number of bits in the SSH key, the fingerprint, and a note about which version of SSH is running on the server.

Related Commands

“SHOW SSHSERVER STATUS” on page 343

SHOW SSHSERVER STATUS

Syntax

```
show sshserver status
```

Parameters

none

Description

Use the SHOW SSHSERVER STATUS command to display information about the SSH server configuration.

Command Mode

View and Privileged Executive modes

Example

The following command displays the status of the SSH server:

```
switch#show sshserver status
```

See Figure 115 for an example display.

```
Secure Shell Server Configuration

Login Timeout..... 120
Max Authentication Tries..... 6
Server Port.....22
Authentication Available.....Password

ssh server is.....Running
```

Figure 115. SHOW SSHSERVER STATUS Command

See Table 22 for definitions of the parameters.

Table 22. SHOW SSHSERVER STATUS

Parameter	Definition
Login Timeout	Indicates the time, in seconds, before the SSH server times out during log in.

Table 22. SHOW SSHSERVER STATUS (Continued)

Parameter	Definition
Max Authentication Tries	Specifies the maximum number of authentication attempts that are permitted per connection. Once the number of failures reaches half this value, additional failures are logged. The default value is 6.
Server Port	Specifies the SSH server port that is connected to the switch.
Authentication Available	Indicates if there is a password is set for the SSH server.

Related Commands

“SHOW SSHFINGERPRINT” on page 342

SHOW SPANNING-TREE

Syntax

```
show spanning-tree interface INTERFACE
```

Parameters

INTERFACE Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with "ge."

Description

Use the SHOW SPANNING-TREE command to display the status of the active spanning tree protocol on the specified port.

For procedures to configure the spanning tree protocols, see "Setting STP and RSTP" on page 71.

Command Mode

View and Privileged Executive modes

Example

The following command displays the spanning tree configuration on port 1:

```
switch#show spanning-tree interface ge1
```

This command displays a variety of parameters. An example of Screen 1 of the display is shown in Figure 116 on page 346.

```

switch# show spanning-tree interface ge1
% 1: Bridge up - Spanning Tree Disabled
% 1: Root Path Cost 0 - Root Port 0 - Bridge Priority 32768
% 1: Forward Delay 15 - Hello Time 2 - Max Age 20
% 1: Root Id 80000012341212ab
% 1: Bridge Id 80000012341212ab
% 1: last topology change Sat Jan 1 00:00:18 2008
% 1: portfast bpdu-filter disabled
% 1: portfast bpdu-guard disabled
% 1: portfast errdisable timeout disabled
% 1: portfast errdisable timeout interval 300 sec
% 1:   ge1: Port 2001 - Id 87d1 - Role Disabled - State Fwd
% 1:   ge1: Designated Path Cost 0
% 1:   ge1: Configured Path Cost 200000 - Add type Explicit ref
count 1
% 1:   ge1: Designated Port Id 87d1 - Priority 128 -
% 1:   ge1: Root 80000012341212ab
% 1:   ge1: Designated Bridge 80000012341212ab
% 1:   ge1: Message Age 0 - Max Age 20
% 1:   ge1: Hello Time 2 - Forward Delay 15
% 1:   ge1: Forward Timer 0 - Msg Age Timer 0 - Hello Timer 0 -
topo change timer 0
% 1:   ge1: forward-transitions 2
% 1:   ge1: Version Rapid Spanning Tree Protocol - Received None
Send RSTP
--More--

```

Figure 116. SHOW SPANNING-TREE Command, Screen 1

See Figure 117 for Screen 2 of the display.

```

% 1:   ge1: No portfast configured - Current portfast off
% 1:   ge1: portfast bpdu-guard default - Current portfast bpdu-
guard off
% 1:   ge1: portfast bpdu-filter default - Current portfast bpdu-
guard off
% 1:   ge1: no root guard configured - Current root guard off
% 1:   ge1: Configured Link Type point-to-point - Current point-
to-point
%

```

Figure 117. SHOW SPANNING-TREE Command, Screen 2

Related Commands

See Chapter 14, “Spanning Tree Protocol (STP) Commands” on page 571.

SHOW STARTUP-CONFIG

Syntax

```
show startup-config
```

Parameters

none

Description

Use the SHOW STARTUP-CONFIG command to display the contents of the startup configuration file which is the file that the switch runs on startup.

Command Mode

Privileged Executive mode

Example

To display the contents of the current startup configuration file, use the following command:

```
switch#show startup-config
```

An example of screen 1 of the display is shown in Figure 118.

```
switch# show startup-config
!
no service password-encryption
!
log file system max-file-size 4096 level 7
username manager privilege 15 password friend
username operator password operator
!
snmp-server enable
!
ip multicast-routing
!
spanning-tree mode rstp
spanning-tree acquire
!
!
interface ge1
switchportaccess vlan 3
interface ge2
traffic-class-table user-priority 7 num-traffic-classes 2 value 0
interface ge3
switchport mode trunk
--More--
```

Figure 118. SHOW RUNNING-CONFIG Command, Screen 1

Related Commands

“SHOW RUNNING-CONFIG FULL” on page 335

SHOW STATIC-CHANNEL-GROUP

Syntax

```
show static-channel-group
```

Parameters

none

Description

Use the SHOW STATIC-CHANNEL-GROUP command to display the static-channel groups configured on the switch.

For a procedure to set create static port trunks, see “Creating Static Trunks” on page 58.

Command Mode

Privileged Executive mode

Example

The following example shows the SHOW STATIC-CHANNEL-GROUP command and a sample of the output:

```
switch#show static-channel-group
```

See Figure 119 for an example display.

```
switch# show static-channel-group
Static Aggregator: sa3
Type: src-dst-mac
Member: ge9
```

Figure 119. SHOW STATIC-CHANNEL-GROUP

Related Commands

“STATIC-CHANNEL-GROUP” on page 475

SHOW STORM-CONTROL

Syntax

```
show storm-control IFNAME ge<1-52>
```

Parameters

IFNAME Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”

Description

Use the SHOW STORM-CONTROL command to display the storm-control information for the specified interface.

Command Mode

View and Privileged Executive modes

Example

To display the storm-control information for port 35, enter the following command:

```
switch#show storm-control ge35
```

See Figure 120 for an example display.

```
switch# show storm-control ge35
Port      BcastLevel  BcastDiscards  McastLevel  McastDiscards  DlfLevel  DlfDiscards
ge35     100.0%      0              100.0%      0              100.0%    0
```

Figure 120. SHOW STORM-CONTROL Command

Related Commands

none

SHOW UPLINK INTERFACE

Syntax

```
show uplink interface IFNAME ge<1-52>
```

Parameters

IFNAME Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with "ge."

Description

Use the SHOW UPLINK INTERFACE command to display the information about an SFP transceiver connected to a port on the switch.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

To display information about an SFP transceiver connected to port 25, enter the following command:

```
switch3#show uplink interface ge25
```

See Figure 121 on page 352 for an example display.

```
switch#show uplink interface ge25
SFP ge25 information:
  Transceiver Identifier.....SFP
  Extended Transceiver Identifier.....Function defined by serial ID
  Connector Type.....SC
  Encoding Algorithm.....8B10B
  Nominal Bit Rate.....2100M Bits/sec
  Link Length Supported For 9 um Fiber....0m
  Link Length Supported For 50 um Fiber...3000m
  Link Length Supported For 62.5 um Fiber.150m
  Link Length Supported For Copper.....0m
  Vendor Name.....AGILENT
  Vendor OUI.....00-00-00
  Vendor Part Number.....HFBR-5720L
  Vendor Product Revision.....0000
  Vendor Serial Number.....010202137111252
  Upper Bit Rate Margin.....0
  Lower Bit Rate Margin.....0
  Manufacturing Date Code.....02022300
  Gigabit Ethernet Compliance Code.....
```

Figure 121. SHOW UPLINK INTERFACE Command

Related Commands

none

SHOW USER-PRIORITY

Syntax

```
show user-priority interface INTERFACE
```

Parameters

INTERFACE Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with "ge."

Description

Use the SHOW USER-PRIORITY command to display the user priority value on the specified port.

Command Mode

View and Privileged Executive modes

Example

The following command displays the user-priority value on port 8:

```
switch#show user-priority interface ge8
```

The following is an example display:

```
Default user priority: 7
```

Related Commands

"USER-PRIORITY" on page 484

SHOW USER-PRIORITY-REGEN-TABLE

Syntax

```
show user-priority-regen-table INTERFACE ge<1-52>
```

Parameters

IFNAME Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”

Description

Use the SHOW USER-PRIORITY-REGEN-TABLE command to display the regenerated user-priority value on the specified port. Set these values with the USER-PRIORITY-REGEN-TABLE command.

Command Mode

View and Privileged Executive modes

Example

The following command displays the user-priority value on port 8:

```
switch#show user-priority-regen-table ge8
```

See Figure 122 contains an example display:

```
switch#show user-priority-regen-table interface ge8
User Priority      Regenerated User Priority
  0                0
  1                1
  2                2
  3                5
  4                4
  5                5
  6                6
  7                0
```

Figure 122. SHOW USER-PRIORITY-REGEN-TABLE Command

Related Commands

“USER-PRIORITY-REGEN-TABLE” on page 485

SHOW USERS

Syntax

```
show users
```

Parameters

none

Description

Use the SHOW USERS command to display information about the users who are currently logged into the switch.

Command Mode

View and Privileged Executive modes

Example

Use the following command to display the users who are currently logged onto the switch:

```
switch#show users
```

See Figure 123 for an example display.

```
switch# show users
Line   User      Host(s)      Idle      Location
con 0  manager  idle         00:00:00  ttyS0
vty 0  bob      idle         00:00:03  172.16.11.1
```

Figure 123. SHOW USERS Command

Related Commands

none

SHOW VERSION

Syntax

```
show version
```

Parameters

none

Description

Use the SHOW VERSION command to display the current version of the software.

Command Mode

View and Privileged Executive modes

Example

The following command displays the current version of the software:

```
switch#show version
```

The following is an example display:

```
switch#show version
    Product ID=ATS100
    Application Version=1.0.4
    Application BuildTime=18:02:47
    Application BuildDate=May 15 2009
    Serial Number= A04149A083700041
    Model=AT-9000/28
    Ethaddr=00-15-77-C9-A5-77
    Baudrate=9600
    Uptime= 16:01:02 up 1 min, load average:
    0.21, 0.08, 0.02

    HWRev=b
```

Related Commands

“SHOW BOOT” on page 249

SYSTEM FACTORY-RESET

Syntax

```
system factory-reset
```

Parameters

none

Description

Use the SYSTEM FACTORY-RESET command to reset the AT-S100 software to the factory default settings. When you enter this command, you will lose the running configuration.



Caution

Before you enter this command, you may want to copy your current configuration. See “COPY” on page 228.

Command Mode

Privileged Executive mode

Example

The following command sets the AT-S100 software to the factory default settings:

```
switch# system factory-reset
```

You are prompted with the following questions:

```
will lose running configuration and system will reboot?  
(Y/N)
```

To continue, enter Y for yes.

Related Commands

“COPY” on page 228

“SYSTEM REBOOT” on page 358

SYSTEM REBOOT

Syntax

```
system reboot
```

Parameters

none

Description

Use the SYSTEM REBOOT command to reboot the switch.

Command Mode

Privileged Executive mode

Example

The following command reboots the switch:

```
switch# system reboot
```

Related Commands

“SYSTEM FACTORY-RESET” on page 357

TELENET

Syntax

```
telnet ip-address port
```

Parameters

ip-address Indicates an IP address in the following format:

```
xxx.xxx.xxx.xxx
```

port Indicates a TCP port number. Here are some guidelines to help you select a port:

- Well-known ports are in the range from 1 to 1023.
- Registered ports are in the range of 1024 to 49151.
- Private ports are in the range of 49152 to 65535.

Description

Use the TELNET command to open a Telnet session to a remote device.

Command Mode

Privileged Executive mode

Example

Enter the following command to connect to TCP port 2602 on the device at 192.58.48.2:

```
switch# telnet 192.58.48.2 2602
```

Related Commands

none

TRACEROUTE

Syntax

```
traceroute ip-address|hostname
```

Parameters

ip-address Indicates an IP address in the following format:

xxx.xxx.xxx.xxx

hostname Specifies a hostname of the device.

Description

Use the TRACEROUTE command to trace the route to the specified IP host.

Command Mode

Privileged Executive mode

Example

Enter the following command to trace a route to IP address 10.10.0.5:

```
switch# traceroute 10.10.0.5
```

Related Commands

none

UPLOAD SERIAL XMODEM

Syntax

```
upload serial xmodem
```

Parameters

none

Description

Use the UPLOAD SERIAL XMODEM command to upload the an image file from the switch onto to a terminal or computer with a terminal emulator program.

You do not need to know the name of the image file on the switch to upload it. The filename that you specify in the UPLOAD command indicates the filename on the XMODEM server. As a result, you can name it anything you'd like as long as the suffix is ".img."

Note

Since the AT-9000/XX switch runs at a speed of 9600 and the image file is over 10MB, using the UPLOAD SERIAL XMODEM command requires many hours to complete the upload. Allied Telesis recommends using the UPLOAD TFTP command. See "UPLOAD TFTP" on page 363.

Command Mode

Privileged Executive mode

Example

Enter the following command to upload an image file from the switch onto to a terminal or computer with a terminal emulator program connected to the serial terminal port on the switch:

```
switch# upload serial xmodem
```

Give your local XMODEM receive command now.

From your XMODEM utility, do the following:

- Select the Receive File option.
- Use the Browse button to select the directory where you want to save the file.

- ❑ Select the “1K XMODEM” option.
- ❑ Select Receive.
- ❑ Supply a file name that ends in “.img.”

A confirmation message is displayed on the screen.

Related Commands

“COPY” on page 228

“COPY DEFAULT.CFG” on page 231

“DOWNLOAD SERIAL XMODEM” on page 238

“UPLOAD TFTP” on page 363

UPLOAD TFTP

Syntax

```
upload tftp A.B.C.D WORD
```

Parameters

A.B.C.D	Indicates an IP address in the following format: xxx.xxx.xxx.xxx
WORD	Indicates the file name of the image (.img) file on the TFTP server after you have set the UPLOAD command.

Description

Use the UPLOAD TFTP command to upload the image file from the switch onto an TFTP server. For example, you may want to use this command to create a backup copy of the AT-S100 software. You must have the IP address of the TFTP server to set this command.

You do not need to know the name of the image file on the switch to upload it. The filename that you specify in the UPLOAD command indicates the filename on the TFTP server. As a result, you can name it anything you'd like as long as the suffix is ".img."

Note

Create a dummy file on the TFTP server with the same file name as the file on the switch that you want to upload before you enter the UPLOAD command. If you do not first create the dummy file, you will receive an error message. However, the file will upload successfully.

Command Mode

Privileged Executive mode

Example

Enter the following command to upload the image file from the switch onto a TFTP server with an IP address of 192.58.48.10 and filename of "at100v104.img:"

```
switch# upload tftp 192.58.48.10 at100v104.img
```

The switch displays the following which indicates a successful upload operation:

```
TFTP IP 192.58.48.10, file name at100v104.img
```

Related Commands

“COPY” on page 228

“COPY DEFAULT.CFG” on page 231

“DOWNLOAD TFTP” on page 240

WRITE FILE

Syntax

```
write file
```

Parameters

none

Description

Use the WRITE FILE command to copy the running-config into the file that is set as the current startup-config file. This command performs the same action as the COPY command.

Command Mode

Privileged Executive mode

Examples

In the following example, the software writes the configuration data to the start-up configuration file:

```
switch#write file
```

The software displays the following:

```
Building configuration...  
[OK]
```

Related Commands

“COPY” on page 228

“CP” on page 235

WRITE TERMINAL

Syntax

```
write terminal
```

Parameters

none

Description

Use the WRITE TERMINAL command to display the current configuration of the switch. This command performs the same action as the SHOW RUNNING-CONFIG command.

Command Mode

Privileged Executive mode

Examples

To display the current configuration of the switch, enter the following command:

```
switch#write terminal
```

See Figure 124 on page 367 for an example of the WRITE TERMINAL command display.

```
(switch3)(config)# write terminal
!
no service password-encryption
!
log file system max-file-size 4096 level 7
username manager privilege 15 password friend
username operator password operator
!
snmp-server enable
!
ip multicast-routing
!
spanning-tree mode rstp
spanning-tree acquire
!
!
interface ge1
switchportaccess vlan 3
interface ge2
traffic-class-table user-priority 7 num-traffic-classes 2 value 0
interface ge3
switchport mode trunk
switchport trunk allowed vlan add 3
--More--
```

Figure 124. WRITE TERMINAL Command

Related Commands

“SHOW RUNNING-CONFIG” on page 420

“SHOW RUNNING-CONFIG INTERFACE” on page 337

Chapter 5

Configuration Terminal Mode Commands

The commands in this chapter apply to the switch (as opposed to a port) and they are accessed through the Configuration Terminal mode. The commands in this mode allow you to configure SSH, MAC addresses, and Network Time Protocol (NTP) commands.

This chapter contains the following commands:

- ❑ “ARP” on page 371
- ❑ “BANNER” on page 373
- ❑ “CLOCK SUMMER-TIME RECURRING” on page 374
- ❑ “CLOCK TIMEZONE” on page 376
- ❑ “CRYPTO KEY GENERATE” on page 378
- ❑ “CRYPTO KEY ZEROIZE” on page 380
- ❑ “CRYPTO SSHSERVER” on page 381
- ❑ “DOT1X SYSTEM-AUTH-CTRL” on page 383
- ❑ “ENABLE SECRET” on page 384
- ❑ “EXIT” on page 385
- ❑ “HELP” on page 386
- ❑ “HOSTNAME” on page 388
- ❑ “INTERFACE” on page 389
- ❑ “IP IGMP LIMIT” on page 391
- ❑ “IP IGMP SNOOPING” on page 393
- ❑ “IP ROUTE” on page 394
- ❑ “IP SSH AUTHENTICATION-TRIES” on page 395
- ❑ “IP SSH TIMEOUT” on page 396
- ❑ “IP SSH RSA KEYPAIR-NAME” on page 397
- ❑ “IP SSH VERSION” on page 398
- ❑ “LACP SYSTEM-PRIORITY” on page 399
- ❑ “LINE CONSOLE” on page 400
- ❑ “MAC ADDRESS-TABLE AGING-TIME” on page 401
- ❑ “MAC ADDRESS-TABLE STATIC DISCARD” on page 402
- ❑ “MAC ADDRESS-TABLE STATIC FORWARD” on page 404

- ❑ “MLS QOS” on page 406
- ❑ “MLS QOS ENABLE” on page 408
- ❑ “NTP AUTHENTICATE” on page 409
- ❑ “NTP AUTHENTICATION-KEY” on page 410
- ❑ “NTP SERVER” on page 412
- ❑ “NTP TRUSTED-KEY” on page 414
- ❑ “SERVICE ADVANCED-VTY” on page 415
- ❑ “SERVICE PASSWORD-ENCRYPTION” on page 416
- ❑ “SERVICE TERMINAL-LENGTH” on page 417
- ❑ “SHOW LIST” on page 418
- ❑ “SHOW RUNNING-CONFIG” on page 420
- ❑ “SHOW RUNNING-CONFIG FULL” on page 424
- ❑ “SHOW RUNNING-CONFIG INTERFACE” on page 426
- ❑ “SHOW RUNNING-CONFIG IP IGMP SNOOPING” on page 428
- ❑ “SHOW RUNNING-CONFIG SWITCH” on page 429
- ❑ “SHOW RUNNING-CONFIG SWITCH LACP” on page 431
- ❑ “SHOW RUNNING-CONFIG SWITCH RADIUS-SERVER” on page 432
- ❑ “SHOW RUNNING-CONFIG SWITCH VLAN” on page 433
- ❑ “USERNAME” on page 434

Note

For GVRP-specific commands, see Chapter 10, “GVRP Commands” on page 519

Note

For VLAN-specific commands, see Chapter 15, “Virtual Local Area Networks (VLAN) Commands” on page 591.

ARP

Syntax

```
arp A.B.C.D MAC
```

```
no arp A.B.C.D
```

Parameters

A.B.C.D	Indicates an IP address of the host in the following format: xxxx.xxxx.xxxx.xxxx The IP address must be a member of a local subnet or network that has a routing interface on the switch.
MAC	Specifies a MAC address of the host in the following format: HHHH.HHHH.HHHH

Description

Use the Address Resolution Protocol (ARP) command to add a static ARP entry to the ARP cache. Typically, this command is used to add entries for local hosts that do not support ARP or to speed up the address resolution function for a host.

The no parameter added to this command removes the ARP entry.

Command Mode

Configuration Terminal mode

Examples

To add an ARP entry with an IP address of 192.12.10.3 and a MAC address of 000C.6E73.2BC4, use the following commands:

```
switch#configure terminal
```

```
switch(config)#arp 192.12.10.3 000C.6E73.2BC4
```

To remove an ARP entry with an IP address of 192.12.10.5, use the following commands:

```
switch#configure terminal
```

```
switch(config)#no arp 192.12.10.5
```

Related Commands

none

BANNER

Syntax

```
banner motd default|LINE
```

```
no banner motd
```

Parameters

default	Indicates the default message of the day (motd) which is "Allied Telesis ATS100 L2/L2+ Ethernet Switch v1.0.3."
LINE	Specifies the message of the day. You do not need to use quotation marks around spaces.

Description

Use the BANNER command to add a message of the day when you log out of the switch.

The no parameter added to this command removes the message of the day.

Command Mode

Configuration Terminal mode

Examples

To add "Good Morning" as the message of the day, use the following commands:

```
switch#configure terminal
```

```
switch(config)#banner motd Good Morning
```

To remove the current message of the day, use the following commands:

```
switch#configure terminal
```

```
switch(config)#no banner motd
```

Related Commands

none

CLOCK SUMMER-TIME RECURRING

Syntax

```
clock summer-time ZONENAME recurring START-WEEK START-
DAY START-MONTH START-TIME END-WEEK END-DAY END-MONTH
END-TIME <1-180>
```

```
no clock summer-time
```

Parameters

ZONENAME	Describes the summertime zone, up to 6 characters long.
recurring	Specifies that this summertime setting applies every year from now on.
START-WEEK	Indicates the week of the month when summertime starts in the range of 1 to 5. The value of 5 indicates the last week that has specified day in it for the specified month. For example, to start summertime on the last Sunday of the month, enter 5 for START-WEEK and "sun" for START-DAY.
START-DAY	Indicates the day of the week when summertime starts. Use the first three letters of each day of the week. Valid day values are "mon," "tue," "wed," "thu," "fri," "sat," and "sun."
START-MONTH	Specifies the month that summer time starts. Use the first three letters of each month to indicate the name of a month. Valid month values are "jan," "feb," "mar," "apr," "may," "jun," "jul," "aug," "sep," "oct," "nov," and "dec."
START-TIME	Indicates the time of day that summer time starts in 24-hour format: HH:MM where H represents hours and M represents minutes.
END-WEEK	Indicates the week of the month when summer time ends in the range of 1 through 5. The value of 5 indicates the last week of the month.
END-DAY	Specifies the day of the week when summer time ends. Use the first three letters of each day of the week. Valid day values are "mon," "tue," "wed," "thu," "fri," "sat," and "sun."

END-MONTH	Specifies the month that summer time ends. Use the first three letters of each month to indicate the name of a month. Valid month values are "jan," "feb," "mar," "apr," "may," "jun," "apr," "may," "jun," "jul," "aug," "sep," "oct," "nov," and "dec."
END-TIME	Indicates the time of day that summer time end in 24-hour format: HH:MM where H represents hours and M represents minutes.
<1-180>	Indicates the time offset in minutes.

Description

Use the `CLOCK SUMMER-TIME RECURRING` command to define the start and end of daylight savings time for every year. In addition, this command allows you to specify the offset value to Standard Time.

Note

You may need to use this command when the standard daylight savings dates change for a country.

The no parameter added to this command removes the summertime setting from the software, including the recurring dates.

Command Mode

Configuration Terminal mode

Example

To set a summer time definition for New Zealand using the official NZST (UTC+12:00) as the standard time and NZST (UTC+13:00) as summertime, with summertime set to start on the first Sunday in October and end on the third Sunday in March, use the following commands:

```
switch#configure terminal
```

```
switch(config)#clock summer-time NZDT recurring 1 sun
oct 2:00 3 sun mar 2:00 60
```

Related Commands

"CLOCK SET" on page 225

"CLOCK TIMEZONE" on page 376

"NTP AUTHENTICATE" on page 409

CLOCK TIMEZONE

Syntax

```
clock timezone <timezone> minus|plus <0-12>
no clock timezone
```

Parameters

timezone	Specifies a description of the timezone up to 6 characters in length.
minus	Indicates the timezone is behind UTC.
plus	Indicates the timezone is ahead of UTC.
<0-12>	Specifies the offset, in hours, from UTC.

Description

Use the CLOCK TIMEZONE command to define the clock timezone in hours. The timezone is set as an offset to the UTC of up to 12 hours. By default, the system time is set to UTC.



Caution

Configure the time zone **before** setting the local time on the system. If you set the time zone after setting the local time, the software applies the new offset to the local time.

Use the no parameter to reset the system time to UTC.

Command Mode

Configuration Terminal mode

Examples

To set the time zone to New Zealand Standard Time with an offset from UTC of +12 hours, use the following commands:

```
switch#configure terminal
switch(config)#clock timezone NZST plus 12
```

To return the time zone to UTC with no offsets, use the following commands:

```
switch#configure terminal
```

```
switch(config)#no clock timezone
```

Related Commands

“CLOCK SET” on page 225

“CLOCK SUMMER-TIME RECURRING” on page 374

CRYPTO KEY GENERATE

Syntax

```
crypto key generate rsa1|rsa <768-32768>
```

Parameters

- | | |
|-----------|---|
| rsa1 | Creates an RSA1 key for an SSH version 1 connection. |
| rsa | Creates an RSA key for an SSH version 2 connection. |
| 768-32768 | Specifies the length of the RSA key in bits. By default, this value is set to 1,024 bits. |

Description

Use the CRYPTO KEY GENERATE command to generate a private key for the RSA cryptography algorithm.

There is not a “no form” of this command. To shut down the connection with the SSH server and remove an SSH key, use the CRYPTO KEY ZEROIZE command.



Caution

This command is not saved in the software configuration. However, the device saves the keys generated by this command in the non-volatile memory.

Command Mode

Configuration Terminal mode

Examples

To generate an RSA user key that is 768 bits in length for an SSH version 2 connection, use the following commands:

```
switch#configure terminal
switch(config)#crypto key generate rsa
```

To generate an RSA 1 key user that is 1,024 bits in length for an SSH version 1 connection, use the following commands:

```
switch#configure terminal
switch(config)#crypto key generate rsa1
```

Related Commands

“CRYPTO KEY ZEROIZE” on page 380

“CRYPTO SSHSERVER” on page 381

CRYPTO KEY ZEROIZE

Syntax

```
crypto key zeroize rsa1|rsa
```

Parameters

rsa1 Creates an RSA1 key for an SSH version 1 connection.

rsa Creates an RSA key for an SSH version 2 connection.

Description

Use the CRYPTO KEY ZEROIZE command to remove all SSH keys. In addition, this command allows established SSH server connections to function, but new connections on the specified SSH protocol, either RSA1 or RSA, are denied.

There is not a “no form” of this command. To generate an SSH key, use the CRYPTO KEY GENERATE command.

Command Mode

Configuration Terminal mode

Example

To remove all RSA1 SSH keys and prevent any new RSA1 sessions from starting with an SSH server, enter the following commands:

```
switch#configure terminal
```

```
switch(config)#crypto key zeroize rsa1
```

Related Commands

“CRYPTO KEY GENERATE” on page 378

“CRYPTO SSHSERVER” on page 381

CRYPTO SSHSERVER

Syntax

```
crypto sshserver restart|start|stop
```

Parameters

restart Restarts the connection with the SSH server.

start Starts the connection with the SSH server.

stop Stops the connection with the SSH server.

Description

Use the CRYPTO SSHSERVER command to start, stop, or restart the switch's built-in SSH server.

There is not a "no form" of this command. To shut down the connection with the SSH server and remove an SSH key, use the CRYPTO KEY ZEROIZE command.

Command Mode

Configuration Terminal mode

Examples

To create a connection with the SSH server, use the following commands:

```
switch#configure terminal
```

```
switch(config)#crypto sshserver start
```

The switch displays the following message:

```
ssh-server started
```

To end the connection with the SSH server, use the following commands:

```
switch#configure terminal
```

```
switch(config)#crypto sshserver stop
```

The switch displays the following message:

```
ssh-server stopped
```

To restart a connection with the SSH server, use the following commands:

```
switch#configure terminal
```

```
switch(config)#crypto sshserver restart
```

The switch displays the following message:

```
ssh-server started
```

Related Commands

“CRYPTO KEY GENERATE” on page 378

“CRYPTO KEY ZEROIZE” on page 380

DOT1X SYSTEM-AUTH-CTRL

Syntax

```
dot1x system-auth-ctrl  
no dot1x system-auth-ctrl
```

Parameters

system-auth-ctrl Enable global interface authentication.

Description

Use the DOT1X SYSTEM-AUTH-CTRL command to enable authentication globally on interfaces 1 through 28 or 1 through 52, depending on your switch. Global authentication is disabled by default.

Use the no form of this command to globally disable authentication.

Command Mode

Configuration Terminal mode

Example

The following commands enable 802.1x Port Based Access Control on all interfaces:

```
switch#configure terminal  
switch(config)#dot1x system-auth-ctrl
```

Related Commands

“SHOW DOT1X ALL” on page 512

ENABLE SECRET

Syntax

```
enable secret (8) LINE
```

```
no enable secret (8) LINE
```

Parameters

8 Specifies a hidden password will follow. This is an optional parameter.

LINE Specifies a password for the Privileged Executive Mode. Enter an alphanumeric value.

Description

Use the ENABLE SECRET command to assign a privileged-level password, or secret. After you assign a secret with this command, you can permit a person with the Operator login to have management access by granting them the secret. By default, there is no secret assigned. For information about the Privileged Executive mode commands, see “Privileged Executive Mode” on page 26.

Use the no form of this command to remove the secret.

Command Mode

Configuration Terminal mode

Example

The following command assigns “aloha5551212” as the hidden password:

```
switch#configure terminal
```

```
switch(config)#enable secret 8 aloha5551212
```

Related Commands

none

EXIT

Syntax

`exit`

Parameters

none

Description

Use the EXIT command to quit the Configuration Terminal mode and enter the Privileged Executive mode. After you enter this command, the prompt changes to "Switchname#" to indicate the Privileged Executive mode.

Command Mode

Configuration Terminal mode

Example

The following commands exit the Configuration Terminal mode and returns the software to the Privileged Executive mode:

```
switch#configure terminal
```

```
switch(config)#exit
```

```
switch#
```

Related Commands

none

HELP

Syntax

help

Parameters

none

Description

Use this command to display information about the CLI. The HELP command provides information about the current parameter. There are two forms of the HELP command:

- ❑ Full help is available when you enter a command followed by a space and the question mark (?). This displays all of the parameters for the command.
- ❑ Partial help is available when you enter an abbreviated command or argument immediately followed by the question mark (?) without a space. For example, “show con?” In this case, the software responds by displaying, “SHOW CONFIGURE.”

Command Mode

All modes

Examples

The following is an example of full help and the resulting display:

```
switch#configure terminal
switch(config)#clear?
ip                Internet Protocol (IP)
mac               Clear layer 2 MAC entries
spanning-tree    spanning-tree
```

The following is an example of the partial help and the resulting display:

```
switch#snmp-server u?
switch#snmp-server user
```

Related Commands

none

HOSTNAME

Syntax

```
hostname NAME
```

```
no hostname NAME
```

Parameters

NAME Specifies the name of the switch. Enter a value between 1 and 63 alphanumeric characters. Names must start with a letter and end with a letter or digit. Within the interior of the name, there must only be letters, digits, and hyphens.

Description

Use the HOSTNAME command to assign a name to the switch. Enter a value between 1 and 63 alphanumeric characters. In addition, the name must follow the rules for ARPNET host names.

After you name the switch, the prompt changes to include the name. The new name of the switch appears in all of the command modes.

Use the no form of this command to remove the hostname.

Command Mode

Configuration Terminal mode

Example

The following example assigns “Switch3” as the name of the switch and displays the new prompt:

```
none#configure terminal
none(config)#hostname Switch3
Switch3(config)#
```

Related Commands

none

INTERFACE

Syntax

```
interface IFNAME ge<1-52>
```

Parameters

IFNAME Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with "ge."

Description

Use the INTERFACE command to access the Interface Configuration command mode for the interface specified. After you enter the INTERFACE command, "-if" is added to the prompt. For more information about the commands included in the Interface Configuration mode, see "Interface Configuration Mode" on page 28.

Command Mode

Configuration Terminal mode

Examples

The following commands access the Interface Configuration mode on interface 3 and the resulting display:

```
switch#configure terminal
switch(config)#interface ge3
switch(config-if)#
```

The following commands access the Interface Configuration mode on interface 8 and the resulting display:

```
switch#configure terminal
switch(config)#interface ge8
switch(config-if)#
```

The following commands access the Interface Configuration mode on VLAN 1 and the resulting display (By default, all of the ports are assigned to VLAN 1.):

```
switch#configure terminal
switch(config)#interface vlan1
switch(config-if)#
```

Related Commands

“SHOW MAC ADDRESS-TABLE INTERFACE” on page 311

IP IGMP LIMIT

Syntax

```
ip igmp limit <1-2097152>
no ip igmp limit
```

Parameters

limit Indicates the number of IGMP states allowed on the switch.

Description

Use the IP IGMP LIMIT command to set a limit on the maximum number of group membership entries for the switch. Once this value is reached, all further membership reports are ignored. The default limit on the number of IGMP groups is 0.

The limit is dependent on the Maximum Transmission Unit (MTU) of the interface which is the size, in bytes, of the largest packet that a network protocol can transmit. Typically for an Ethernet channel with an MTU of 1500, the IGMP group membership limit is 183 groups.

Use the no parameter with this command to unset the limit and any specified exception access list.

Command Mode

Configuration Terminal mode

Examples

Use the following commands to set the IGMP limit to 1,000 group membership entries on the switch:

```
switch#configure terminal
switch(config)#ip igmp limit 1000
```

Use the following commands to set the IGMP limit to 50 group membership entries on the switch:

```
switch#configure terminal
switch(config)#ip igmp limit 50
```

Related Commands

“IP IGMP SNOOPING” on page 393

IP IGMP SNOOPING

Syntax

```
ip igmp snooping
no ip igmp snooping
```

Parameters

none

Description

Use the IP IGMP SNOOPING command to enable IGMP Snooping on the switch. When you enter this command at the Configuration Terminal mode, IGMP Snooping is enabled on the switch. By default, the IP IGMP Snooping feature is enabled.

Use the no parameter with this command to globally disable IGMP Snooping for the specified interface.

Command Mode

Configuration Terminal mode

Example

Use the following commands to enable IGMP Snooping on the switch:

```
switch#configure terminal
switch(config)#ip igmp snooping
```

Related Commands

"IP IGMP LIMIT" on page 391

IP ROUTE

Syntax

```
ip route A.B.C.D/m A.B.C.D
```

```
no ip route 0.0.0.0/0 A.B.C.D
```

Parameters

A.B.C.D/m Indicates the IPV4 address and subnet mask of the gateway device. This command only permits you to create a default gateway. Therefore, you must set this parameter to:

```
0.0.0.0/0
```

A.B.C.D Indicates the IP address of the gateway router in the following format:

```
xxx.xxx.xxx.xxx
```

Description

The IP ROUTE command creates a default gateway router so the switch can communicate with devices in another IP network.

Use the no form of this command to remove the default gateway.

Command Mode

Configuration Terminal mode

Examples

The following example sets the gateway IP address to 0.0.0.0, a subnet mask of 0, and a gateway router of 192.168.3.1.1:

```
switch#configure terminal
```

```
switch(config)#ip route 0.0.0.0/0 192.168.3.1.1
```

Related Commands

“IP ADDRESS” on page 117

“IP ADDRESS DHCP” on page 119

IP SSH AUTHENTICATION-TRIES

Syntax

```
ip ssh timeout authentication-tries <0-10>
```

Parameters

authentication-tries Specifies the maximum number of authentication attempts permitted per connection. The default value is 6.

Description

Use the IP SSH AUTHENTICATION-TRIES command to define the number of login attempts on the SSH sever.

There not a no form of this command. To indicate no maximum number of authentication attempt, set the authentication-tries parameter to 0.

To view the current setting of the IP SSH AUTHENTICATION command, use the SHOW CONFIGURATION command.

Command Mode

Configuration Terminal mode

Example

The following commands set the number of authentication tries to 5:

```
switch#configure terminal
switch(config)#ip ssh authentication-tries 5
```

Related Commands

“IP SSH RSA KEYPAIR-NAME” on page 397

“IP SSH TIMEOUT” on page 396

“IP SSH VERSION” on page 398

“SHOW RUNNING-CONFIG” on page 420

IP SSH TIMEOUT

Syntax

```
ip ssh timeout <0-120>
```

Parameters

timeout Indicates the login time out period, in seconds. A value of 0 indicates that there is no time out period. The default value is 120.

Description

Use the IP SSH TIMEOUT command to define the amount of time, in seconds, to log into the SSH sever. After this time period is met, the server disconnects if the user has not successfully logged in.

There not a no form of this command. To indicate no time out period for logging into the SSH server, set the timeout parameter to 0.

To view the current setting of the IP SSH TIMEOUT command, use the SHOW CONFIGURATION command.

Command Mode

Configuration Terminal mode

Examples

The following commands set the login timeout of an SSH server to 120 seconds:

```
switch#configure terminal
switch(config)#ip ssh timeout 120
```

Related Commands

“IP SSH AUTHENTICATION-TRIES” on page 395

“IP SSH RSA KEYPAIR-NAME” on page 397

“IP SSH VERSION” on page 398

“SHOW RUNNING-CONFIG” on page 420

IP SSH RSA KEYPAIR-NAME

Syntax

```
ip ssh rsa keypair-name WORD
no ip ssh rsa keypair-name
```

Parameters

WORD Specifies a name of an RSA keypair.

Description

Use the IP SSH RSA KEYPAIR-NAME command to set the name of an RSA keypair.

Use the no form of this command to remove an RSA keypair.

Command Mode

Configuration Terminal mode

Example

The following commands set the keypair name to "ssh_host_rsa_key5:"

```
switch#configure terminal
switch(config)#ip ssh rsa keypair-name
ssh_host_rsa_key5
```

Related Commands

"IP SSH VERSION" on page 398

IP SSH VERSION

Syntax

```
ip ssh version 1|2
```

```
no ip ssh version
```

Parameters

version Indicates the SSH version number. Choose from the following options:

- 1 Specifies SSH version 1.
- 2 Specifies SSH version 2.

Description

Use the IP SSH VERSION command to set the SSH protocol version number.

Use the no form of this command to set the SSH version number to its default value.

Command Mode

Configuration Terminal mode

Example

The following commands set the switch to SSH version 2:

```
switch#configure terminal
```

```
switch(config)#ip ssh version 2
```

Related Commands

“IP SSH RSA KEYPAIR-NAME” on page 397

LACP SYSTEM-PRIORITY

Syntax

```
lacp system-priority <1-65535>  
no lacp system-priority
```

Parameters

<1-65535> Specifies the LACP port priority. Lower numerical values have higher priorities.

Description

Use the LACP SYSTEM-PRIORITY command to set the system priority of a local system. This is used in determining the system responsible for resolving conflicts in the choice of aggregation groups. The default value is 32,768.

Use the no form of this command to reset the priority of the switch to the default value.

Command Mode

Configuration Terminal mode

Example

The following commands set the switch with an LACP priority of 6700:

```
switch#configure terminal  
switch(config)#lacp system-priority 6700
```

Related Commands

“LACP PORT-PRIORITY” on page 462

LINE CONSOLE

Syntax

```
line console 0-7
```

Parameters

none

Description

The LINE CONSOLE command sets the console configuration and enters the Line mode. The primary terminal line is set to line number 0. After you enter this command, the prompt changes to “switch(config-line)#” to indicate the Line mode.

For more information about the LINE mode, see “Line Mode” on page 30.

Command Mode

Configuration Terminal mode

Example

The following commands set the primary line console to 0:

```
switch#configure terminal  
switch(config)#line console 0  
switch(config-line)#
```

Related Commands

“LOGIN REMOTELOCAL” on page 489

“LINE VTY” on page 491

MAC ADDRESS-TABLE AGING-TIME

Syntax

```
mac address-table aging-time <10-1000000>
```

```
no mac address-table aging-time
```

Parameters

aging-time Indicates the aging time in seconds. Choose a value between 10 and 1,000,000 seconds. The default is 300 seconds.

Description

Use the MAC ADDRESS-TABLE AGING-TIME command to specify the aging-out time for a learned MAC address in a MAC address table. The learned MAC address persists for at least the time specified.

Use the no form to reset this parameter.

For procedures to configure and display the MAC addresses, see “Displaying and Setting MAC Addresses” on page 40.

Command Mode

Configuration Terminal mode

Example

The following commands set the aging time to 120 seconds:

```
switch# configure terminal
```

```
switch#(config)# mac address-table aging-time 120
```

Related Commands

“MAC ADDRESS-TABLE AGING-TIME” on page 401

“MAC ADDRESS-TABLE STATIC DISCARD” on page 402

“MAC ADDRESS-TABLE STATIC FORWARD” on page 404

MAC ADDRESS-TABLE STATIC DISCARD

Syntax

```
mac address-table static MAC discard interface IFNAME
vlan VLANID
```

```
no mac address-table static MAC discard interface
IFNAME VLAN VID
```

Parameters

MAC	Indicates the destination MAC address in the following format: HHHH . HHHH . HHHH
IFNAME	Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”
VLANID	Indicates the VLAN ID. Enter a value between 2 and 4,094. If you do not enter a value, VLAN 1 is assumed by default.

Description

Use the MAC ADDRESS-TABLE STATIC DISCARD command to discard frames with a matching destination MAC address. The switch discards packets with the specified source or destination MAC address. Only unicast static addresses are supported. By default, this command is disabled.

Use the no form of this command to reset it.

For procedures to configure and display the MAC addresses, see “Displaying and Setting MAC Addresses” on page 40.

Command Mode

Configuration Terminal mode

Example

The following commands discard the MAC address “000C.6E73.2BC4” on interface 4 on VLAN 9:

```
switch# configure terminal  
  
switch#(config)# mac address-table static  
000C.6E73.2BC4 discard interface ge4 vlan 9
```

Related Commands

“MAC ADDRESS-TABLE STATIC FORWARD” on page 404

“MAC ADDRESS-TABLE AGING-TIME” on page 401

“SHOW MAC ADDRESS-TABLE” on page 305

MAC ADDRESS-TABLE STATIC FORWARD

Syntax

```
mac address-table static MAC forward interface IFNAME
vlan VLANID
```

```
no mac address-table static MAC forward interface
IFNAME vlan VLANID
```

Parameters

MAC	Indicates the static MAC address in the following format: HHHH . HHHH . HHHH
IFNAME	Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”
VLANID	Indicates the VLAN ID. Enter a value between 2 and 4094. If you do not enter a value, VLAN 1 is assumed by default.

Description

The MAC ADDRESS-TABLE STATIC FORWARD command to forward frames with a matching destination MAC address. Only unicast static addresses are supported. By default, this command is disabled.

Use the no form of this command to reset it.

For procedures to configure and display the MAC addresses, see “Displaying and Setting MAC Addresses” on page 40.

Command Mode

Configuration Terminal mode

Example

The following example sets the MAC address of “000C.6E73.2BC4” on interface 3 and VLAN 2:

```
switch# configure terminal
switch#(config)# mac address-table static
000C.6E73.2BC4 forward interface ge3 vlan 2
```

Related Commands

“MAC ADDRESS-TABLE AGING-TIME” on page 401

“MAC ADDRESS-TABLE STATIC DISCARD” on page 402

“SHOW MAC ADDRESS-TABLE” on page 305

MLS QOS

Syntax

```
mls qos <0-10> <0-7> | <0-10> <0-7> | <0-10> <0-7> |
<0-10> <0-7> | <0-10> <0-7> | <0-10> <0-7> | <0-10> <0-7> | <0-10> <0-7> |
```

Parameters

<0-10>	Specifies the weight for queue 0, where 0 indicates strict priority.
<0-7>	Specifies the priority for queue 0, where 0 indicates strict priority.
<0-10>	Specifies the weight for queue 1, where 0 indicates strict priority.
<0-7>	Specifies the priority for queue 1, where 0 indicates strict priority.
<0-10>	Specifies the weight for queue 2, where 0 indicates strict priority.
<0-7>	Specifies the priority for queue 2, where 0 indicates strict priority.
<0-10>	Specifies the weight for queue 3, where 0 indicates strict priority.
<0-7>	Specifies the priority for queue 3, where 0 indicates strict priority.
<0-10>	Specifies the weight for queue 4, where 0 indicates strict priority.
<0-7>	Specifies the priority for queue 4, where 0 indicates strict priority.
<0-10>	Specifies the weight for queue 5, where 0 indicates strict priority.
<0-7>	Specifies the priority for queue 5, where 0 indicates strict priority.
<0-10>	Specifies the weight for queue 6, where 0 indicates strict priority.

- <0-7> Specifies the priority for queue 6, where 0 indicates strict priority.
- <0-10> Specifies the weight for queue 7, where 0 indicates strict priority.
- <0-7> Specifies the priority for queue 7, where 0 indicates strict priority.

Description

The MLS QOS command to define queues for the Quality of Service feature. This command configures the default queues for any packet arriving on the specified interface. You must configure all of the queues.

Use the no form of this command to turn off the use of a default queue.

Command Mode

Configuration Terminal mode

Example

The following example sets queue 0 with a weight of 10 and a priority of 7, queue 1 with a weight of 9 and a priority of 6, and the remaining queues with a weight of 1 and a priority of 1:

```
switch# configure terminal
switch#(config)# mls qos 10 7 9 6 1 1 1 1 1 1 1 1 1 1 1
1
```

Related Commands

“USER-PRIORITY” on page 484

MLS QOS ENABLE

Syntax

```
mls qos enable  
no mls qos enable
```

Parameters

none

Description

The MLS QOS ENABLE command to enable the Quality of Service (QoS) feature on the switch.

Use the no form of this command to disable QoS on the switch and remove all QoS configuration.

Command Mode

Configuration Terminal mode

Example

The following commands enables QoS on the switch:

```
switch# configure terminal  
switch#(config)# mls qos enable
```

Related Commands

“MLS QOS” on page 406

NTP AUTHENTICATE

Syntax

```
ntp authenticate
no ntp authenticate
```

Parameters

none

Description

Use the NTP AUTHENTICATE command to enable authentication of the Network Time Protocol (NTP) time source. When NTP is enabled, this protocol authenticates the associations with other systems for security purposes. By default, this command is disabled.

To disable NTP authentication on the switch, use the no form of this command.

For procedures to configure NTP, see “Setting the Network Time” on page 37.

Command Mode

Configuration Terminal mode

Example

The following commands enable authentication of the NTP time source:

```
switch#configure terminal
switch(config)#ntp authenticate
```

Related Commands

“CLOCK SUMMER-TIME RECURRING” on page 374

“CLOCK TIMEZONE” on page 376

“NTP TRUSTED-KEY” on page 414

NTP AUTHENTICATION-KEY

Syntax

```
ntp authentication-key KEYNUMBER <1-4294967295>
md5 KEY
```

```
no ntp authentication-key KEYNUMBER <1-4294967295> md5
KEY
```

Parameters

KEYNUMBER Specifies a key number. Choose a value between 1 and 4,294,967,295. This key indicates a trusted time source.

MD5 Indicates MD5 (message digest algorithm 5) authentication.

KEY Specifies the name of an authentication key.

Description

Use the NTP AUTHENTICATION-KEY command to define an authentication key for a trusted time source. Each key has a key number, a type, and a value. Currently, the only key type supported is MD5. If you create a key, the AT-S100 software only synchronizes to a system that carries one of the authentication keys specified. By default, this command is disabled.

To disable an authentication key, use the no form of this command.

For procedures to configure NTP, see “Setting the Network Time” on page 37.

Command Mode

Configuration Terminal mode

Example

The following commands specify an authentication key of “888” and a key name of “topsecretkey:”

```
switch#configure terminal
switch(config)#ntp authentication-key 888 md5
topsecretkey
```

Related Commands

“NTP AUTHENTICATE” on page 409

“NTP TRUSTED-KEY” on page 414

NTP SERVER

Syntax

```
ntp server WORD key <1-4294967295>[prefer|version <1-4>]
```

```
no ntp server WORD
```

Parameters

WORD	Indicates the IP address of the NTP server. Use the following format: xxx.xxx.xxx.xxx
key	Indicates the key number of the authentication key. This is a peer key number that permits access to the specified NTP server. Enter a value between 1 and 4,294,967,295.
prefer	Specifies the software prefers this peer when possible.
version	Indicates the NTP version. Specify versions 1 through 4.

Description

Use the NTP SERVER command to specify the IP address of the NTP server, a key to access the server, and the NTP version number. In addition, you can specify if the software prefers this NTP server over other NTP servers and the NTP version.

Note

To add more than one NTP server to the switch, enter a second NTP SERVER command with another IP address.

Use the no form of this command to remove the IP address of the NTP server.

For procedures to configure NTP, see “Setting the Network Time” on page 37.

Command Mode

Configuration Terminal mode

Example

The following commands set the IP address of the NTP server to 198.11.1.9 and shows the resulting display:

```
switch#configure terminal
switch(config)#ntp server 198.11.1.9
Translating "198.11.1.9"... [OK]
```

Related Commands

"NTP AUTHENTICATE" on page 409

"NTP AUTHENTICATION-KEY" on page 410

"NTP TRUSTED-KEY" on page 414

NTP TRUSTED-KEY

Syntax

```
ntp trusted-key <1-4294967295>  
no ntp trusted-key <1-4294967295>
```

Parameters

none

Description

Use the NTP TRUSTED-KEY command to define a list of trusted authenticated keys. You must first define a key number with the NTP AUTHENTICATION-KEY command. If a key is trusted, this switch is ready to synchronize to a system that uses this key in its NTP packets. Enter a value between 1 and 4,294,967,295.

By default, no trusted keys are defined. To disable the authentication of a device, use the no form of this command.

For procedures to configure NTP, see “Setting the Network Time” on page 37.

Command Mode

Configuration Terminal mode

Example

The following commands set the trusted key to 222,222:

```
switch#configure terminal  
switch(config)#ntp trusted-key 222222
```

Related Commands

“NTP AUTHENTICATE” on page 409

“NTP AUTHENTICATION-KEY” on page 410

“NTP SERVER” on page 412

SERVICE ADVANCED-VTY

Syntax

```
service advanced-vty
no service advanced-vty
```

Parameters

none

Description

Use the SERVICE ADVANCED-VTY command to turn on the Tab completion for commands. When multiple options are possible, the help feature displays all of the possible options. This feature is enabled by default.

When this feature is enabled, pressing the Tab key fills in the rest of the keyword automatically. For example, typing “di” and then pressing the Tab key enters “disable” on the command line.

Use the no form of this command to disable the Tab completion feature.

Command Mode

Configuration Terminal mode

Examples

The following commands turn on the TAB completion for commands:

```
switch#configure terminal
switch(config)#service advanced-vty
```

The following commands disable TAB completion for commands:

```
switch#configure terminal
switch(config)#no service advanced-vty
```

Related Commands

“SERVICE PASSWORD-ENCRYPTION” on page 416

“SERVICE TERMINAL-LENGTH” on page 417

SERVICE PASSWORD-ENCRYPTION

Syntax

```
service password-encryption  
no service password-encryption
```

Parameters

none

Description

Use the SERVICE PASSWORD-ENCRYPTION command to enable password encryption. When this feature is enabled, the switch displays passwords in the running configuration in encrypted form instead of in plain text. This feature is enabled by default.

Use the no form of this command to stop the switch from displaying newly entered passwords in encrypted form. Issuing this command does not change the display of existing commands.

Command Mode

Configuration Terminal mode

Examples

The following commands enable password encryption:

```
switch#configure terminal  
switch(config)#service password-encryption
```

The following commands cause the switch to display newly entered passwords in plain text:

```
switch#configure terminal  
switch(config)#no service password-encryption
```

Related Commands

“SERVICE ADVANCED-VTY” on page 415

“SERVICE TERMINAL-LENGTH” on page 417

SERVICE TERMINAL-LENGTH

Syntax

```
service terminal-length <0-512>  
no service terminal-length
```

Parameters

none

Description

Use the SERVICE TERMINAL-LENGTH command to specify the number of rows of output that the software displays before pausing for all console and VTY lines.

Use the no form of this command to remove the length specified by this command.

Command Mode

Configuration Terminal mode

Example

The following commands sets the number of rows to be displayed to 25 rows:

```
switch#configure terminal  
switch(config)#service terminal-length 25
```

Related Commands

“SERVICE ADVANCED-VTY” on page 415

“SERVICE PASSWORD-ENCRYPTION” on page 416

SHOW LIST

Syntax

```
show list
```

Parameters

none

Description

Use the SHOW LIST command to display a list of all the commands available in the current mode.

The display of the SHOW LIST command is often more than one page. To advance the display to the next line, press ENTER. To advance the display to the next page, press ESC.

Command Mode

All modes

Example

Use the following commands to display the commands available in the current mode:

```
switch#configure terminal
```

```
switch(config)#show list
```

See Figure 125 on page 419 for a sample display of the SHOW LIST command in the Privileged Executive mode.

```
(switch3)#show list
boot config-file WORD
cat WORD
clear arp-cache
clear counters IFNAME
clear gmrp statistics all
clear gmrp statistics vlanid <1-4094>
clear gvrp statistics IFNAME
clear gvrp statistics all
clear gvrp statistics all
clear ipmg
clear ipmg group *
clear ipmg group A.B.C.D
clear ipmg group A.B.C.D IFNAME
--More--
```

Figure 125. SHOW LIST Command

Related Commands

“SHOW RUNNING-CONFIG” on page 420

“SHOW RUNNING-CONFIG INTERFACE” on page 426

SHOW RUNNING-CONFIG

Syntax

```
show running-config
```

Parameters

none

Description

Use the SHOW RUNNING-CONFIG command to display information about the system.

The display of the SHOW RUNNING-CONFIG command is often more than one page. To advance the display to the next line, press ENTER. To advance the display to the next page, press ESC.

Command Mode

All modes

Example

The following is an example of the SHOW RUNNING-CONFIG command and a sample of the output:

```
switch#show running-config
```

This command displays a variety of switch parameters. An example of screen 1 of the display is shown in Figure 126.

```
switch(config)# show running-config
!
no service password-encryption
!
log file system max-file-size 4096 level 7
username manager privilege 15 password friend
username operator password operator
!
snmp-server enable
!
ip multicast-routing
!
spanning-tree mode rstp
spanning-tree acquire
!
!
vlan database
vlan 2 name VLAN0002
vlan 2 state enable
vlan 3 name VLAN0003
vlan 3 state enable
!
interface ge1
switchport mode trunk
switchport trunk allowed vlan add 2
switchport trunk allowed vlan add 3
interface ge2
traffic-class-table user-priority 7 num-traffic-classes 2 value 0
interface ge3
switchport mode trunk
switchport trunk allowed vlan add 3
--More--
```

Figure 126. SHOW RUNNING-CONFIG Command, Screen 1

See Figure 127 for screen 2 of the SHOW RUNNING-CONFIG command display.

```
interface ge4
static-channel-groups
interface ge5
static-channel-group4
interface ge6
user-priority 7
interface ge7
mtu 1518
interface ge8
!
interface ge9
!
interface ge10
!
!interface ge11
!
interface ge12
!
interface ge13
!
interface ge14
!
interface ge15
!
interface ge16
!
interface ge17
!
interface ge18
!
interface ge19
!
interface ge20
!
interface ge21
!
!interface ge22
!
interface ge23
!
interface ge24
!
interface ge25
--More--
```

Figure 127. SHOW RUNNING-CONFIG Command, Screen 2

See Figure 128 for screen 3 of the SHOW RUNNING-CONFIG command display.

```
interface ge26
!
interface ge27
!
interface lo
  ip address 127.0.0.1/8
  shutdown
!
interface vlan1
  ip address 192.10.4.110/8
!
interface vlan2
  shutdown
!
interface vlan3
  shutdown
!
no snmp-server enable trap snmp auth
no spanning-tree rstp enable forward
!
clock summer-time PDT recurring 2 sun mar 02:00 1 sun nov 02:00
line con 0
  login local
line vty 0 4
  login local
!
end
```

Figure 128. SHOW RUNNING-CONFIG Command, Screen 3

Related Commands

“SHOW LIST” on page 418

“SHOW RUNNING-CONFIG INTERFACE” on page 426

SHOW RUNNING-CONFIG FULL

Syntax

```
show running-config full
```

Parameters

none

Description

Use the SHOW RUNNING-CONFIG FULL command to display full configuration information about the system.

The display of the SHOW RUNNING-CONFIG FULL command is often more than one page. To advance the display to the next line, press ENTER. To advance the display to the next page, press ESC.

Command Mode

All modes

Example

The following is an example of the SHOW RUNNING-CONFIG FULL command and a sample of the output:

```
switch#configure terminal
```

```
switch(config)#show running-config full
```

This command displays a variety of switch parameters. An example of page one of the display is shown in Figure 129.

```
switch(config)# show running-config full
!
no service password-encryption
!
log file system max-file-size 4096 level 7
username manager privilege 15 password friend
username operator password operator
!
interface lo
ip address 127.0.0.1/8
!
interface vlan1
ip address 127.0.0.5/8!
!
interface vlan2
ip address 127.0.0.7/8
!
ip route 5.5.5.0/24 10.10.16.2
!
line con 0
login
line vty 0 4
login
!
```

Figure 129. SHOW RUNNING-CONFIG FULL Command

Related Commands

“SHOW LIST” on page 418

“SHOW RUNNING-CONFIG” on page 420

“SHOW RUNNING-CONFIG INTERFACE” on page 426

SHOW RUNNING-CONFIG INTERFACE

Syntax

```
show running-config interface INTERFACE
bridge|dot1x|lacp|rstp|stp
```

Parameters

INTERFACE	Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with "ge." To specify a VLAN, use the VLAN ID.
bridge	Displays the running configuration for a bridge for the specified interface.
dot1x	Displays the running configuration for 802.1X port authentication for the specified interface.
rstp	Displays the running configuration for RSTP (Rapid Spanning Tree Protocol) for the specified interface.
stp	Displays the running configuration for STP (Spanning Tree Protocol) for the specified interface.

Description

Use the SHOW RUNNING-CONFIG INTERFACE command to display the current configuration of an interface on the switch.

Note

Although the ip igmp and mstp parameters appear in the software for the SHOW RUNNING-CONFIG INTERFACE command, they are not supported in this release.

Command Modes

Privileged Executive, Configuration Terminal, Interface Configuration, VLAN Configuration, and Line modes

Examples

To display the status of the SHOW RUNNING-CONFIG INTERFACE command on port 4, enter the following command:

```
switch#show running-config interface vlan1
```

See Figure 130 for an example display.

```
!
interface vlan1
  ip address 192.168.8.10/8
!
```

Figure 130. SHOW RUNNING-CONFIG INTERFACE Port Example

To display the status of the current running configuration of port 1 for a bridge, enter the following command:

```
switch#show running-config interface ge1 bridge
```

See Figure 131 for an example display.

```
!
interface ge1
  switchport mode trunk
  switchport trunk allowed vlan add2
  switchport trunk allowed vlan add3
!
```

Figure 131. SHOW RUNNING-CONFIG INTERFACE Bridge Example

To display the status of the current running configuration of port 2 for the 802.1x Access Control feature, enter the following command:

```
switch#show running-config interface ge2 dot1x
```

See Figure 132 for an example display.

```
!
interface ge2
  dot1x port-control force-authorized
  dot1x port-control dir both
!
```

Figure 132. SHOW RUNNING-CONFIG INTERFACE DOT1X Example

Related Commands

“SHOW RUNNING-CONFIG” on page 420

SHOW RUNNING-CONFIG IP IGMP SNOOPING

Syntax

```
show running-config ip igmp snooping
```

Parameters

ip igmp snooping Displays the running configuration for the IP IGMP snooping feature.

Description

Use the SHOW RUNNING-CONFIG IP IGMP SNOOPING command to display the running system status and configuration details for the IP IGMP snooping feature.

Command Mode

Configuration Terminal and Privileged Executive modes

Example

To display the status of the SHOW RUNNING-CONFIG IP IGMP SNOOPING command, enter the following:

```
switch#configure terminal  
switch(config)#show running-config ip igmp snooping
```

Related Commands

“SHOW RUNNING-CONFIG” on page 420

SHOW RUNNING-CONFIG SWITCH

Syntax

```
show running-config switch dot1x|mstp|rstp|stp
```

Parameters

dot1x	Displays the running configuration for 802.1X Port-Based Authentication.
gmrp	Displays the running configuration for GARP Multicast Registration Protocol.
gvrp	Displays the running configuration for GVRP GARP VLAN Registration Protocol.
mstp	Displays the running configuration for MSTP (Multiple Spanning Tree Protocol)
rstp	Displays the running configuration for RSTP (Rapid Spanning Tree Protocol).
stp	Displays the running configuration for STP (Spanning Tree Protocol).

Description

Use the SHOW RUNNING-CONFIG SWITCH command to display the running system status and configuration details for a given switch.

Note

The MSTP parameter is not supported in this release.

Command Mode

Privileged Executive and Configuration Terminal modes

Example

To display the status of the SHOW RUNNING-CONFIG SWITCH command for STP, enter the following:

```
switch#configure terminal
```

```
switch(config)#show running-config switch stp
```

See Figure 133 for an example display.

```
!  
bridge 6 aging-time 45  
bridge 6 priority 4096  
bridge 6 max-age 7
```

Figure 133. SHOW RUNNING-CONFIG SWITCH STP Example

Related Commands

“SHOW RUNNING-CONFIG” on page 420

SHOW RUNNING-CONFIG SWITCH LACP

Syntax

```
show running-config switch lacp
```

Parameters

lacp Displays the running configuration for LACP.

Description

Use the SHOW RUNNING-CONFIG SWITCH LACP command to display the running system LACP related configuration.

Command Mode

Privileged Executive and Configuration Terminal modes

Example

To display the status of the SHOW RUNNING-CONFIG SWITCH LACP command, enter the following:

```
switch#configure terminal  
switch(config)#show running-config switch lacp
```

See Figure 134 for an example display.

```
!  
lacp system-priority 23  
!
```

Figure 134. SHOW RUNNING-CONFIG SWITCH LACP Example

Related Commands

“SHOW RUNNING-CONFIG” on page 420

SHOW RUNNING-CONFIG SWITCH RADIUS-SERVER

Syntax

```
show running-config switch radius-server
```

Parameters

radius-server Displays the running configuration for RADIUS.

Description

Use the SHOW RUNNING-CONFIG SWITCH RADIUS-SERVER command to display the running system RADIUS-server related configuration.

Command Mode

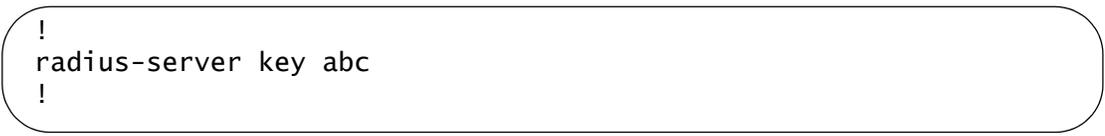
Privileged Executive and Configuration Terminal modes

Example

To display the status of the RADIUS-SERVER configuration, enter the following:

```
switch#configure terminal
switch(config)#show running-config switch radius-
server
```

See Figure 135 for an example display.



```
!
radius-server key abc
!
```

Figure 135. SHOW RUNNING-CONFIG SWITCH RADIUS-SERVER Example

Related Commands

“SHOW RUNNING-CONFIG” on page 420

SHOW RUNNING-CONFIG SWITCH VLAN

Syntax

```
show running-config switch vlan
```

Parameters

VLAN Displays the running configuration for VLAN.

Description

Use the SHOW RUNNING-CONFIG SWITCH VLAN command to display the running system VLAN-related configuration.

Command Mode

Privileged Executive and Configuration Terminal modes

Example

To display the status of the VLAN configuration, enter the following:

```
switch#configure terminal
switch(config)#show running-config switch vlan
```

See Figure 136 for an example display.

```
!
vlan database
vlan 4 bridge 2 name VLAN0004
vlan 4 bridge 2 state enable
!
```

Figure 136. SHOW RUNNING-CONFIG SWITCH VLAN Example

Related Commands

“SHOW RUNNING-CONFIG” on page 420

USERNAME

Syntax

```
username WORD privilege <1-15> password LINE <8>
```

```
no username WORD
```

Parameters

WORD Specifies a user name.

privilege Specifies a user privilege level. Enter a value between 1 and 15. Values 1 through 14 provide operator privileges. Value 15 provides an administrator, or manager, privileges.

LINE Specifies a password for an administrator or manager. Enter an alphanumeric value between 1 and 8 characters in length.

Description

Use the USERNAME command to set a user name, password, and privilege level. By default, the AT-S100 software provides one USERNAME type named “manager” and one called “operator.” A manager login has permission to perform all of the AT-S100 software commands in all of the command modes. An operator login only has access to the View mode.

Use the no form of this command to delete a user name.

Command Modes

Configuration Terminal mode

Examples

The following command sets the user name to “jenny,” the privilege to “15,” and the password to “friend:”

```
switch#configure terminal
```

```
switch(config)#username jenny privilege 15 password friend
```

Related Commands

“ENABLE SECRET” on page 384

Chapter 6

Log Server Commands

The commands in this chapter can be used set the log server feature and display log files in the Configuration Terminal mode.

This chapter contains the following commands:

- ❑ “CLEAR LOG” on page 436
- ❑ “LOG BUFFERED” on page 437
- ❑ “LOG CONSOLE” on page 438
- ❑ “LOG FILE” on page 440
- ❑ “LOG HOST” on page 442
- ❑ “LOG RECORD-PRIORITY” on page 443
- ❑ “LOG STDOUT” on page 444
- ❑ “LOG SYSLOG” on page 446
- ❑ “LOG TRAP” on page 447

Note

To display the current log server configuration, use the SHOW RUNNING-CONFIG command.

CLEAR LOG

Syntax

```
clear console FILENAME
```

Parameters

FILENAME Indicates the name of a log file.

Description

Use the CLEAR LOG command to clear the contents of the buffered and permanent logs.

Command Mode

Configuration Terminal mode

Examples

The following commands clear a log file called “tuesday.txt:”

```
switch#configure terminal  
switch(config)#clear log tuesday.txt
```

The following commands delete a log file called “friday.log:”

```
switch#configure terminal  
switch(config)#no clear log friday.log
```

Related Commands

“LOG FILE” on page 440

“LOG SYSLOG” on page 446

LOG BUFFERED

Syntax

```
log buffered <4096-4294967295>  
no log buffered
```

Parameters

none

Description

Use the LOG BUFFERED command to store log messages in RAM and set a maximum allowable buffer size in bytes. Messages stored in RAM are not retained on the switch after a restart. Once the buffered log reached its configured maximum allowable size, old messages are deleted to make way for new ones. The buffered log is configured by default.

Use the no form of this command to stop storing log files in RAM.

Command Mode

Configuration Terminal mode

Examples

The following commands set the maximum allowable size of the buffered log file to 5,000 bytes:

```
switch#configure terminal  
switch(config)#log buffered 5000
```

The following commands stop storing log files in RAM:

```
switch#configure terminal  
switch(config)#no log buffered
```

Related Commands

“LOG CONSOLE” on page 438

LOG CONSOLE

Syntax

```
log console <0-7>
```

```
no log console
```

Parameters

0-7 Indicates the minimum severity level to send a message to the buffered log. The level can be specified as one of the following numbers:

- 0 Indicates emergencies and that the system is unusable.
- 1 Indicates alerts and that action must be taken immediately.
- 2 Indicates critical conditions.
- 3 Indicates error conditions.
- 4 Indicates warning conditions.
- 5 Indicates notices which are normal but significant conditions.
- 6 Indicates informational messages.
- 7 Indicates debug level messages.

Description

Use the LOG CONSOLE command to set the switch to send log messages to consoles and indicate the severity level of the message. The console log is configured by default to send messages to the switch's main console port.

Use the no form of this command to configure the device not to send log messages to consoles.

Command Mode

Configuration Terminal mode

Examples

The following commands display logging messages that indicate an alert on the console:

```
switch#configure terminal
switch(config)#log console 1
```

The following commands display error messages on the console:

```
switch#configure terminal
switch(config)#log console 3
```

The following commands stop logging information from being displayed on the console:

```
switch#configure terminal
switch(config)# no log console
```

Related Commands

“LOG BUFFERED” on page 437

“LOG FILE” on page 440

“SHOW LOG” on page 155

LOG FILE

Syntax

```
log file FILENAME level <0-7>
```

```
no log file FILENAME
```

Parameters

FILENAME Specifies the name of the log file.

level Indicates the minimum severity level to send a message to the buffered log. The level can be specified as one of the following numbers:

- 0 Indicates emergencies and that the system is unusable.
- 1 Indicates alerts and that action must be taken immediately.
- 2 Indicates critical conditions.
- 3 Indicates error conditions.
- 4 Indicates warning conditions.
- 5 Indicates notices which are normal but significant conditions.
- 6 Indicates informational messages.
- 7 Indicates debug level messages.

Description

Use the LOG FILE command to create a log file and indicate the severity level of the messages that are included in the log.

Use the no form of this command to disable the log file on the switch.

Command Mode

Configuration Terminal mode

Examples

The following commands create a log file called “tuesday.log” that logs notices:

```
switch#configure terminal
switch(config)#log file tuesday.log level 5
```

The following commands create a log file called “wednesday.log” that logs informational messages:

```
switch#configure terminal
switch(config)#log file wednesday.log level 6
```

The following commands remove a log file called “monday.log” from the switch:

```
switch#configure terminal
switch(config)#no log file monday.log
```

Related Commands

“LOG BUFFERED” on page 437

“LOG CONSOLE” on page 438

LOG HOST

Syntax

log host WORD

no log host WORD

Parameters

WORD Specifies the IP address of the SYSLOG server. Use the following format:

xxx.xxx.xxx.xxx

Description

Use the LOG HOST command to configure the switch to send log messages to a remote SYSLOG server. You must specify the IP address of the remote server in this command.

Use the no form of this command to stop the switch from sending log messages to a remote SYSLOG server.

Command Mode

Configuration Terminal mode

Example

The following commands specifies IP address 192.168.12.1 as the SYSLOG server:

```
switch#configure terminal
```

```
switch(config)#log file host 192.168.12.1
```

The system displays the following:

```
Translating "192.168.12.1"... [OK]
```

Related Commands

“LOG CONSOLE” on page 438

“LOG SYSLOG” on page 446

LOG RECORD-PRIORITY

Syntax

```
log record-priority  
no log record-priority
```

Parameters

none

Description

Use the LOG RECORD-PRIORITY command to record, or log, the priority of the message within the message.

Use the no form of this command to stop recording the priority of the message within the message.

Command Mode

Configuration Terminal mode

Example

The following commands adds the priority of the message within the message:

```
switch#configure terminal  
switch(config)#log record-priority
```

Related Commands

none

LOG STDOUT

Syntax

```
log stdout
```

```
no log stdout
```

Parameters

none

Description

Use the LOG STDOUT command to direct logging information in standard output on the console.

Use the no form of this command to stop directing logging information in standard output on the console.

Command Mode

Configuration Terminal mode

Example

The following commands directs logging information to the stdout file:

```
switch#configure terminal
```

```
switch(config)#log stdout
```

See Figure 137 on page 445 for an example of the LOG STDOUT command and its resulting output.

```
(none)#configuration terminal
Enter configuration commands, one per line. End with CNTL/Z
(none)(config)#log stdout
(none)(config)#2000/01/01 00:01:16 : NSM: [IGMP-DECODE] Socket Read:
IGMP Msg (IPHdrLen=20) with out RA-OPT
2001/01/01 00:01:16 NSM: [IGMP-DECODE] Socket Read: IGMP Msg
(IPHdrLen=20 without RA-OPT
2001/01/01 00:01:31 NSM: [IGMP-EVENTS] Warn R-Limit Timer: 1V2 Query Msgs
received on ge23 configured for v3
2001/01/01 00:02:27 NSM: [IGMP-DECODE] Socket Read: IGMP Msg
(IPHdrLen=20) with out RA-OPT
2001/01/01 00:02:27 NSM: [IGMP-DECODE] Socket Read: IGMP Msg
(IPHdrLen=20) with out RA-OPT
2001/01/01 00:01:31 NSM: [IGMP-EVENTS] Warn R-Limit Timer: 1V2 Query Msgs
received on ge23 configured for v3
```

Figure 137. LOG STDOUT Command

Related Commands

“LOG CONSOLE” on page 438

“LOG SYSLOG” on page 446

LOG SYSLOG

Syntax

```
log syslog
```

```
no log syslog
```

Parameters

none

Description

Use the LOG SYSLOG command to create a system log for the switch.

Command Mode

Configuration Terminal mode

Examples

The following commands create a system log:

```
switch#configure terminal
```

```
switch(config)#log syslog
```

The following commands turn off the system log:

```
switch#configure terminal
```

```
switch(config)#no log syslog
```

Related Commands

“LOG HOST” on page 442

LOG TRAP

Syntax

```
log trap
alerts|critical|debugging|emergencies|errors|informati
onal|notifications|warnings
```

```
no log trap
```

Parameters

emergencies	Indicates that logging is limited to emergency traps.
alerts	Indicates that logging is limited to alert traps.
critical	Indicates that logging is limited to critical traps.
errors	Indicates that logging is limited to error traps.
warnings	Indicates that logging is limited to warning traps.
notifications	Indicates that logging is limited to notification traps.
informational	Indicates that logging is limited to informational traps.
debugging	Indicates that logging is limited to debugging traps.

Description

Use the LOG TRAP command to limit the information in the logging file to the trap specified. You can only specify one of the trap parameters per command.

Use the no form of this command to stop collecting a trap type.

Command Mode

Configuration Terminal mode

Examples

The following commands limit the logging file to collecting information about alert traps:

```
switch#configure terminal
switch(config)#log trap alerts
```

The following commands limit the logging file to collecting information about error traps:

```
switch#configure terminal
```

```
switch(config)#log trap errors
```

Related Commands

See Chapter 13, “Simple Network Management Protocol (SNMP) Commands” on page 547.

Chapter 7

Interface Configuration Mode Commands

This chapter provides descriptions of the commands in the Interface Configuration mode which can access either a port or a vlan interface. For more information about this mode, see “Interface Configuration Mode” on page 28.

This chapter describes the following commands:

- ❑ “CHANNEL-GROUP” on page 451
- ❑ “DOT1X PORT-CONTROL” on page 453
- ❑ “EXIT” on page 454
- ❑ “FLOW CONTROL BACKPRESSURE” on page 455
- ❑ “FLOW CONTROL RECEIVE” on page 456
- ❑ “FLOW CONTROL SEND” on page 457
- ❑ “IP ADDRESS” on page 458
- ❑ “IP ADDRESS DHCP” on page 461
- ❑ “LACP PORT-PRIORITY” on page 462
- ❑ “MDIX” on page 463
- ❑ “MIRROR INTERFACE DIRECTION” on page 464
- ❑ “MTU” on page 466
- ❑ “SHOW RUNNING-CONFIG INTERFACE” on page 467
- ❑ “SHUTDOWN” on page 469
- ❑ “SPANNING-TREE PORTFAST BPDU-GUARD” on page 470
- ❑ “SPEED” on page 472
- ❑ “STATIC-CHANNEL-GROUP” on page 475
- ❑ “STORM-CONTROL” on page 476
- ❑ “SWITCHPORT ACCESS VLAN” on page 478
- ❑ “SWITCHPORT MODE TRUNK” on page 479
- ❑ “SWITCHPORT TRUNK ALLOWED VLAN” on page 481
- ❑ “TRAFFIC-CLASS-TABLE USER-PRIORITY NUM-TRAFFIC-CLASSES” on page 483
- ❑ “USER-PRIORITY” on page 484
- ❑ “USER-PRIORITY-REGEN-TABLE” on page 485

Note

For information about port security commands which are also in the Interface Configuration mode, see Chapter 12, “Port Security Commands” on page 539.

CHANNEL-GROUP

Syntax

```
channel-group <1-10> mode active|passive
```

```
no channel-group <1-10>
```

Parameters

<1-10> Specifies a channel group. Enter a value between 1 and 10.

mode Specifies the status of LACP negotiation on a port. Choose from the following:

active Enables initiation of LACP negotiation on a port.

passive Disables initiation of LACP negotiation on a port.

Description

Use the CHANNEL-GROUP command to create a channel-group and enable or disable LACP negotiation on a port. To remove a channel group from an interface, use the no form of this command.

Command Mode

Interface Configuration mode

Examples

The following commands create channel group 3 and make it active on port 20:

```
switch# configure terminal
```

```
switch(config)# interface ge20
```

```
switch(config-if)# channel-group 3 mode active
```

To disable LACP on port 7 and channel group 2 (and leave it as a static channel group), enter the following commands:

```
switch# configure terminal
```

```
switch(config)# interface ge7
```

```
switch(config-if)# channel-group 2 mode passive
```

To remove port 7 from the LACP channel group 2, enter the following commands:

```
switch# configure terminal
```

```
switch(config)# interface ge7
```

```
switch(config-if)# no channel-group 2 mode active
```

Related Commands

“SHOW RUNNING-CONFIG” on page 420

“SHOW ETHERCHANNEL” on page 262

DOT1X PORT-CONTROL

Syntax

```
dot1x port-control auto|force-authorized|force-
unauthorized dir=both|in
```

```
no dot1x port-control
```

Parameters

force-authorized	Forces an interface to an authorized state.				
force-unauthorized	Forces an interface to an unauthorized state.				
auto	Allows a client to negotiate authentication on an interface.				
dir	Specifies the packet control direction, where: <table> <tr> <td>both</td> <td>Discards receive and transmit packets from the supplicant.</td> </tr> <tr> <td>in</td> <td>Discards receive packets from the supplicant.</td> </tr> </table>	both	Discards receive and transmit packets from the supplicant.	in	Discards receive packets from the supplicant.
both	Discards receive and transmit packets from the supplicant.				
in	Discards receive packets from the supplicant.				

Description

Use the DOT1X PORT-CONTROL command to force a port state on an interface. To remove an interface from the 802.1x management, use the no form of this command.

Command Mode

Interface Configuration mode

Example

The following commands enable authentication on interface 20:

```
switch# configure terminal
switch(config)# interface ge20
switch(config-if)# dot1x port-control auto
```

Related Commands

none

EXIT

Syntax

`exit`

Parameters

none

Description

Use the EXIT command to quit the Configuration Terminal mode and enter the Privileged Executive mode. After you enter this command, the prompt changes to “Switchname#” to indicate the Privileged Executive mode.

Command Mode

Configuration Terminal mode

Example

The following commands exit the Configuration Terminal mode and returns the software to the Privileged Executive mode:

```
switch#configure terminal
```

```
switch(config)#exit
```

```
switch#
```

Related Commands

none

FLOW CONTROL BACKPRESSURE

Syntax

```
flow control backpressure on|off
```

Parameters

backpressure Specifies back-pressure flow-control in half-duplex mode. Choose from the following options.

on Enables back pressure.

off Disables back pressure.

Description

Use the FLOWCONTROL BACKPRESSURE command to enable or disable back-pressure flow-control on an interface.

Command Mode

Interface Configuration mode

Example

The following commands turn on back-pressure flow-control in half-duplex mode on port 4:

```
switch#configure terminal
switch(config)#interface ge4
switch(config-if)#flowcontrol backpressure on
```

Related Commands

“FLOW CONTROL SEND” on page 457

“FLOW CONTROL RECEIVE” on page 456

FLOW CONTROL RECEIVE

Syntax

```
flow control receive on|off
```

Parameters

receive Controls flow control on traffic that is received by an interface. Choose from the following options:

on Enables flow control.

off Disables flow control.

Description

Use the FLOWCONTROL RECEIVE command to enable an interface to receive traffic using flow control.

Flow control enables connected Ethernet ports (or interfaces) to control traffic rates during congestion by allowing congested nodes to pause link operation at the other end. If one port experiences congestion and cannot receive any more traffic, it notifies another port to stop sending traffic until the condition clears. When the local device detects congestion at its end, it notifies the remote device by sending a pause frame. After the remote device receives a pause frame, the remote device stops sending data packets. This prevents the loss of data packets during the congestion period.

Command Mode

Interface Configuration mode

Example

The following commands set port 7 to flow control receive on.

```
switch#configure terminal
```

```
switch(config)#interface ge7
```

```
switch(config-if)#flow control receive on
```

Related Commands

“FLOW CONTROL BACKPRESSURE” on page 455

“FLOW CONTROL SEND” on page 457

FLOW CONTROL SEND

Syntax

```
flow control send on|off
```

Parameters

send Controls flow control on traffic that is sent by an interface. Choose from the following options:

on Enables flow control.

off Disables flow control.

Description

Use the FLOWCONTROL SEND command to enable an interface to send traffic using flow control.

Flow control enables connected Ethernet ports (or interfaces) to control traffic rates during congestion by allowing congested nodes to pause link operation at the other end. If one port experiences congestion and cannot receive any more traffic, it notifies another port to stop sending traffic until the condition clears. When the local device detects congestion at its end, it notifies the remote device by sending a pause frame. After the remote device receives a pause frame, the remote device stops sending data packets. This prevents the loss of data packets during the congestion period.

Command Mode

Interface Configuration mode

Example

The following commands set port 20 to flow control send on.

```
switch#configure terminal
switch(config)#interface ge20
switch(config-if)#flow control send on
```

Related Commands

“FLOW CONTROL BACKPRESSURE” on page 455

“FLOW CONTROL RECEIVE” on page 456

IP ADDRESS

Syntax

```
ip address A.B.C.D/M label LABEL
```

Parameters

A.B.C.D/M Specifies the IP address of the interface followed by a slash and a subnet mask.

LABEL Specifies the label, or name, of the IP address.

Description

Use the IP ADDRESS command to assign an IP address to a VLAN interface and label the address.

You must assign an IP address to a VLAN in the Interface Command mode. You may assign the IP address to the default VLAN which is VLAN 1 or to a VLAN that you have created. For information about how to create a VLAN, see “Creating VLANs” on page 49.

Note

Although a secondary IP address is displayed in the software, it is not supported.

Command Mode

Interface Configuration mode

Examples

The following commands set VLAN 1 with the IP address of 10.0.0.1 and a subnet mask of 255.255.255.255.0 (24 bits) and labels the IP address as “englab5.”

```
switch#configure terminal
```

```
switch(config)#interface vlan1
```

```
switch(config-if)#ip address 10.0.0.1/8 label englab5
```

The following commands set VLAN 2 with the IP address and mask of 192.10.0.5/8 and labels the IP address as “Sales2” to VLAN2:

```
switch#configure terminal
```

```
switch(config)#interface vlan2
```

```
switch(config-if)#ip address 192.10.0.5/8 label sales2
```

Related Commands

“IP ADDRESS DHCP” on page 461

“SHOW RUNNING-CONFIG” on page 420

“VLAN” on page 603

IP ADDRESS DHCP

Syntax

```
ip address DHCP
```

Parameters

DHCP Indicates the DHCP client is used to obtain an IP address for this interface.

Description

Use the IP ADDRESS DHCP command to allow a DHCP server to assign an IP address to an interface. You can enable DHCP on a port or on a VLAN.

Command Mode

Interface Configuration mode

Examples

The following commands set VLAN 1 with an IP address obtained by the DHCP server:

```
switch#configure terminal
switch(config)#interface vlan1
switch(config-if)#ip address dhcp
```

The following commands set port 4 with an IP address obtained by the DHCP server:

```
switch#configure terminal
switch(config)#interface ge4
switch(config-if)#ip address dhcp
```

Related Commands

“IP ADDRESS” on page 458

“SHOW RUNNING-CONFIG” on page 420

LACP PORT-PRIORITY

Syntax

```
lacp port-priority <1-65535>  
no lacp system-port
```

Parameters

<1-65535> Specifies the LACP port priority. Lower numerical values have higher priorities.

Description

Use the LACP PORT-PRIORITY command to set the priority of a port. Ports are selected for aggregation based on their priority, with the higher priority (numerically lower) ports selected first. The default value is 32,768.

Use the no form of this command to reset the priority of the port to the default value.

Command Mode

Interface Configuration mode

Example

The following commands set port 7 with an LACP priority of 34:

```
switch#configure terminal  
switch(config)#interface ge7  
switch(config-if)#lacp port-priority 34
```

Related Commands

“LACP SYSTEM-PRIORITY” on page 399

MDIX

Syntax

```
mdix mdi|mdix
```

Parameters

mdi Specifies the interface is forced to MDI mode.

mdix Specifies the interface is forced to MDIX mode.

Description

Use the MDIX command to force an interface to the MDI or MDIX mode. This command only applies to copper ports 1-24 on the AT-9000/28 and AT-9000/52 switches. The MDIX command does not apply to fiber ports.

Command Mode

Interface Configuration mode

Example

The following commands force interface 7 to MDI mode:

```
switch#configure terminal
switch(config)#interface ge7
switch(config-if)#mdix mdi
```

Related Commands

“SPEED” on page 472

MIRROR INTERFACE DIRECTION

Syntax

```
mirror interface ge<1-28> direction
both|receive|transmit
```

```
no mirror interface ge<1-28> direction
both|receive|transmit
```

Parameters

interface	Specifies the port-mirroring-destination port on the switch.
direction	Specifies the direction of traffic to be monitored. Choose from the following options:
both	Mirror traffic in both directions.
receive	Mirror received traffic.
transmit	Mirror transmitted traffic.

Description

Use the MIRROR INTERFACE DIRECTION command to create a port mirror and specify the direction of the traffic to be monitored. You can only specify one active port at a time.

To turn off port mirroring, use the no command.

Command Mode

Interface Configuration mode

Examples

The following commands set port 19 to receive port mirroring traffic from port 20:

```
switch#configure terminal
switch(config)#interface ge19
switch(config-if)#mirror interface ge20 direction
receive
```

The following commands turn off port mirroring on port 19:

```
switch#configure terminal
```

```
switch(config)#interface ge19
```

```
switch(config-if)#no mirror interface ge20 direction  
receive
```

Related Commands

“SHOW RUNNING-CONFIG” on page 420

MTU

Syntax

```
mtu <64-9216>
```

Parameters

none

Description

Use the MTU command to set the MTU value for the specified interface. Choose a value between 64 and 9,216.

Command Mode

Interface Configuration mode

Example

The following commands set port 22 with an MTU value of 1700:

```
switch#configure terminal  
switch(config)#interface ge22  
switch(config-if)#mtu 1700
```

Related Commands

“SHOW RUNNING-CONFIG INTERFACE” on page 467

SHOW RUNNING-CONFIG INTERFACE

Syntax

```
show running-config interface INTERFACE
bridge|dot1x|l2cp|rstp|stp
```

Parameters

INTERFACE	Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with "ge." To specify a VLAN, use the VLAN ID.
bridge	Displays the running configuration for a bridge for the specified interface.
dot1x	Displays the running configuration for 802.1X port authentication for the specified interface.
rstp	Displays the running configuration for RSTP (Rapid Spanning Tree Protocol) for the specified interface.
stp	Displays the running configuration for STP (Spanning Tree Protocol) for the specified interface.

Description

Use the SHOW RUNNING-CONFIG INTERFACE command to display the current configuration of an interface on the switch.

Note

Although the ip igmp and mstp parameters appear in the software for the SHOW RUNNING-CONFIG INTERFACE command, they are not supported in this release.

Command Mode

Privileged Executive, Configuration Terminal, Interface Configuration, VLAN Configuration, and Line modes

Examples

To display the status of the SHOW RUNNING-CONFIG INTERFACE command on port 4, enter the following command:

```
switch#show running-config interface vlan1
```

See Figure 138 for an example display.

```
!
interface vlan1
  ip address 192.168.8.10/8
!
```

Figure 138. SHOW RUNNING-CONFIG INTERFACE Port Example

To display the status of the current running configuration of port 1 for a bridge, enter the following command:

```
switch#show running-config interface ge1 bridge
```

See Figure 139 for an example display.

```
!
interface ge1
  switchport mode trunk
  switchport trunk allowed vlan add2
  switchport trunk allowed vlan add3
!
```

Figure 139. SHOW RUNNING-CONFIG INTERFACE Bridge Example

To display the status of the current running configuration of port 2 for the 802.1x Access Control feature, enter the following command:

```
switch#show running-config interface ge2 dot1x
```

See Figure 140 for an example display.

```
!
interface ge2
  dot1x port-control force-authorized
  dot1x port-control dir both
!
```

Figure 140. SHOW RUNNING-CONFIG INTERFACE DOT1X Example

Related Commands

“SHOW RUNNING-CONFIG” on page 420

SHUTDOWN

Syntax

shutdown
no shutdown

Parameters

none

Description

Use the SHUTDOWN command to shut down or disable the specified interface.

Use the no form of this command to enable a connection with the specified interface.

Command Mode

Interface Configuration mode

Example

The following commands shutdown port 23:

```
switch#configure terminal  
switch(config)#interface ge23  
switch(config-if)#shutdown
```

Related Commands

none

SPANNING-TREE PORTFAST BPDU-GUARD

Syntax

```
spanning-tree portfast bpdu-guard default|disable|enable
```

Parameters

bpdu-guard	Indicates a portfast port that has BPDU guard turned on. This port enters the STP blocking state if it receives a BPDU. Choose one of the following:
default	Takes the setting that was configured for the switch with the SPANNING-TREE PORTFAST BPDU-GUARD DEFAULT command in the Configuration Terminal mode.
disable	Turns off the BPDU guard.
enable	Turns on the BPDU guard.

Description

Use the SPANNING-TREE BPDU-GUARD command to enable the BPDU (Bridge Protocol Data Unit) guard feature on a port.

When the BPDU guard feature is set for a bridge, all portfast-enabled interfaces of the bridge that have the BPDU guard set to default shut down the interface on receiving a BPDU. In this case, the BPDU is not processed. You can bring the interface up manually by using the NO SHUTDOWN command.

Use the no form of the SPANNING-TREE BPDU-GUARD command to disable the BPDU-guard feature on a bridge.

Command Mode

Interface Configuration mode

Example

The following commands enable the BPDU Guard feature on port 25:

```
switch#configure terminal
switch(config)#interface ge25
```

```
switch(config-if)#spanning-tree portfast bpdu-guard  
enable
```

Related Commands

“SPANNING-TREE PORTFAST BPDU-GUARD DEFAULT” on page 587

SPEED

Syntax

```
speed
10000mfull | 1000mfull | 100mfull | 100mhalf | 100fx | 10mfull |
10mhalf | auto
```

```
no speed
```

Parameters

10000mfull	Specifies the interface is forced to operate at a speed of 10,000 Mbps in full duplex mode.
1000mfull	Specifies the interface is forced to operate at a speed of 1,000 Mbps in full duplex mode.
100mfull	Specifies the interface is forced to operate at a speed of 100 Mbps in full duplex mode.
100mhalf	Specifies the interface is forced to operate at a speed of 100 Mbps in half duplex mode.
100fx	Specifies the interface is forced to operate at a speed of 100Mhz on an uplink port that is connected to a 100Mhz fiber SFP transceiver. This setting is available in full-duplex mode only. This setting applies to the following ports only: <ul style="list-style-type: none"> – Ports 25 through 28 on the AT-9000/28 switch – Ports 1 through 28 on the AT-9000/28SP switch – Ports 49 through 52 on the AT-9000/52 switch
10mfull	Specifies the interface is forced to operate at a speed of 10 Mbps in full duplex mode.
10mhalf	Specifies the interface is forced to operate at a speed of 10 Mbps in half duplex mode.
auto	Enables auto speed and duplex configuration.

Description

Use the SPEED command to set the speed and duplex mode for each port on the switch. For ports ge24 through ge28, you need to manually set the port speed to 100FX when you insert a 100FX SFP.

Use the no form of this command to remove the interface speed.

Note

To display the current port speeds, use the SHOW INTERFACE command. See "SHOW INTERFACE" on page 282.

Note

For more information about the AT-9000 switches and their ports, see the *AT-9000 Managed Layer 2 GE ecoSwitch Family Installation Guide*.

Command Mode

Interface Configuration mode

Examples

The following commands set port 5 to 1,000Mbps in full-duplex mode:

```
switch#configure terminal
switch(config)#interface ge5
switch(config-if)#speed 1000mfull
```

The following commands set port 24 to 100FX in full-duplex mode on the AT-9000/28 switch:

```
switch#configure terminal
switch(config)#interface ge24
switch(config-if)#speed 100fx
```

The following commands set port 13 to 100FX in full-duplex mode on the AT-9000/28SP switch:

```
switch#configure terminal
switch(config)#interface ge13
switch(config-if)#speed 100fx
```

Related Commands

“SHOW INTERFACE” on page 282

STATIC-CHANNEL-GROUP

Syntax

```
static-channel-group <1-8>  
no static-channel-group
```

Parameters

<1-8> Specifies the static-channel-group number.

Description

Use the STATIC-CHANNEL-GROUP command to create a static-channel group.

Use the no form of this command to remove a static-channel group.

Command Mode

Interface Configuration mode

Example

The following commands create channel group 2 on port 8:

```
switch#configure terminal  
switch(config)#interface ge8  
switch(config-if)#static-channel-group 2
```

Related Commands

“SHOW STATIC-CHANNEL-GROUP” on page 349

STORM-CONTROL

Syntax

```
storm-control broadcast|dlf|multicast LEVEL <1-100>
no storm-control broadcast|dlf|multicast
```

Parameters

broadcast	Sets the broadcast rate limiting value for the interface.
dlf	Sets the destination lookup failure (DLF) for the interface.
multicast	Sets the multicast rate limiting value for the interface.
LEVEL	Specifies the percentage of the threshold or the percentage of the maximum speed (pps) of the interface. Enter a value between 1 and 100.

Description

Flooding techniques are used to block the forwarding of unnecessary flooded traffic. A packet storm occurs when a large number of broadcast packets are received on an interface. Forwarding these packets can cause the network to slow down or timeout.

Use the STORM-CONTROL command to specify the rising threshold level for broadcasting, multicast, or destination-lookup-failure traffic. The storm control action occurs when traffic reaches the level specified with the LEVEL parameter. By default, storm control is disabled.

Use the no form of this command to disable storm control.

Command Mode

Interface Configuration mode

Example

The following commands set the broadcast rate to 30% on port 4:

```
switch#configure terminal
switch(config)#interface ge4
switch(config-if)#storm-control broadcast level 30
```

Related Commands

none

SWITCHPORT ACCESS VLAN

Syntax

```
switchport access vlan VLANID <2-4094>
```

```
no switchport access vlan VLANID <2-4094>
```

Parameters

VLANID Specifies a VLAN ID. Enter a value from 2 to 4094.

Description

Use the SWITCHPORT ACCESS VLAN command to change the default VLAN for an interface. By default, all ports are assigned to VLAN 1. Use the no form of this command to remove a previously created VLAN with the specified VLAN ID.



Caution

Before you enter the SWITCHPORT ACCESS VLAN command, you must configure a VLAN using the VLAN command.

Note

The default VLAN ID is 1. Do not use a VLAN ID of 1 due to interoperability issues.

Command Mode

Interface Configuration mode

Example

The following commands set the default VLAN to 3 on port 6:

```
switch#configure terminal
```

```
switch(config)#interface ge6
```

```
switch(config-if)#switchport access vlan 3
```

Related Commands

“SHOW VLAN ALL” on page 594

SWITCHPORT MODE TRUNK

Syntax

```
switchport mode trunk ingress-filter enable|disable
no switchport mode
```

Parameters

ingress-filter	Sets the ingress filtering for the received frames. Choose from the following options:
enable	Sets the ingress filtering for received frames. Received frames that cannot be classified in the previous step based on the acceptable frame type parameter (access/trunk) are discarded.
disable	Turns off ingress filtering to accept frames that do not meet the classification criteria. This is the default value.

Description

Use the SWITCHPORT MODE TRUNK command to set the switching characteristics of the Layer-2 interface to trunk mode and specify tagged frames only. Received frames are classified based on the VLAN characteristics. Then they are accepted or discarded based on the specified filtering criteria.

Use the no form of this command to reset the mode of the Layer-2 interface to the default value which is ingress filtering is off and all frame types are classified and accepted.

Command Mode

Interface Configuration mode

Example

The following commands enable ingress filtering for received frames:

```
switch#configure terminal
switch(config)#interface ge5
switch(config-if)#switchport mode trunk ingress-filter
enable
```

Related Commands

none

SWITCHPORT TRUNK ALLOWED VLAN

Syntax

```
switchport trunk allowed vlan add|remove VLANID
```

Parameters

- | | |
|--------|---|
| add | Add a VLAN to transmit and receive through the Layer-2 interface. |
| remove | Remove a VLAN that transmits and receives through the Layer-2 interface. |
| VLANID | Specifies a VLAN ID or a list of VLAN IDs. Enter a value from 2 to 4094. Set a single VLAN, VLAN range, or a VLAN list.

For a VLAN range, specify the lowest VLAN, then the highest VLAN number in the range, and separate them with a hyphen.

For a VLAN list, specify VLAN numbers separated by commas. |

Note

Do not enter spaces between hyphens or commas when setting parameters for VLAN ranges or lists.

Description

Use the SWITCHPORT TRUNK ALLOWED VLAN command to change the default VLAN for an interface.

Command Mode

Interface Configuration mode

Examples

The following commands add a single VLAN, VLAN ID 2, to the member set of port 6:

```
switch#configure terminal  
switch(config)#interface ge6
```

```
switch(config-if)#switchport mode trunk
```

```
switch(config-if)#switchport trunk allowed vlan add 2
```

The following commands add VLANs 2 through 6 to the member set of port 7:

```
switch#configure terminal
```

```
switch(config)#interface ge7
```

```
switch(config-if)#switchport mode trunk
```

```
switch(config-if)#switchport trunk allowed vlan add 2-6
```

The following commands remove a list of VLANs from port 5:

```
switch#configure terminal
```

```
switch(config)#interface ge5
```

```
switch(config-if)#switchport mode trunk
```

```
switch(config-if)#switchport trunk allowed vlan remove 2-6
```

Related Commands

“SHOW VLAN ALL” on page 594

“SWITCHPORT MODE TRUNK” on page 479

TRAFFIC-CLASS-TABLE USER-PRIORITY NUM-TRAFFIC-CLASSES

Syntax

```
traffic-class-table user-priority <0-7> num-traffic-classes <0-8> value <0-2?>
```

Parameters

user-priority	Indicates the user priority associated with the traffic class table. Choose a value between 0 and 7.
num-traffic-classes	Indicates the number of supported traffic classes. Choose a value between 0 and 8.
value	Indicates the value that is used for the given user-priority and num-traffic classes.

Description

Use the TRAFFIC-CLASS-TABLE USER-PRIORITY NUM-TRAFFIC-CLASSES command to specify how the incoming 802.1p priority market packets are mapped to the internal Class of Service queues. Also, it allows you to display the number of queues per port.

To display the current port security settings, use the “SHOW RUNNING-CONFIG INTERFACE” on page 426.

Command Mode

Interface Configuration mode

Example

The following commands set port 3 with a user priority of 7, a traffic class value of 7, and a value of 2:

```
switch#configure terminal
switch(config)#interface ge3
switch(config-if)#traffic-class-table user-priority 7
num-traffic classes 7 value 2
```

Related Commands

none

USER-PRIORITY

Syntax

```
user-priority <0-7>
```

Parameters

none

Description

Use the USER-PRIORITY command to indicate a priority for the port specified.

A tagged Ethernet frame contains a field that specifies its VLAN membership. Such frames also contain a user priority level used by the switch to determine the Quality of Service to apply to the frame and which egress queue on the egress port a packet should be stored in. The three bit binary number represents eight priority levels, 0 to 7, with 0 the lowest priority and 7 the highest. By default, this command is set to 0 on all ports.

Command Mode

Interface Configuration mode

Example

The following commands assign a user priority of 7 to port 16:

```
switch#configure terminal
switch(config)#interface ge16
switch(config-if)#user-priority 7
```

Related Commands

“MLS QOS” on page 406

“USERNAME” on page 434

USER-PRIORITY-REGEN-TABLE

Syntax

```
show user-priority-regen-table user-priority <0-7>
regenerated-user-priority <0-7>
```

Parameters

user-priority	Indicates the current user-priority that is associated with the regeneration table.
regenerated-user-priority	Specifies the regenerated values that will be used for the user priority.

Description

Use the USER-PRIORITY-REGEN-TABLE command to regenerate the priority of packets as they egress out of a switch. If a packet with an assigned priority enters the switch, then the packet leaves the switch based on the regenerated user-priority value. The user priority is set on a per port basis.

To display the regenerated user-priority values, use the SHOW USER-PRIORITY-REGEN-TABLE command.

Command Mode

Interface Configuration mode

Example

The following command reassigns the user-priority value on port 8 from 3 to 5:

```
switch#configure terminal
switch(config)#interface ge8
switch(config-if)#user-priority-regen-table user-
priority 3 regenerated-user-priority 5
```

Related Commands

“SHOW USER-PRIORITY-REGEN-TABLE” on page 192

Chapter 8

Line Mode Commands

The commands in the Line Command mode permit you to create a Telnet connection and determines the length of the console lines in a Telnet session. In addition, you can enable password checking on a RADIUS server. Access the Line mode through the Configuration Terminal mode, with the LINE VTY command.

This chapter contains the following commands:

- ❑ “CLEAR LINE VTY” on page 488
- ❑ “LOGIN REMOTELOCAL” on page 489
- ❑ “LINE CONSOLE” on page 490
- ❑ “LINE VTY” on page 491
- ❑ “SHOW RUNNING-CONFIG INTERFACE” on page 493
- ❑ “TELENET” on page 495

CLEAR LINE VTY

Syntax

```
clear line vty <0-871>
```

Parameters

vtly Specifies the line number.

Description

Use command to reset the line number of a virtual terminal in a Telnet session. If a session exists on the line specified, then the Telnet session is closed.

Command Mode

Privileged Executive mode

Example

To reset the first line number, enter the following command:

```
switch#clear line vty 1
```

Related Commands

“LINE CONSOLE” on page 490

“LINE VTY” on page 491

LOGIN REMOTELOCAL

Syntax

```
login remotelocal  
no login
```

Parameters

none

Description

Use the LOGIN REMOTELOCAL command to enable password checking on a RADIUS server. To disable password checking, use the no form of the command.

Command Mode

Line mode

Example

The following commands enable password checking on a RADIUS server with an IP address of 192.168.1.30 and a key of "ATI:"

```
switch# configure terminal  
switch(config)# radius-server host 192.168.1.30 auth-  
port 1812  
switch(config)# radius-server key ATI  
switch(config)# line console 0  
switch(config-line)# login remotelocal
```

Related Commands

"LINE CONSOLE" on page 400

"RADIUS-SERVER HOST" on page 506

"RADIUS-SERVER KEY" on page 508

LINE CONSOLE

Syntax

```
line console 0
```

Parameters

none

Description

The LINE CONSOLE command sets the console configuration and enters the Line mode. The primary terminal line is set to line number 0. After you enter this command, the prompt changes to “switch(config-line)#” to indicate the Line mode.

For more information about the LINE mode, see “Line Mode” on page 30.

Command Mode

Configuration Terminal mode

Example

The following commands set the primary line console to 0:

```
switch#configure terminal  
switch(config)#line console 0  
switch(config-line)#
```

Related Commands

“LOGIN REMOTELOCAL” on page 489

“LINE VTY” on page 491

LINE VTY

Syntax

```
line vty FIRST <0-871> LAST <0-871>
```

```
no line vty FIRST <0-871> LAST <0-871>
```

Parameters

FIRST Specifies the first line number. Enter a value between 0 and 871.

LAST Specifies the last line number. Enter a value between 0 and 871.

Description

Use the LINE VTY command to enter the Line mode and set the console configuration. With this command, you can specify the first and last line mode of your virtual terminal session. After you enter this command, the prompt changes to "switch(config-line)#" to indicate the Line mode.

To disable active sessions, use the no form of this command.

To display the current number of sessions, use the SHOW RUNNING-CONFIG command.

Command Mode

Configuration Terminal mode

Examples

The following commands shows the use of the LINE VTY command to enter the Line mode:

```
switch#configure terminal
```

```
switch(config)#line vty 0 15
```

```
switch(config-line)#
```

To disable Telnet and web server sessions, enter the following commands:

```
switch#configure terminal
```

```
switch(config)#no line vty 0 4
```

Related Commands

“CLEAR LINE VTY” on page 488

“LINE CONSOLE” on page 490

“SHOW RUNNING-CONFIG” on page 420

SHOW RUNNING-CONFIG INTERFACE

Syntax

```
show running-config interface INTERFACE
bridge|dot1x|l2cp|rstp|stp
```

Parameters

INTERFACE	Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with "ge." To specify a VLAN, use the VLAN ID.
bridge	Displays the running configuration for a bridge for the specified interface.
dot1x	Displays the running configuration for 802.1X port authentication for the specified interface.
rstp	Displays the running configuration for RSTP (Rapid Spanning Tree Protocol) for the specified interface.
stp	Displays the running configuration for STP (Spanning Tree Protocol) for the specified interface.

Description

Use the SHOW RUNNING-CONFIG INTERFACE command to display the current configuration of an interface on the switch.

Note

Although the ip igmp and mstp parameters appear in the software for the SHOW RUNNING-CONFIG INTERFACE command, they are not supported in this release.

Command Mode

Privileged Executive, Configuration Terminal, Interface Configuration, VLAN Configuration, and Line modes

Examples

To display the status of the SHOW RUNNING-CONFIG INTERFACE command on port 4, enter the following command:

```
switch#show running-config interface vlan1
```

See Figure 141 for an example display.

```
!
interface vlan1
  ip address 192.168.8.10/8
!
```

Figure 141. SHOW RUNNING-CONFIG INTERFACE Port Example

To display the status of the current running configuration of port 1 for a bridge, enter the following command:

```
switch#show running-config interface ge1 bridge
```

See Figure 142 for an example display.

```
!
interface ge1
  switchport mode trunk
  switchport trunk allowed vlan add2
  switchport trunk allowed vlan add3
!
```

Figure 142. SHOW RUNNING-CONFIG INTERFACE Bridge Example

To display the status of the current running configuration of port 2 for the 802.1x Access Control feature, enter the following command:

```
switch#show running-config interface ge2 dot1x
```

See Figure 143 for an example display.

```
!
interface ge2
  dot1x port-control force-authorized
  dot1x port-control dir both
!
```

Figure 143. SHOW RUNNING-CONFIG INTERFACE DOT1X Example

Related Commands

“SHOW RUNNING-CONFIG” on page 420

TELENET

Syntax

```
telnet ip-address port
```

Parameters

ip-address Indicates an IP address in the following format:

```
xxx.xxx.xxx.xxx
```

port Indicates a TCP port number. Here are some guidelines to help you select a port:

- Well-known ports are in the range from 1 to 1023.
- Registered ports are in the range of 1024 to 49151.
- Private ports are in the range of 49152 to 65535.

Description

Use the TELNET command to open a Telnet session to a remote device.

Command Mode

Privileged Executive mode

Example

Enter the following command to connect to TCP port 2602 on the device at 192.58.48.2:

```
switch# telnet 192.58.48.2 2602
```

Related Commands

none

Section II

Advanced Configuration

The chapters in this section provide information about configuring advanced features:

- ❑ Chapter 9, “802.1x Access Control Commands” on page 499
- ❑ Chapter 10, “GVRP Commands” on page 519
- ❑ Chapter 11, “GMRP Commands” on page 529
- ❑ Chapter 12, “Port Security Commands” on page 539
- ❑ Chapter 13, “Simple Network Management Protocol (SNMP) Commands” on page 547
- ❑ Chapter 14, “Spanning Tree Protocol (STP) Commands” on page 571
- ❑ Chapter 15, “Virtual Local Area Networks (VLAN) Commands” on page 591

Chapter 9

802.1x Access Control Commands

The switch implements the server side of the IEEE 802.1x Port-based and MAC-based Network Access Control. This feature allows only authorized users, or their network devices, access to network resources by establishing criteria for each interface on the switch.

This chapter contains the following commands:

- ❑ “DOT1X PORT-CONTROL” on page 500
- ❑ “DOT1X SYSTEM-AUTH-CTRL” on page 501
- ❑ “IP RADIUS SOURCE-INTERFACE” on page 502
- ❑ “RADIUS-SERVER DEADTIME” on page 504
- ❑ “RADIUS-SERVER HOST” on page 506
- ❑ “RADIUS-SERVER KEY” on page 508
- ❑ “RADIUS-SERVER RETRANSMIT” on page 509
- ❑ “RADIUS-SERVER TIMEOUT” on page 510
- ❑ “SHOW DOT1X” on page 511
- ❑ “SHOW DOT1X ALL” on page 512
- ❑ “SHOW DOT1X INTERFACE” on page 515
- ❑ “SHOW DOT1X STATISTICS INTERFACE” on page 517

DOT1X PORT-CONTROL

Syntax

```
dot1x port-control auto|force-authorized|force-
unauthorized dir=both|in
```

```
no dot1x port-control
```

Parameters

force-authorized	Forces an interface to an authorized state.				
force-unauthorized	Forces an interface to an unauthorized state.				
auto	Allows a client to negotiate authentication on an interface.				
dir	Specifies the packet control direction, where: <table> <tr> <td>both</td> <td>Discards receive and transmit packets from the supplicant.</td> </tr> <tr> <td>in</td> <td>Discards receive packets from the supplicant.</td> </tr> </table>	both	Discards receive and transmit packets from the supplicant.	in	Discards receive packets from the supplicant.
both	Discards receive and transmit packets from the supplicant.				
in	Discards receive packets from the supplicant.				

Description

Use the DOT1X PORT-CONTROL command to force a port state on an interface. To remove an interface from the 802.1x management, use the no form of this command.

Command Mode

Interface Configuration mode

Example

The following commands enable authentication on interface 20:

```
switch# configure terminal
switch(config)# interface ge20
switch(config-if)# dot1x port-control auto
```

Related Commands

none

DOT1X SYSTEM-AUTH-CTRL

Syntax

```
dot1x system-auth-ctrl
```

Parameters

system-auth-ctrl Enable global interface authentication.

Description

Use the DOT1X SYSTEM-AUTH-CTRL command to enable authentication globally on all ports. Global authentication is disabled by default.

Command Mode

Configuration Terminal mode

Example

The following commands enable 802.1x Port Based Access Control on all interfaces:

```
switch#configure terminal  
switch(config)#dot1x system-auth-ctrl
```

Related Commands

“SHOW DOT1X ALL” on page 512

IP RADIUS SOURCE-INTERFACE

Syntax

```
ip radius source-interface HOSTNAME xxx.xxx.xxx.xxx  
PORT <1-1812>
```

```
no ip radius source-interface
```

Parameters

HOSTNAME Indicates IP address of the RADIUS client in the following format:

xxx.xxx.xxx.xxx

PORT Specifies a RADIUS client port number. Enter a value between 1 and 1812.

Description

The IP RADIUS SOURCE-INTERFACE command configures the source IP address of the switch which causes every outgoing RADIUS packet to use a specific IP address. The source IP address of the outgoing RADIUS packets depends on the interface the packets leave by.

For information about assigning an RADIUS host, see the RADIUS-SERVER HOST command.

The NO IP RADIUS SOURCE-INTERFACE command removes the source interface configuration made by the IP RADIUS SOURCE-INTERFACE command. With no source interface configured, the source IP address of outgoing RADIUS packets depends on the interface the packets leave by.

Command Mode

Configuration Terminal mode

Example

The following commands set a RADIUS client on RADIUS client port number 1 on a switch with an IP address of 192.168.12.4:

```
switch# configure terminal
```

```
switch(config)# ip radius source-interface  
192.168.12.4 1
```

Related Commands

"RADIUS-SERVER HOST" on page 506

RADIUS-SERVER DEADTIME

Syntax

```
radius-server deadtime MIN <0-1440>  
no radius-server deadtime
```

Parameters

MIN Indicates minutes. Specify a value between 0 and 1,440 minutes (24 hours). The default is 0 minutes.

Description

Use the RADIUS-SERVER DEADTIME command to specify the global dead time for all RADIUS servers. This command specifies the number of minutes a RADIUS server, which is not responding to authentication requests, is passed over for requests for RADIUS authentication.

The RADIUS client considers a RADIUS server to be “dead” if it fails to respond to a request after it has been retransmitted as often as specified globally by the RADIUS-SERVER RETRANSMIT command or for the server by the RADIUS-SERVER HOST command. To improve RADIUS response times when servers may be unavailable, set a dead time to skip dead servers. If a RADIUS server is considered dead, it is skipped for the defined deadtime minutes.

Use the no form of this command to reset the global deadtime to the default value of 0, so that RADIUS servers are not skipped even if they are considered dead.

Command Mode

Configuration Terminal mode

Examples

The following commands set the RADIUS server dead time to 60 minutes.

```
switch# configure terminal  
switch(config)# radius-server deadtime 60
```

The following commands disable the dead time set for the RADIUS server:

```
switch# configure terminal  
switch(config)# no radius-server deadtime
```

Related Commands

“RADIUS-SERVER HOST” on page 506

RADIUS-SERVER HOST

Syntax

```
radius-server host HOSTNAME auth-port=port|ALL <1-1812>
```

```
no radius-server host HOSTNAME auth-port=port|ALL <1-1812>
```

Parameters

- | | |
|-----------|---|
| hostname | Sets the radius server to an IP address in the following format:
xxx.xxx.xxx.xxx |
| auth-port | Specifies the port number of the RADIUS client. The default port number is 1812. The range is from 1 to 1812. |

Description

Use the RADIUS-SERVER HOST command to specify the IP address of a remote RADIUS server host for authentication and to set the port number of the RADIUS client. If you do not specify a port number the default port number of 1812 is used. After you issue this command, the RADIUS server is added to the running configuration.

To specify multiple hosts, use multiple RADIUS-SERVER HOST commands. The software searches for hosts in the order they are specified.

Use the no form of this command to remove the defined host and port from the list of RADIUS servers.

Command Mode

Configuration Terminal mode

Example

The following commands set an IP address of 192.126.12.1 to the RADIUS-server host and the port number of the RADIUS client to 1800:

```
switch# configure terminal
```

```
switch(config)# radius-server host 192.126.12.1 auth-port 1800
```

Related Commands

“IP RADIUS SOURCE-INTERFACE” on page 502

“RADIUS-SERVER DEADTIME” on page 504

“RADIUS-SERVER KEY” on page 508

“RADIUS-SERVER RETRANSMIT” on page 509

“RADIUS-SERVER TIMEOUT” on page 510

RADIUS-SERVER KEY

Syntax

```
radius-server key KEY
```

```
no radius-server key
```

Parameters

KEY The secret key shared among the radius server and the 802.1x client. Special characters such as “*,” “_,” and “!” are permitted.

Description

Use the RADIUS-SERVER KEY command to set the global secret key between a RADIUS server and a client. This command has no default value.

To erase the current value of the secret key, use the no form of this command.

Command Mode

Configuration Terminal mode

Examples

The following commands set the shared secret key to “ketz124:”

```
switch# configure terminal
```

```
switch(config)# radius-server key ketzel24
```

The following commands delete the global secret key for the RADIUS server:

```
switch# configure terminal
```

```
switch(config)# no radius-server key
```

Related Commands

“RADIUS-SERVER DEADTIME” on page 504

“RADIUS-SERVER HOST” on page 506

“RADIUS-SERVER RETRANSMIT” on page 509

“RADIUS-SERVER TIMEOUT” on page 510

RADIUS-SERVER RETRANSMIT

Syntax

```
radius-server retransmit RETRIES <1-100>  
no radius-server retransmit
```

Parameters

RETRIES Indicates the number of times a request is sent to a RADIUS SERVER that does not respond before the server is considered “dead” and the next server is tried. The default is 3 retries.

Description

Use the RADIUS-SERVER RETRANSMIT command to set the shared secret key between a Radius server and a client. This command has no default value.

To erase the current value of the secret key, use the no form of this command.

Command Mode

Configuration Terminal mode

Examples

The following commands set the number of retransmit retries to 6:

```
switch# configure terminal  
switch(config)# radius-server retransmit 6
```

The following commands remove the number of retransmit retries:

```
switch# configure terminal  
switch(config)# no radius-server retransmit
```

Related Commands

“RADIUS-SERVER DEADTIME” on page 504

“RADIUS-SERVER HOST” on page 506

“RADIUS-SERVER KEY” on page 508

“RADIUS-SERVER TIMEOUT” on page 510

RADIUS-SERVER TIMEOUT

Syntax

```
radius-server timeout <1-100>  
no radius-server timeout
```

Parameters

SEC Indicates time in seconds. The default value is 5 seconds.

Description

Use the RADIUS-SERVER TIMEOUT command to set the number of seconds that the switch waits for a response from a RADIUS server. After this time is reached, the switch either resends the request or considers the server to be “dead.”

To delete the timeout value, use the no form of this command.

Command Mode

Configuration Terminal mode

Examples

The following commands set the time out to 20 seconds:

```
switch# configure terminal  
switch(config)# radius-server timeout 20
```

The following commands remove the time out value:

```
switch# configure terminal  
switch(config)# no radius-server timeout
```

Related Commands

“RADIUS-SERVER DEADTIME” on page 504

“RADIUS-SERVER HOST” on page 506

“RADIUS-SERVER KEY” on page 508

“RADIUS-SERVER RETRANSMIT” on page 509

SHOW DOT1X

Syntax

```
show dot1x
```

Parameters

none

Description

Use this command to display the status of the 802.1x feature on the switch.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

Privileged Executive mode

Example

The following example shows the SHOW DOT1X command and the resulting display:

```
switch#show dot1x
```

See Figure 144 for a sample display.

```
switch# show dot1x
% 802.1x authentication enabled
% Radius server address: 192.168.1.1.1812
% Radius client address: dhcp128.ipinfusion.com.12103
% Next radius message id: 0
```

Figure 144. SHOW DOT1X Command

Related Commands

“SHOW DOT1X ALL” on page 512

“SHOW DOT1X INTERFACE” on page 515

SHOW DOT1X ALL

Syntax

```
show dot1x all
```

Parameters

none

Description

Use this command to display detailed 802.1x information about all of the interfaces. To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

The following example shows the SHOW DOT1X ALL command and the resulting display in Figure 145:

```
switch# show dot1x all
```

```
(switch3)#show dot1x all
% 802.1x authentication enabled
% Radius server address: 192.168.1.1.1812
% Radius client address: dhcp128.ipinfusion.com.12103
% Next radius message id: 0
% Dot1x info for interface eth1 - 3
% portEnabled: true - portControl: auto
% portStatus: unauthorized - currentId: 11
% reAuthenticate: disabled
% abort:F fail:F start:F timeout:F success:F
% PAE: state: connecting - portMode: auto
% PAE: reAuthCount: 2 - rxRespId: 0
% PAE: quietPeriod: 60 - reauthMax: 2 - txPeriod: 30
% BE: state: idle - reqCount: 0 - idFromServer: 0
% BE: supptimeout: 30 - serverTimeout: 30 - maxReq: 2
% CD: adminControlledDirections: in - operControlledDirections: in
% CD: bridgeDetected: false
% KR: rxKey: false
% KT: keyAvailable: false - keyTxEnabled: false
```

Figure 145. SHOW DOT1X ALL Command

Table 23 provides a description of the parameters of the SHOW DOT1X ALL and SHOW DOT1X INTERFACE commands.

Table 23. SHOW DOT1X Parameter Description

Parameter	Description
portEnabled	Indicates the interface operational status (up-true/down-false).
portControl	Indicates the current control status of the port for 802.1x control.
portStatus	Indicates the 802.1x status of the port (authorized or unauthorized).
reAuthenticate	Indicates the status of reauthentication on an interface.
reAuthPeriod	Indicates the time period of reauthentication.
Supplicant PAE related global variables:	
abort	Indicates that authentication should be aborted when this variable is set to true.
fail	Indicates failed authentication attempt when this variable is set to false.
start	Indicates authentication should be started when this variable is set to true.
timeout	Indicates an authentication attempt timed out when this variable is set to true.
success	Indicates authentication is successful when this variable is set to true.
PAE: state Current 802.1x operational state of the interface	
mode	Indicates the mode is set to 802.1x.
reAuthMax	Indicates the maximum number of reauthentication attempts.
BE Backend Authentication state	
state	Indicates the status of the state machine.
reqCount	Indicates the number of requests sent to the server.
suppTimeout	Indicates the supplicant timeout period.
serverTimeout	Indicates the server timeout period.

Table 23. SHOW DOT1X Parameter Description (Continued)

Parameter	Description
maxReq	Specifies the maximum number of requests that can be sent.
CD	Specifies the Controlled Directions State machine.
adminControlledDirections	Indicates the administrative value (Both/In).
operControlledDirections	Indicates the operational Value (Both/In).
KR	Specifies the key receive state machine.
rxKey	Indicates true when EAPOL-Key message is received by supplicant or authenticator. Indicates false when a key is transmitted.
KT	Specifies the Key Transmit State machine.
keyAvailable	Indicates false when key has been transmitted by authenticator. Indicates true when a new key is available for key exchange.
keyTxEnabled	Indicates the key transmission status.

Related Commands

“SHOW DOT1X INTERFACE” on page 515

SHOW DOT1X INTERFACE

Syntax

```
show dot1x interface IFNAME ge<1-52>
```

Parameters

IFNAME Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with "ge."

Description

Use this command to display the state of a particular interface.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

The following command displays the state of port 6.

```
switch# show dot1x interface ge6
```

See Figure 146 for a sample display.

```
(switch3)#show dot1x interface
% 802.1X info for interface xe6
% portEnabled: true - portControl: Force Unauthorized
% portStatus: Unauthorized - currentId: 2
% reAuthenticate: disabled
% reAuthPeriod: 3600
% abort:F fail:F start:F timeout:F success:F
% PAE: state: Force Unauthorized - portMode: Force Unauthorized
% PAE: reAuthCount: 1 - rxRespId: 0
% PAE: quietPeriod: 60 - reauthMax: 2 - txPeriod: 30
BE: state: Idle - reqCount: 0 - idFromServer: 0
BE: supTimeout: 30 - serverTimeout: 30 - maxReq: 2
CD: adminControlledDirections: in - operControlledDirections: in
CD: bridgeDetected: false
KR: rxKey: false
KT: keyAvailable: false - keyTxEnabled: falseExample
```

Figure 146. SHOW DOT1X INTERFACE Command

See Table 23 on page 513 for a description of the command parameters shown in Figure 146.

Related Commands

“SHOW DOT1X ALL” on page 512

SHOW DOT1X STATISTICS INTERFACE

Syntax

```
show dot1x statistics interface IFNAME ge<1-52>
```

Parameters

IFNAME Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with "ge."

Description

Use the SHOW DOT1X STATISTICS INTERFACE command to display the vital statistics of an interface.

To modify the lines displayed, use the | (output modifier token); to save the output to a file, use the > (output redirection token).

Command Mode

View and Privileged Executive modes

Example

The following command displays the statistics for interface 5:

```
switch# show dot1x statistics interface ge5
```

See Figure 147 for a sample display.

```
(switch3)#show dot1x interface
% Dot1x statistics for interface xe5 - 3
% EAPOL Frames Rx: 0 - EAPOL Frames Tx: 0
% EAPOL Start Frames Rx: 0 - EAPOL Logoff Frames Rx: 0
% EAP Rsp/Id Frames Rx: 0 - EAP Response Frames Rx: 0
% EAP Req/Id Frames Tx: 35 - EAP Request Frames Tx: 0
% Invalid EAPOL Frames Rx: 0 - EAP Length Error Frames Rx: 0
% EAPOL Last Frame Version Rx: 0 - EAPOL Last Frame Src:
0000.0000.0000
```

Figure 147. SHOW DOT1X INTERFACE STATISTICS Command

Related Commands

“SHOW DOT1X” on page 511

Chapter 10

GVRP Commands

The GARP VLAN Registration Protocol (GVRP) allows network devices to share VLAN information. The main purpose of GVRP is to allow switches to automatically discover some of the VLAN information that would otherwise need to be manually configured in each switch. This is helpful in networks where VLANs span more than one switch. Without GVRP, you must manually configure your switches to ensure that the various parts of a VLAN can communicate across the different switches. GVRP, which is an application of the Generic Attribute Registration Protocol (GARP), does this for you automatically.

For detailed information about GVRP, see IEEE specifications 802.1d and 802.1q.

This chapter contains the following:

- “Overview” on page 520
- “Guidelines” on page 521
- “SET GVRP” on page 522
- “SET GVRP APPLICANT” on page 523
- “SET GVRP DYNAMIC-VLAN-CREATION” on page 524
- “SET GVRP REGISTRATION” on page 525
- “SET GVRP TIMER” on page 527

Note

For information about VLAN commands, see Chapter 15, “Virtual Local Area Networks (VLAN) Commands” on page 591.

Overview

The GARP VLAN Registration Protocol (GVRP) allows network devices to share VLAN information. The main purpose of GVRP is to allow switches to automatically discover some of the VLAN information that would otherwise need to be manually configured in each switch. This is helpful in networks where VLANs span more than one switch. Without GVRP, you must manually configure your switches to ensure that the various parts of a VLAN can communicate across the different switches. GVRP, which is an application of the Generic Attribute Registration Protocol (GARP), does this for you automatically.

The AT-S100 Management Software uses GVRP protocol data units (PDUs) to share VLAN information among GVRP-active devices. The PDUs contain the VID numbers of the VLANs on the switch. A PDU contains the VIDs of all the VLANs on the switch, not just the VID of which the transmitting port is a member.

When a switch receives a GVRP PDU on a port, it examines the PDU to determine the VIDs of the VLANs on the device that sent it. It then does the following:

- ❑ If a VLAN does not exist on the switch, it creates the VLAN and adds the port as a tagged member to the VLAN. A VLAN created by GVRP is called a *dynamic GVRP VLAN*.
- ❑ If the VLAN already exists on the switch but the port is not a member, the switch adds the port as a tagged member. A port that has been added by GVRP to a static VLAN (that is a user-created VLAN) is called a *dynamic GVRP port*.

You cannot modify a dynamic GVRP VLAN. After it is created, only GVRP can modify or delete it. A dynamic GVRP VLAN exists only so long as there are active nodes in the network that belong to the VLAN. If all nodes of a dynamic GVRP VLAN are shut down and there are no active links, the VLAN is deleted from the switch.

A dynamic GVRP port in a static VLAN remains a member of the VLAN as long as there are active VLAN members. If all members of the VLAN become inactive or there are no active links, GVRP removes the dynamic port from the VLAN, but does not delete the VLAN if the VLAN is a static VLAN.

Guidelines

Following are guidelines to observe when using this feature:

- ❑ GVRP is supported with STP or RSTP.
- ❑ GVRP is supported when the switch is operating in the tagged VLAN mode, which is the VLAN mode for creating your own tagged and port-based VLANs.
- ❑ Both ports that constitute a network link between the switch and the other device must be running GVRP.
- ❑ You cannot modify or delete a dynamic GVRP VLAN.
- ❑ You cannot remove a dynamic GVRP port from a static or dynamic VLAN.
- ❑ GVRP can only detect a VLAN where there are active nodes, or where at least one end node of a VLAN has established a valid link with a switch. GVRP will not be aware of a VLAN where there are no active end nodes or if no end nodes have established a link with the switch.
- ❑ Resetting a switch erases all dynamic GVRP VLANs and dynamic GVRP port assignments. The switch relearns the dynamic assignments as it receives PDUs from the other switches.
- ❑ GVRP has three timers that you can set: join timer, leave timer, and leave all timer. Allied Telesis recommends that you do not change the default values of these timers. If you do change them, the values for these timers must be set to the same value on all switches running GVRP. Timers with different values on different switches can result in GVRP compatibility problems.
- ❑ You can convert dynamic GVRP VLANs and dynamic GVRP port assignments to static VLANs and static port assignments.
- ❑ The default port settings on the switch for GVRP is active, meaning that the ports participate in GVRP. Allied Telesis recommends disabling GVRP on those ports that are connected to GVRP-inactive devices, meaning devices that do not feature GVRP.
- ❑ PDUs are transmitted to only those switch ports where GVRP is enabled.

SET GVRP

Syntax

```
set gvrp enable|disable
```

Parameters

enable Enables GVRP on the switch.

disable Disables GVRP on the switch.

Description

This command enables or disables GVRP globally on the switch. When GVRP is enabled, the switch learns GVRP VLANs and GVRP ports dynamically.

When GVRP is disabled, the switch does not learn any new dynamic GVRP VLANs or dynamic GVRP ports.

Command Mode

Configuration Terminal mode

Examples

The following commands enable GVRP on the switch:

```
switch#configure terminal  
switch(config)#set gvrp enable
```

The following commands disable GVRP on the switch:

```
switch#configure terminal  
switch(config)#set gvrp disable
```

Related Commands

“SET GVRP APPLICANT” on page 523

“SET GVRP DYNAMIC-VLAN-CREATION” on page 524

“SET GVRP REGISTRATION” on page 525

“SET GVRP TIMER” on page 527

SET GVRP APPLICANT

Syntax

```
set gvrp applicant state active|normal ge<1-52>
```

Parameters

- | | |
|----------|--|
| active | Indicates the active state. The port participates in GVRP. The port processes GVRP information and transmits PDUs. |
| normal | Indicates the normal state. The port does not participate in GVRP. The port neither processes GVRP information nor transmits PDUs. |
| ge<1-52> | Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with "ge." |

Description

The GVRP APPLICANT command sets the GID applicant state on a port to active or normal.

Command Mode

Configuration Terminal mode

Examples

The following commands set the GID applicant on port 5 to an active state:

```
switch#configure terminal
switch(config)#set gvrp applicant state active ge5
```

Related Commands

"SET GVRP" on page 522

"SET GVRP DYNAMIC-VLAN-CREATION" on page 524

"SET GVRP REGISTRATION" on page 525

"SET GVRP TIMER" on page 527

SET GVRP DYNAMIC-VLAN-CREATION

Syntax

```
set gvrp dynamic-vlan-creation
```

Parameters

none

Description

The GVRP DYNAMIC-VLAN-CREATION command enables dynamic VLANs to be created on the switch.

Command Mode

Configuration Terminal mode

Example

The following commands allow GVRP VLANs to be created dynamically on the switch:

```
switch#configure terminal  
switch(config)#set gvrp dynamic-vlan-creation
```

Related Commands

“SET GVRP” on page 522

“SET GVRP APPLICANT” on page 523

“SET GVRP REGISTRATION” on page 525

“SET GVRP TIMER” on page 527

SET GVRP REGISTRATION

Syntax

```
set gvrp registration fixed|forbidden|normal ge<1-52>
```

Parameters

fixed	Allows manual creation and registration of VLANs and prevents VLAN deregistration. Also registers all known VLANs on other port on the tagged port.
forbidden	Unregisters all VLANs (except VLAN 1) and prevents any further VLAN creation or registration on the tagged port.
normal	Allows dynamic creation (if dynamic VLAN creation is enabled), registration, and deregistration of VLANs on the tagged port. This is the default value.
ge<1-52>	Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with "ge."

Description

Use the SET GVRP REGISTRATION command to set GVRP registration to fixed, forbidden, or normal on an interface.

Command Mode

Configuration Terminal mode

Examples

The following commands set GVRP registration to fixed on port 9:

```
switch#configure terminal
switch(config)#set gvrp registration fixed ge9
```

The following commands set GVRP registration to forbidden on port 15:

```
switch#configure terminal
switch(config)#set gvrp registration forbidden ge15
```

Related Commands

“SET GVRP” on page 522

“SET GVRP APPLICANT” on page 523

“SET GVRP DYNAMIC-VLAN-CREATION” on page 524

“SET GVRP TIMER” on page 527

SET GVRP TIMER

Syntax

```
set gvrp timer join|leave|leaveall <1-65535> ge<1-52>
```

Parameters

default	Returns the GARP timers to their default settings.
join	Specifies the Join timer for joining the group. Enter a value in centiseconds, which are one hundredths of a second. The default is 20 centiseconds.
leave	Specifies the Leave timer for leaving a group. Enter a value in centiseconds, which are one hundredths of a second. The default is 60 centiseconds.
leaveall	Specifies the LeaveAll timer for leaving all groups. Enter a value in centiseconds, which are one hundredths of a second. The default is 1,000 centiseconds.
<1-65535>	Specifies the timer value in hundredths of a second. Enter a value between 1 and 65,535.
ge<1-52>	Specifies a port. There are 28 ports on the AT-9000/28 and the AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with "ge."

Description

Use the SET GVRP TIMER command to set the GARP timers to join or leave a group.

Note

You must make the settings for these timers the same on all GVRP-active network devices.

Examples

The following command sets the Join timer to 0.1 second for all GVRP applications on port 8:

```
switch#configure terminal
switch(config)#set gvrp timer join 10 ge8
```

The following commands set the leave timer to 0.5 seconds for all GVRP applications on port 9:

```
switch#configure terminal
```

```
switch(config)#set gvrp timer leave 50 seconds ge9
```

Related Commands

“SET GVRP” on page 522

“SET GVRP APPLICANT” on page 523

“SET GVRP DYNAMIC-VLAN-CREATION” on page 524

“SET GVRP REGISTRATION” on page 525

“SHOW GVRP CONFIGURATION” on page 123

Chapter 11

GMRP Commands

For detailed information about GMRP, see IEEE specification 802.1q. This chapter contains the following commands:

- ❑ “SET GMRP” on page 530
- ❑ “SET GMRP EXTENDED-FILTERING” on page 531
- ❑ “SET GMRP FDWALL” on page 532
- ❑ “SET GMRP REGISTRATION” on page 533
- ❑ “SET GMRP TIMER” on page 535

Note

For information about VLAN commands, see Chapter 15, “Virtual Local Area Networks (VLAN) Commands” on page 591.

SET GMRP

Syntax

```
set gmrp enable|disable
```

Parameters

enable	Enables GMRP on the switch.
disable	Disables GMRP on the switch.

Description

This command enables or disables GMRP globally on the switch. When GMRP is enabled, the switch learns GMRP VLANs and GMRP ports dynamically.

When GMRP is disabled, the switch does not learn any new dynamic GMRP VLANs or dynamic GMRP ports.

Command Mode

Configuration Terminal mode

Examples

The following commands enable GMRP on the switch:

```
switch#configure terminal  
switch(config)#set gmrp enable
```

The following commands disable GMRP on the switch:

```
switch#configure terminal  
switch(config)#set gmrp disable
```

Related Commands

“SET GMRP EXTENDED-FILTERING” on page 531

“SET GMRP REGISTRATION” on page 533

“SET GMRP TIMER” on page 535

SET GMRP EXTENDED-FILTERING

Syntax

```
set gmrp extended-filtering disable|enable
```

Parameters

none

Description

The SET GMRP EXTENDED-FILTERING command enables the extended filtering option on the switch.

Command Mode

Configuration Terminal mode

Example

The following commands enable extended filtering on the switch:

```
switch#configure terminal
switch(config)#set gmrp extended-filtering enable
```

The following commands disable extended filtering on the switch:

```
switch#configure terminal
switch(config)#set gmrp extended-filtering disable
```

Related Commands

“SET GMRP” on page 530

“SHOW GMRP CONFIGURATION” on page 119

SET GMRP FDWALL

Syntax

```
set gmrp fdwall disable|enable IF_NAME ge<1-52>
```

Parameters

IF_NAME Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”

Description

The SET GMRP FDWALL command enables the forward all option on the specified port. Before you enable

Command Mode

Configuration Terminal mode

Example

The following commands enable the forward all option on port 17:

```
switch#configure terminal  
switch(config)#set gmrp fdwall enable ge17
```

The following commands disable the forward all option on port 21:

```
switch#configure terminal  
switch(config)#set gmrp fdwall disable ge21
```

Related Commands

“SET GMRP” on page 530

SET GMRP REGISTRATION

Syntax

```
set gmrp registration fixed|forbidden|normal ge<1-52>
```

Parameters

fixed	Allows manual creation and registration of VLANs and prevents VLAN deregistration. Also registers all known VLANs on other ports on the tagged port.
forbidden	Unregisters all VLANs (except VLAN 1) and prevents any further VLAN creation or registration on the tagged port.
normal	Allows dynamic creation (if dynamic VLAN creation is enabled), registration, and deregistration of VLANs on the tagged port. This is the default value.
ge<1-52>	Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with "ge."

Description

Use the SET GMRP REGISTRATION command to set GMRP registration to fixed, forbidden, or normal on an interface.

Command Mode

Configuration Terminal mode

Examples

The following commands set GMRP registration to fixed on port 9:

```
switch#configure terminal
switch(config)#set gmrp registration fixed ge9
```

The following commands set GMRP registration to forbidden on port 15:

```
switch#configure terminal
switch(config)#set gmrp registration forbidden ge15
```

Related Commands

“SET GMRP” on page 530

“SET GMRP EXTENDED-FILTERING” on page 531

“SET GMRP TIMER” on page 535

SET GMRP TIMER

Syntax

```
set gmrp timer join|leave|leaveall <1-65535> ge<1-52>
```

Parameters

join	Specifies the Join timer for joining the group. Enter a value in centiseconds, which are one hundredths of a second. The default is 20 centiseconds.
leave	Specifies the Leave timer for leaving a group. Enter a value in centiseconds, which are one hundredths of a second. The default is 60 centiseconds.
leaveall	Specifies the LeaveAll timer for leaving all groups. Enter a value in centiseconds, which are one hundredths of a second. The default is 1,000 centiseconds.
<1-65535>	Specifies the timer value in hundredths of a second. Enter a value between 1 and 65,535.
ge	Indicates a port number. There are 28 ports on the AT-9000/28 and the AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with "ge."

Description

Use the SET GMRP TIMER command to set the GARP timers to join or leave a group.

Note

You must make the settings for these timers the same on all GVRP-active network devices. Allied Telesis recommends that you do not change the default values for the timers.

Examples

The following command sets the Join timer to 0.1 second for all GMRP applications on port 8:

```
switch#configure terminal
switch(config)#set gmrp timer join 10 ge8
```

The following commands set the leave timer to 0.5 seconds for all GMRP applications on port 9:

```
switch#configure terminal
```

```
switch(config)#set gmrp timer leave 50 seconds ge9
```

Related Commands

“SET GMRP” on page 530

“SET GMRP EXTENDED-FILTERING” on page 531

“SET GMRP REGISTRATION” on page 533

SET GMRP VLAN

Syntax

```
set gmrp disable|enable vlan VLANID
```

Parameters

vlan	Returns the GARP timers to their default settings.
VLANID	Specifies the Join timer for joining the group. Enter a value in centiseconds, which are one hundredths of a second. The default is 20 centiseconds.

Description

Use the SET GMRP VLAN command to set the GARP timers to join or leave a group.

Note

You must make the settings for these timers the same on all GVRP-active network devices.

Examples

The following command sets the Join timer to 0.1 second for all GMRP applications on port 8:

```
switch#configure terminal
switch(config)#set gmrp vlan enable vlan vlan8
```

The following commands set the leave timer to 0.5 seconds for all GMRP applications on port 9:

```
switch#configure terminal
switch(config)#set gmrp timer leave 50 seconds ge9
```

Related Commands

“SET GMRP” on page 530

Chapter 12

Port Security Commands

The Port Security feature is based on assigning and limiting MAC addresses learned by a port. You can use the MAC-Address-based Port Security feature to enhance the security of your network by controlling which end nodes can forward frames through the switch, thereby preventing unauthorized individuals from accessing your network. This feature uses a MAC address to determine whether the switch should forward a frame or discard it. The source address is the MAC address of the end node that sent the frame.

All of the port security commands are available in the Interface Configuration mode.

This chapter contains the following commands:

- ❑ “SWITCHPORT PORT-SECURITY MAC-ADDRESS” on page 540
- ❑ “SWITCHPORT PORT-SECURITY MAXIMUM” on page 542
- ❑ “SWITCHPORT PORT-SECURITY MODE” on page 543
- ❑ “SWITCHPORT PORT-SECURITY VIOLATION” on page 545

Note

For port security configuration procedures, see “Setting Port Security” on page 55.

SWITCHPORT PORT-SECURITY MAC-ADDRESS

Syntax

```
switchport port-security mac-address sticky
no switchport port-security mac-address sticky
```

Parameters

mac-address Sets a predefined MAC dress in the following format:

```
xxxx.xxxx.xxxx
```

sticky Enables the sticky MAC address feature.

Description

Use the SWITCHPORT PORT-SECURITY MAC-ADDRESS command to set a predefined, secure MAC address for the specified port and to enable the sticky MAC address feature. This is an optional command that is used in conjunction with the SWITCHPORT PORT-SECURITY MAXIMUM command which sets the maximum number of MAC addresses that can be learned by a port.

If you configure fewer secure MAC addresses than the value specified in the SWITCHPORT PORT-SECURITY MAXIMUM command, then the remaining MAC addresses are learned dynamically.

Port security is enforced as long as a device stays connected to the port. If the port is disconnected, the switch removes the pre-existing MAC addresses and any new device can be connected to the switch, as long as the maximum is not exceeded. While this prevents unauthorized hubs and switches, it doesn't prevent someone from unplugging a device and plugging in a different unauthorized device. To prevent someone from plugging in an unauthorized device, enable the sticky MAC address feature. In addition, you need to enable port security with the SWITCHPORT PORT-SECURITY MAXIMUM command.

After enabling the sticky MAC address feature, the currently connected MAC address(es) appear in the running configuration file.

Use the no form of this command to remove the predefined MAC address.



Caution

The sticky MAC address feature stays configured until the switch is rebooted. It is important to save your current configuration.

Note

The VLAN and IP address options are not supported in this release.

Command Mode

Interface Configuration mode

Example

The following commands set the predefined MAC address of 00A0.0490.10E0 on port 7 and limits the VLAN to VLAN 7:

```
switch#configure terminal
switch(config)#interface ge7
switch(config-if)#switchport port-security mac-address
00A0.0490.10E0 vlan 2
```

Related Commands

“SWITCHPORT PORT-SECURITY MAXIMUM” on page 542

“SWITCHPORT PORT-SECURITY MODE” on page 543

“SWITCHPORT TRUNK ALLOWED VLAN” on page 481

SWITCHPORT PORT-SECURITY MAXIMUM

Syntax

```
switchport port-security maximum <1-320>  
no switchport port-security maximum <1-320>
```

Parameters

maximum Sets the maximum number of MAC addresses that can be accepted by the port. Choose a value between 1 and 320.

Description

Use the SWITCHPORT PORT-SECURITY MAXIMUM command to set the maximum number of secure MAC addresses that can be learned by the specified port.

Use the no form of this command to remove maximum the port-security setting.

To display the current port security settings, use the “SHOW RUNNING-CONFIG INTERFACE” on page 426.

Command Mode

Interface Configuration mode

Example

The following commands set the maximum number of secure addresses learned on port 15 to 40:

```
switch#configure terminal  
switch(config)#interface ge15  
switch(config-if)#switchport port-security maximum 40
```

Related Commands

“SWITCHPORT PORT-SECURITY MODE” on page 543

“SWITCHPORT TRUNK ALLOWED VLAN” on page 481

SWITCHPORT PORT-SECURITY MODE

Syntax

```
switchport port-security mode limited|locked|secured
```

```
no switchport port-security mode
limited|locked|secured
```

Parameters

mode	Sets the security mode. Choose from the following options:
limited	Sets the port to the Limited security mode. The port learns a limited number of dynamic MAC addresses. This is the least secure option.
locked	Sets the switch to the Locked security mode. The port stops learning new dynamic MAC addresses. The port forwards frames based on static MAC addresses and on those dynamic addresses it has already learned.
secured	Sets the port to the Secured security mode. The port accepts frames based only on static MAC addresses. You must enter the static MAC addresses of the nodes with frames the port is to accept after you have activated this security mode on a port. To add static MAC addresses, use the SWITCHPORT PORT-SECURITY MAC-ADDRESS command.

Description

Use the SWITCHPORT PORT-SECURITY MODE command to set a port's security mode. Only one mode can be active on a port at a time. By default, no port-security mode is configured on an interface.

The no form of this command removes the current setting.

To display the current port security settings, use the "SHOW RUNNING-CONFIG INTERFACE" on page 426.

Command Mode

Interface Configuration mode

Example

The following commands set the security mode to “locked” on port 20:

```
switch#configure terminal
```

```
switch(config)#interface ge20
```

```
switch(config-if)#switchport port-security mode locked
```

Related Commands

“SWITCHPORT PORT-SECURITY MAC-ADDRESS” on page 540

“SWITCHPORT PORT-SECURITY MAXIMUM” on page 542

“SWITCHPORT TRUNK ALLOWED VLAN” on page 481

SWITCHPORT PORT-SECURITY VIOLATION

Syntax

```
switchport port-security violation
protect|restrict|shutdown
```

```
no switchport port-security violation
protect|restrict|shutdown
```

Parameters

violation Sets the security violation definition. Choose from the following options:

protect	Permits traffic from registered addresses only. Drops packets from unknown addresses on the ports. This is the least secure option.
restrict	Sends an alert when security violation is detected.
shutdown	Shuts down a port if a security violation is detected.

Description

Use the SWITCHPORT PORT-SECURITY VIOLATION command to set a port's security violation definition. This is the action the software takes when the it detects a violation.

The no form of this command removes the current setting.

To display the current port security settings, use "SHOW PORT-SECURITY INTERFACE" on page 168.

Command Mode

Interface Configuration mode

Example

The following commands set port 4 to shutdown when the AT-S100 software detects a security violation:

```
switch#configure terminal
switch(config)#interface ge4
```

```
switch(config-if)#switchport port-security violation  
shutdown
```

Related Commands

“SWITCHPORT PORT-SECURITY MAC-ADDRESS” on page 540

“SWITCHPORT PORT-SECURITY MAXIMUM” on page 542

“SWITCHPORT TRUNK ALLOWED VLAN” on page 481

Chapter 13

Simple Network Management Protocol (SNMP) Commands

This chapter provides descriptions of SNMP v1 and v2c commands that are accessed through the Configuration Terminal mode.

This chapter contains the following commands:

- ❑ “RMON ALARM” on page 548
- ❑ “RMON EVENT” on page 550
- ❑ “SNMP-SERVER COMMUNITY” on page 552
- ❑ “SNMP-SERVER CONTACT” on page 554
- ❑ “SNMP-SERVER ENABLE TRAPS ENVIRON” on page 556
- ❑ “SNMP-SERVER ENABLE TRAPS SNMP” on page 558
- ❑ “SNMP-SERVER GROUP” on page 559
- ❑ “SNMP-SERVER HOST” on page 561
- ❑ “SNMP-SERVER LOCATION” on page 563
- ❑ “SNMP-SERVER USER” on page 564
- ❑ “SNMP-SERVER USER REMOTE” on page 566
- ❑ “SNMP-SERVER VIEW” on page 568

RMON ALARM

Syntax

```
rmon alarm <1-65535> WORD interval <1-65535>
delta|absolute rising threshold <1-65535> rising-
event-index <1-65535> falling threshold <1-65535>
falling event-index <1-65535>

no rmon alarm <1-65535>
```

Parameters

alarm	Indicates an alarm entry index value.
WORD	Indicates the SNMP MIB Object Identifier (OID) name to be monitored in the format of etherStatsEntryfield.<stats-index>. For the interface defined by the <status-index>22, use etherStatsPkts filed in the etherStatsEntry table.
delta	Indicates the RMON MIB alarmSampleType which is the change monitored by the MIB object value between the beginning and the end of the polling interval.
absolute	Indicates the RMON MIB alarmSampleType which is the value of the monitored object.
rising threshold	Specifies the rising threshold of the alarm entry.
rising-event-index	Specifies the event that is triggered when the monitored object value reaches the rising threshold value. Enter a value between 1 and 65,535. This is an event index of an event specified by the RMON EVENT command.
falling threshold	Specifies the falling threshold of the alarm entry.
falling-event-index	Specifies the event that is triggered when the monitored object value reaches the falling threshold value. Enter a value between 1 and 65,535. This is an event index of an event specified by the RMON EVENT command.
OWNER	Indicates the name of the owner to identify the alarm entry.

Description

Use the RMON ALARM command to configure an RMON alarm to monitor the value of an SNMP object and to trigger specified events when the monitored object crosses the defined thresholds. The event monitored is defined by the event index as defined in the RMON EVENT command. By default, there are no defined RMON alarms.

Use the no form of this command to remove the alarm configuration.

Command Mode

Configuration Terminal mode

Example

The following commands creates an RMON alarm that monitors the variable MIB object of etherStatsEntry.22.5.8 for an for event index 7 with a rising threshold of 400 and a falling threshold of 200 in intervals of 60 seconds. The owner of this alarm is Maria:

```
switch#configure terminal
switch#(config)#rmon alarm 229 etherStatsEntry.22.5.8
interval 60 rising-threshold 400 event 7 falling-
threshold 200 event 3 owner Maria
```

The following commands remove the alarm configuration for event index 5:

```
switch#configure terminal
switch#(config)#no rmon alarm 5
```

Related Commands

“RMON EVENT” on page 550

RMON EVENT

Syntax

```
rmon event <1-65535> description|log|owner|trap WORD
no rmon event <1-65535>
```

Parameters

event	Specifies a unique event index value. Enter a value between 1 and 65,535.
description	Specifies an event entry description.
log	Specifies an log description.
owner	Indicates the person who owns this entry. This is an optional parameter.
trap	Indicates an SNMP trap event type. This is an optional parameter.

Description

Use the RMON EVENT command to configure an event definition for a log, trap, or both. The event index that you define here is then used by the RMON ALARM command.

Use the no form of this command to remove the event definition.

Command Mode

Configuration Terminal mode

Example

The following commands sets the RMON event to index 129, a description of "condition3", and an owner of Nelson:

```
switch#configure terminal
switch#(config)#rmon event 129 description condition3
owner Nelson
```

The following commands removes the RMON event index 231:

```
switch#configure terminal
switch#(config)#no rmon event index 231
```

Related Commands

“RMON ALARM” on page 548

SNMP-SERVER COMMUNITY

Syntax

```
snmp-server community STRING view VIEWNAME ro|rw
```

```
no snmp-server community view STRING ro|rw
```

Parameters

STRING Specifies the name of the SNMP community. Choose an alphanumeric value between 1 and 255 characters. This name acts as a password and permits access to SNMP.

VIEWNAME Indicates the name of a MIB view that was defined with the SNMP-SERVER VIEW command. Choose from the following options:

ro Specifies the view is read-only access.

rw Specifies the view is read-write access.

Description

Use the SNMP-SERVER COMMUNITY command to set the name, view, and access of an SNMP community. Set the VIEWNAME with the SNMP-SERVER VIEW command.

Use the no form of this command to remove a community string.

Command Mode

Configuration Terminal mode

Examples

The following commands sets the name of the SNMP community to “engineering78” and read-write access to the MIB view called “internet.”

```
switch#configure terminal
```

```
switch#(config)#snmp-server community “engineering78”  
view internet rw
```

The following commands remove the community string called “eng5” with read-write access:

```
switch#configure terminal
```

```
switch#(config)#no snmp-server community eng5 rw
```

Related Commands

“SNMP-SERVER GROUP” on page 559

“SNMP-SERVER VIEW” on page 568

SNMP-SERVER CONTACT

Syntax

```
snmp-server contact LINE
```

```
no snmp-server contact
```

Parameters

LINE Specifies an alphanumeric string including spaces. You do not have to use quotation marks to indicate spaces. Choose a value that is between 1 and 255 characters in length.

Description

Use the SNMP-SERVER CONTACT command to set a contact person, email address, or IP address for the SNMP system. To remove a contact from the SNMP server, use the no form of this command.

Command Mode

Configuration Terminal mode

Examples

The following commands set the SNMP server contact to info@alliedtelesis.com:

```
switch#configure terminal
switch#(config)#snmp-server contact
info@alliedtelesis.com
```

The following commands set the SNMP server contact to "Todd Marcus:"

```
switch#configure terminal
switch#(config)#snmp-server contact Todd Marcus
```

The following commands set the SNMP server contact to IP address 192.34.12.4:

```
switch#configure terminal
switch#(config)#snmp-server contact 192.34.12.4
```

Related Commands

“SNMP-SERVER USER” on page 564

SNMP-SERVER ENABLE TRAPS ENVIRON

Syntax

```
snmp-server enable traps environ fan|temp|volt  
no snmp-server enable traps environ fan|temp|volt
```

Parameters

fan Enables the stop fan trap.

temp Enables abnormal temperature traps.

volt Enables exceeding voltage limit traps.

Description

Use the SNMP-SERVER ENABLE TRAPS ENVIRON command to enable environmental traps on the switch. Choose from fan, temperature, and voltage traps.

Use the no form of this command to disable environmental traps.

Note

Both the AT-9000/28SP and the AT-9000/52 switches have fans. The AT-9000/28 switch does not have a fan.

Command Mode

Configuration Terminal mode

Examples

The following commands enable fan traps on the switch:

```
switch#configure terminal  
switch(config)#snmp-server enable traps environ fan
```

The following commands enable voltage traps on the switch:

```
switch#configure terminal  
switch(config)#snmp-server enable traps environ volt
```

Related Commands

“SNMP-SERVER ENABLE TRAPS SNMP” on page 558

SNMP-SERVER ENABLE TRAPS SNMP

Syntax

```
snmp-server enable traps snmp link IFNAME|auth  
no snmp-server enable traps snmp link IFNAME|auth
```

Parameters

auth Enables authentication failure traps on the switch.

link Enables link up and link down traps on the specified port.

IFNAME Indicates an interface name. Enter either a port number or a VLAN ID. For a port number, specify values ge1 through ge52. For a VLAN ID, specify vlan followed by the VLAN ID. For example, to indicate VLAN 1 enter "vlan1."

Description

Use the SNMP-SERVER ENABLE TRAPS SNMP command to enable authentication failure traps on the switch or SNMP link and on the specified port.

Use the no form of this command to authentication failure traps on the switch or SNMP link and on the specified port.

Command Mode

Configuration Terminal mode

Examples

The following commands enable link up and link down traps on port 7:

```
switch#configure terminal  
switch(config)#snmp-server enable traps snmp link ge7
```

The following commands enable authentication traps on port 7:

```
switch#configure terminal  
switch(config)#snmp-server enable traps snmp auth ge7
```

Related Commands

"SNMP-SERVER ENABLE TRAPS ENVIRON" on page 556

SNMP-SERVER GROUP

Syntax

```
snmp-server group GROUPNAME usm|v1|v2c
auth|noauth|priv
|read[VIEWNAME]|write[VIEWNAME]|notify[VIEWNAME]

no snmp-server group GROUPNAME usm|v1|v2c
auth|noauth|priv
```

Parameters

GROUPNAME	Specifies the group name. Choose an alphanumeric value between 1 and 255 characters.
usm	Specifies the User Security Model mode.
v1	Specifies a group that uses the SNMPv1 security mode.
v2c	Specifies a group that uses the SNMPv2c security mode.
read	Specifies the view that permits the user read access.
	VIEWNAME Indicates a name of a view defined with the SNMP-SERVER VIEW command.
write	Specifies the view that the user is allowed to read and write.
	VIEWNAME Indicates a name of a view defined with the SNMP-SERVER VIEW command.
notify	Specifies the MIB object within the view that permits a user to send notification.
	VIEWNAME Indicates a name of a view defined with the SNMP-SERVER VIEW command.

Description

Use the SNMP-SERVER GROUP command to define the access rights for an SNMP group that you created with the SNMP-SERVER USER command. The SNMP-SERVER GROUP command assigns a security model and a security level to a group.

Use the no form of this command to remove an SNMP group.

Command Mode

Configuration Terminal mode

Examples

The following commands create an SNMPv1 group named “marcom” with write access to a view of the Internet which has an IP address of 1.3.6.1:

```
switch#configure terminal  
  
switch(config)#snmp-server group marcom v1 write  
1.3.6.1
```

The following commands create an SNMPv1 group named “group1” with access to a view called “nview” with notify permission:

```
switch#configure terminal  
  
switch(config)#snmp-server group group1 v1 notify  
nview
```

The following commands create an SNMPv2c group named “group2” with access to a view called “wview” with write permission and a view called “nview” with notify permission:

```
switch#configure terminal  
  
switch(config)#snmp-server group group2 v2c write  
wview notify nview
```

Related Commands

“SNMP-SERVER USER” on page 564

“SNMP-SERVER VIEW” on page 568

SNMP-SERVER HOST

Syntax

```
snmp-server host A.B.C.D informs|traps version 1|2c
COMMUNITY-STRING
```

```
no snmp-server host A.B.C.D informs|traps version 1|2c
COMMUNITY-STRING
```

Parameters

A.B.C.D	Specifies the name or the Internet address of the host.
inform	Sends SNMP inform messages to the host specified.
traps	Sends SNMP traps to the host specified.
version	Specifies the SNMP version used to send the traps. Choose from the following: <ul style="list-style-type: none"> 1 Indicates SNMPv1 traps. 2c Indicates SNMPv2c traps.
COMMUNITY-STRING	Specifies the password community string that is sent with the notification operation. There is no default for this parameter.

Description

Use the SNMP-SERVER HOST command to create an SNMP v1 or v2c host which is the recipient of SNMP notifications. In addition, you define which SNMP mode (v1 or v2c) the host is able to receive.

Use the no form of the command to remove one or more of the following:

- the specified host
- specific traps that the host can receive
- the community-string.

Command Mode

Configuration Terminal mode

Examples

The following commands create an SNMP v2c host with an IP address of 192.34.10.1, traps, and public notification:

```
switch#configure terminal
switch(config)#snmp-server host 192.34.10.1 traps
version 2c public
```

The following commands create an SNMP v1 host with an IP address of 192.34.10.1 that receives inform messages:

```
switch#configure terminal
switch(config)#snmp-server host 192.34.10.1 inform
version 1
```

Related Commands

“SNMP-SERVER COMMUNITY” on page 552

“SNMP-SERVER USER” on page 564

SNMP-SERVER LOCATION

Syntax

```
snmp-server location LOCATION
```

```
no snmp-server user USERNAME
```

Parameters

LOCATION Specifies the location of the system, from 1 to 255 characters in length. Valid characters are any printable characters and spaces.

Description

Use the SNMP-SERVER LOCATION command to set the location of the SNMP server.

Use the no form of this command to remove the configured location of the SNMP server from the system.

Command Mode

Configuration Terminal mode

Examples

The following commands set the location to "server room 523:"

```
switch#configure terminal
```

```
switch(config)#snmp-serverlocation server room 523
```

The following commands remove a configured location:

```
switch#configure terminal
```

```
switch(config)#no snmp-server location
```

Related Commands

none

SNMP-SERVER USER

Syntax

```
snmp-server user USERNAME usm[auth(md5|sha) auth-
password] | v1 | v2c
```

```
no snmp-server user USERNAME
```

Parameters

USERNAME	Specifies the name of the user on the host that connects to the agent.
usm	Indicates the User Security Model (USM) mode.
auth	Specifies authentication is used to verify the server. If you select this parameter, you must specify an auth-password. Choose one of the following: <ul style="list-style-type: none"> md5 Specifies the MD5 security mode. This is an optional parameter. sha Specifies the SHA security mode. This is an optional parameter.
auth-password	Specifies the SNMP authorization password. Enter a value between 1 and 162 characters.
v1	Specifies the SNMPv1 security mode. With this protocol, you do not need to specify a password.
v2c	Specifies the SNMPv2c security mode. With this protocol, you do not need to specify a password.

Description

Use the SNMP-SERVER USER command to create an SNMP user and map a security mode, authentication mode, and authorization password to the user.

Use the no form of the SNMP-SERVER USER command to remove an SNMP user from a group.

Command Mode

Configuration Terminal mode

Examples

The following commands add a user named “Marla” that is associated with the SNMP v2 security mode:

```
switch#configure terminal
switch(config)#snmp-server user Marla v2
```

The following commands remove a user named “Yifan.”

```
switch#configure terminal
switch(config)#no snmp-server user Yifan
```

The following commands create a user named “Mark” on the protocol with an authentication method of md5 and a password of “skateboarder7”:

```
switch#configure terminal
switch(config)#snmp-server user Mark usm auth md5
skateboarder7
```

Related Commands

“SNMP-SERVER GROUP” on page 559

“SNMP-SERVER USER REMOTE” on page 566

SNMP-SERVER USER REMOTE

Syntax

```
snmp-server user USERNAME remote A.B.C.D udp-port <1-65535> |usm encrypted|auth(md5|sha) PASSWORD
```

```
no snmp-server user USERNAME
```

Parameters

USERNAME	Specifies the name of the user on the host.
A.B.C.D	Specifies the IP address of the host that connects to the agent in the following format: xxx.xxx.xxx.xxx
udp-port	Specifies the UDP port of the remote host. Choose a value between 1 and 65,535. The default value is 162.
usm	Indicates the User Security Model which is used by SNMP version v3. This is the most secure SNMP protocol.
encrypted	Enables an encrypted password. This is an optional parameter that is only specified when SNMP v3 is the security mode.
auth	Specifies the authentication level which is used to verify the server. If you select this parameter, you must specify the SNMP authorization password. Choose from the following options: md5 Specifies the MD5 security mode. This is an optional parameter. sha Specifies the SHA security mode. This is an optional parameter.
PASSWORD	Specifies the SNMP authorization password. Enter a value between 1 and 64 alphanumeric characters.

Description

Use the SNMP-SERVER USER command to create an SNMP user on the host and map a security mode and security name to this user. The host is connected to the agent.

Use the no form of this command to remove an SNMP user.

Command Mode

Configuration Terminal mode

Examples

The following commands add a user named “Shufen” and a host with an IP address of 192.168.10.1 connected to UDP port 1812. The protocol is SNMPv2c and the authentication method is SHA security mode. The password, “super1password,” is used as an authorization password:

```
switch#configure terminal  
  
switch(config)#snmp-server user shufen remote  
192.168.10.1 v2 udp-port 1812 auth sha super1password
```

The following commands add a user named “Yifan” and a host with an IP address of 192.168.10.1. The protocol is SNMPv3 and the UDP port on the host is 1812. The authentication method is MD5 security mode and “coffeeicecream7” is used as an authorization password:

```
switch#configure terminal  
  
switch(config)#snmp-server user Yifan remote  
192.168.45.1 udp-port 1812 usm encrypted auth md5  
coffeeicecream7
```

Related Commands

“SNMP-SERVER GROUP” on page 559

“SNMP-SERVER USER” on page 564

SNMP-SERVER VIEW

Syntax

```
snmp-server view VIEWNAME WORD included|excluded
no snmp-server view VIEWNAME WORD included|excluded
```

Parameters

VIEWNAME	Specifies the name of the user.
WORD	Specifies the MIB Tree.
include	Includes users in this view.
exclude	Excludes users from this view.

Description

Use the SNMP-SERVER VIEW command to create an SNMP view and determine if a user can access it. The MIB tree is defined by RFC 1155 Structure of Management Information. You use object identifiers (OIDs) to specify MIB modules that are included or excluded in a view. After you create a view, you can map an SNMP group to it with the SNMP-SERVER GROUP command.

Use the no form of this command to remove an SNMP view.

Command Mode

Configuration Terminal mode

Examples

The following commands create a view called “Internet” and allows the users that are mapped to this Object Identifier (OID) to view the Internet:

```
switch#configure terminal
switch(config)#snmp-server view Internet 1.3.6.1
include
```

The following commands create a view called “sweng4” and excludes users that are mapped to this OID from viewing its contents:

```
switch#configure terminal
switch(config)#snmp-server view sweng4 1.3.6.1.4.1
exclude
```

Related Commands

“SNMP-SERVER GROUP” on page 559

Chapter 14

Spanning Tree Protocol (STP) Commands

The commands in this chapter can be used in the Spanning Tree Protocol (STP) and Rapid Spanning Tree Protocol (RSTP) Protocol daemons. All of the spanning-tree commands are available in the Configuration Terminal mode.

This chapter contains the following commands:

- ❑ “SHOW SPANNING-TREE” on page 572
- ❑ “SPANNING-TREE ACQUIRE” on page 575
- ❑ “SPANNING-TREE ERDDISABLE-TIMEOUT ENABLE” on page 576
- ❑ “SPANNING-TREE ERDDISABLE-TIMEOUT INTERVAL” on page 578
- ❑ “SPANNING-TREE ENABLE” on page 580
- ❑ “SPANNING-TREE FORWARD-TIME” on page 582
- ❑ “SPANNING-TREE HELLO-TIME” on page 583
- ❑ “SPANNING-TREE MAX-AGE” on page 584
- ❑ “SPANNING-TREE MODE” on page 585
- ❑ “SPANNING-TREE PORTFAST BPDU-FILTER DEFAULT” on page 586
- ❑ “SPANNING-TREE PORTFAST BPDU-GUARD DEFAULT” on page 587
- ❑ “SPANNING-TREE PORTFAST BPDU-GUARD” on page 588
- ❑ “SPANNING-TREE PRIORITY” on page 590

Note

To display the current spanning tree configuration, see “SHOW SPANNING-TREE” on page 345.

SHOW SPANNING-TREE

Syntax

```
show spanning-tree interface INTERFACE ge<1-52>
```

Parameters

INTERFACE Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.”

Description

Use the SHOW SPANNING-TREE command to display the status of the active spanning tree protocol on the specified port.

Command Mode

View and Privileged Executive modes

Example

The following command displays the spanning tree configuration on port 1:

```
switch#show spanning-tree interface ge1
```


Related Commands

“SPANNING-TREE MODE” on page 585

SPANNING-TREE ACQUIRE

Syntax

```
spanning-tree acquire  
no spanning-tree acquire
```

Parameters

none

Description

Use the SPANNING-TREE ACQUIRE command to enable dynamic learning of MAC addresses.

Use the no form of this command to disable dynamic learning of MAC addresses.

Command Mode

Configuration Terminal mode

Examples

The following commands enable dynamic learning of MAC addresses:

```
switch#configure terminal  
switch(config)#spanning-tree acquire
```

The following commands disable dynamic learning of MAC addresses:

```
switch#configure terminal  
switch(config)#no spanning-tree acquire
```

Related Commands

none

SPANNING-TREE ERRDISABLE-TIMEOUT ENABLE

Syntax

```
spanning-tree errdisable-timeout enable  
no spanning-tree errdisable-timeout enable
```

Parameters

`errdisable-timeout` Specifies the errdisable-timeout facility.
`enable` Enables the errdisable-timeout facility.

Description

Use the SPANNING-TREE ERRDISABLE-TIMEOUT ENABLE command to enable the errdisable-timeout facility which sets a timeout for ports that are disabled due to the BPDU guard feature. By default, the errdisable-timeout facility is disabled.

The BPDU guard features shuts down the port on receiving the BPDU on a BPDU-guard enabled port. This commands associates a timer with the feature such that the port is re-enabled without manual intervention after the set interval. Configure this interval with the SPANNING-TREE ERRDISABLE-TIMEOUT INTERVAL command.

Note

Use this command for RSTP.

Use the no form of this command to disable the errdisable-timeout facility.

Command Mode

Configuration Terminal mode

Examples

The following commands enable the errdisable-timeout facility on the switch:

```
switch#configure terminal  
switch(config)#spanning-tree errdisable-timeout enable
```

The following commands disable the errdisable-timeout facility on the switch:

```
switch#configure terminal
```

```
switch(config)#no spanning-tree errdisable-timeout
```

Related Commands

“SPANNING-TREE ENABLE” on page 580

“SPANNING-TREE ERRDISABLE-TIMEOUT INTERVAL” on page 578

“SPANNING-TREE PORTFAST BPDU-GUARD DEFAULT” on page 587

SPANNING-TREE ERRDISABLE-TIMEOUT INTERVAL

Syntax

```
spanning-tree errdisable-timeout interval <10-1000000>  
no spanning-tree errdisable-timeout interval
```

Parameters

errdisable-timeout Specifies the errdisable-timeout interval, in seconds.

Description

Use the SPANNING-TREE ERRDISABLE-TIMEOUT INTERVAL command to specify a time interval after which a port is brought back up when it has been disabled by the BPDU guard feature. By default, the interval is set to 300 seconds.

Note

Use this command for RSTP.

Use the no form of this command to remove the time interval.

Command Mode

Configuration Terminal mode

Examples

The following commands set the errdisable-timeout interval to 360 seconds:

```
switch#configure terminal  
switch(config)#spanning-tree errdisable-timeout  
interval 360
```

The following commands remove the configured errdisable-timeout interval:

```
switch#configure terminal  
switch(config)#no spanning-tree errdisable-timeout
```

Related Commands

“SHOW SPANNING-TREE” on page 572

“SPANNING-TREE ERDISABLE-TIMEOUT INTERVAL” on page 578

“SPANNING-TREE PORTFAST BPDU-GUARD DEFAULT” on page 587

SPANNING-TREE ENABLE

Syntax

```
spanning-tree stp|rstp|mstp enable
no spanning-tree stp|rstp|mstp enable
```

Parameters

stp	Specifies IEEE 801.Q Spanning-tree protocol (STP).
rstp	Specifies IEEE 801.w Rapid Spanning-tree protocol (RSTP).
mstp	Specifies IEEE 802.1s Multiple Spanning-tree protocol (MSTP).
enable	Makes the current spanning tree protocol the active spanning-tree protocol.
forward	Allows the ports on the switch to transmit and receive traffic regardless if a spanning tree protocol is enabled on the switch. This is an option parameter.

Description

Use the SPANNING-TREE ENABLE command to enable STP or RSTP on the switch. After you have specified a spanning tree protocol, such as RSTP, all subsequent spanning tree commands in a login session apply to this spanning tree protocol. To make the specified spanning tree protocol the active spanning tree mode and enable it on the switch, use the SPANNING TREE MODE command.

Use the no form of this command to disable the spanning tree protocol on the switch.

Allied Telesis recommends using the NO SPANNING-TREE STP|RSTP ENABLE FORWARD command to disable a spanning tree protocol. If this command is used without the "FORWARD" parameter, it disables the spanning-tree protocol and prevents all of the ports from receiving or transmitting data. This causes loss of data.

Note

The MSTP parameter is not supported in this release.

Command Mode

Configuration Terminal mode

Examples

The following commands enable RSTP on the switch:

```
switch#configure terminal  
switch(config)#spanning-tree rstp enable
```

The following commands disable STP on the switch while still allowing the ports to transmit and receive traffic:

```
switch#configure terminal  
switch(config)#no spanning-tree stp enable
```

Related Commands

“SPANNING-TREE MODE” on page 585

SPANNING-TREE FORWARD-TIME

Syntax

```
spanning-tree forward-time <4-30>  
no spanning-tree forward-time
```

Parameters

none

Description

Use the SPANNING-TREE FORWARD-TIME command to set the time, (in seconds), after which (if this bridge is the root bridge) each interface changes to the learning and forwarding states. This value is used by all instances. The default value is 15 seconds.

Use the no form of this command to restore the default value of 15 seconds.

Command Mode

Configuration Terminal mode

Example

The following commands set the forward delay time to 20 seconds:

```
switch#configure terminal  
switch(config)#spanning-tree forward-time 20
```

Related Commands

“SPANNING-TREE MAX-AGE” on page 584

SPANNING-TREE HELLO-TIME

Syntax

```
spanning-tree hello-time <1-10>  
no spanning-tree hello-time
```

Parameters

none

Description

Use the SPANNING-TREE HELLO-TIME command to set the hello-time, the time in seconds after which (if this bridge is the root bridge) all the bridges in a bridged LAN exchange Bridge Protocol Data Units (BPDUs). A very low value of this command leads to excessive traffic on the network, while a higher value delays the detection of topology change. This value is used by all instances.

To restore the default value of the hello time, use the no form of this command.

Command Mode

Configuration Terminal mode

Example

The following commands set the hello delay time to 9 seconds:

```
switch#configure terminal  
switch(config)#spanning-tree hello-time 9
```

Related Commands

none

SPANNING-TREE MAX-AGE

Syntax

```
spanning-tree max-age <6-40>
```

```
no spanning-tree max-age
```

Parameters

none

Description

Use the SPANNING-TREE MAX-AGE command to set the max-age for a bridge. Max-age is the maximum time, in seconds, for which (if a bridge is the root bridge) a message is considered valid. This prevents the frames from looping indefinitely. This value is used by all instances.

Set the value of max-age to greater than twice the value of the hello time plus one, but less than twice the value of forward delay minus one. The allowable range for max-age is 6-40 seconds. The default value is 20 seconds.

Configure this value sufficiently high, so that a frame generated by root can be propagated to the leaf nodes without exceeding the max-age.

Use the no form of this command to restore the default value of max-age.

Command Mode

Configuration Terminal mode

Example

The following commands set the max-age time for the bridge to 10 seconds:

```
switch#configure terminal
```

```
switch(config)#spanning-tree max-age 10
```

Related Commands

“SPANNING-TREE FORWARD-TIME” on page 582

SPANNING-TREE MODE

Syntax

```
spanning-tree mode stp|rstp|mstp  
no spanning-tree mode
```

Parameters

stp Specifies IEEE 801.Q Spanning-tree protocol (STP).
rstp Specifies IEEE 801.w rapid Rapid Spanning-tree protocol (RSTP).
mstp Specifies IEEE 802.1s Multiple Spanning-tree protocol (MSTP).

Description

Use the SPANNING-TREE MODE command to specify the active Spanning Tree Protocol and enable it on the switch. The default value is RSTP.

There is not a no form of this command.

Note

The MSTP parameter is not supported in this release.

Command Mode

Configuration Terminal mode

Example

The following commands set the active spanning tree mode to STP and enables this mode on the switch:

```
switch#configure terminal  
switch(config)#spanning-tree mode stp
```

Related Commands

“SPANNING-TREE ENABLE” on page 580

SPANNING-TREE PORTFAST BPDU-FILTER DEFAULT

Syntax

```
spanning-tree portfast bpdu-filter default  
no spanning-tree portfast bpdu-filter default
```

Parameters

none

Description

Use the SPANNING-TREE BPDU-FILTER DEFAULT command to globally enable the BPDU filter on a bridge.

The Spanning Tree Protocol sends BPDUs from all interfaces. Enabling the BPDU filter ensures that portfast-enabled interfaces do not transmit or receive any BPDUs.

Use the no form of this command to disable the BPDU filter on a bridge.

Command Mode

Configuration Terminal mode

Example

The following commands enable the BPDU filter on a bridge:

```
switch#configure terminal  
switch(config)#spanning-tree portfast bpdu-filter  
default
```

Related Commands

“SPANNING-TREE PORTFAST BPDU-GUARD DEFAULT” on page 587

SPANNING-TREE PORTFAST BPDU-GUARD DEFAULT

Syntax

```
spanning-tree portfast bpdu-guard default  
no spanning-tree portfast bpdu-guard default
```

Parameters

none

Description

Use the SPANNING-TREE BPDU-GUARD DEFAULT command to enable the BPDU (Bridge Protocol Data Unit) guard feature on a bridge. This command indicates the bridge level BPDU-Guard configuration takes effect for the entire switch.

When the BPDU guard feature is set for a bridge, all portfast-enabled interfaces of the bridge that have the BPDU guard set to default shut down the interface on receiving a BPDU. In this case, the BPDU is not processed. You can bring the interface up manually by using the NO SHUTDOWN command.

Use the no form of the SPANNING-TREE BPDU-GUARD DEFAULT command to disable the BPDU-guard feature on a bridge.

Command Mode

Configuration Terminal mode

Example

The following commands enable the BPDU Guard feature on a bridge:

```
switch#configure terminal  
switch(config)#spanning-tree portfast bpdu-guard  
default
```

Related Commands

“SHUTDOWN” on page 469

“SPANNING-TREE PORTFAST BPDU-GUARD” on page 588

SPANNING-TREE PORTFAST BPDU-GUARD

Syntax

```
spanning-tree portfast bpdu-guard default|disable|enable
```

Parameters

bpdu-guard	Indicates a portfast port that has BPDU guard turned on. This port enters the STP blocking state if it receives a BPDU. Choose one of the following:
default	Takes the setting that was configured for the switch with the SPANNING-TREE PORTFAST BPDU-GUARD DEFAULT command in the Configuration Terminal mode.
disable	Turns off the BPDU guard.
enable	Turns on the BPDU guard.

Description

Use the SPANNING-TREE BPDU-GUARD command to enable the BPDU (Bridge Protocol Data Unit) guard feature on a port. The BPDU guard is a port-security feature that changes how a portfast-enabled port behaves if it receives a BPDU. When this command is enabled, the BPDU guard is turned on and the port shuts down when if it receives a BPDU. It does not process the BPDU because it is considered suspicious. When this command is disabled, the BPDU guard is turned off and the port negotiates spanning tree with the device sending the BPDUs.

You can configure a port disabled by the BPDU guard to re-enable itself after a specific time interval. Set this interval with the SPANNING-TREE ERRDISABLE-TIMEOUT INTERVAL command. If you do not use the SPANNING-TREE ERRDISABLE-TIMEOUT INTERVAL command, then you need to manually re-enable the port with the NO SHUTDOWN command.

Command Mode

Interface Configuration mode

Examples

The following commands enable the BPDU Guard feature on port 25:

```
switch#configure terminal
```

```
switch(config)#interface ge25
```

```
switch(config-if)#spanning-tree portfast bpdu-guard  
enable
```

The following commands disable the BPDU Guard feature on port 50:

```
switch#configure terminal
```

```
switch(config)#interface ge50
```

```
switch(config-if)#spanning-tree portfast bpdu-guard  
disable
```

Related Commands

“SHOW SPANNING-TREE” on page 572

“SHUTDOWN” on page 469

“SPANNING-TREE ERDISABLE-TIMEOUT ENABLE” on page 576

“SPANNING-TREE ERDISABLE-TIMEOUT INTERVAL” on page 578

“SPANNING-TREE PORTFAST BPDU-FILTER DEFAULT” on page 586

SPANNING-TREE PRIORITY

Syntax

```
spanning-tree priority <0-61440>
```

```
no spanning-tree priority
```

Parameters

<0-61440> Specifies the bridge priority value in increments of 4,096. For example, 4,096, 8,192, and 12,288 are all valid values.

Description

Use the SPANNING-TREE PRIORITY command to specify the interface priority. A lower priority value indicates a greater likelihood of becoming a root. The default value is 32,768.

The no form of this command resets the spanning-tree priority value to the default value which is 32,768.

Note

This command can be used for either STP or RSTP.

Command Mode

Configuration Terminal mode

Example

The following commands set the spanning-tree priority on the switch to 4,096:

```
switch#configure terminal
```

```
switch(config)#spanning-tree priority 4096
```

Related Commands

none

Chapter 15

Virtual Local Area Networks (VLAN) Commands

This chapter provides descriptions of VLAN commands that are accessed through the Configuration Terminal mode.

This chapter contains the following commands:

- ❑ “SHOW RUNNING-CONFIG INTERFACE” on page 592
- ❑ “SHOW VLAN ALL” on page 594
- ❑ “SHOW VLAN BRIEF” on page 596
- ❑ “SHOW VLAN DYNAMIC” on page 598
- ❑ “SHOW VLAN STATIC” on page 599
- ❑ “SWITCHPORT TRUNK ALLOWED VLAN” on page 601
- ❑ “VLAN” on page 603
- ❑ “VLAN DATABASE” on page 604

SHOW RUNNING-CONFIG INTERFACE

Syntax

```
show running-config interface INTERFACE
bridge|dot1x|lacp|rstp|stp
```

Parameters

INTERFACE	Specifies the name of an interface. There are 28 ports on the AT-9000/28 and AT-9000/28SP switches. There are 52 ports on the AT-9000/52 switch. To specify a port, precede the port number with “ge.” To specify a VLAN, use the VLAN ID.
bridge	Displays the running configuration for a bridge for the specified interface.
dot1x	Displays the running configuration for 802.1X port authentication for the specified interface.
rstp	Displays the running configuration for RSTP (Rapid Spanning Tree Protocol) for the specified interface.
stp	Displays the running configuration for STP (Spanning Tree Protocol) for the specified interface.

Description

Use the SHOW RUNNING-CONFIG INTERFACE command to display the current configuration of an interface on the switch.

Note

Although the ip igmp and mstp parameters appear in the software for the SHOW RUNNING-CONFIG INTERFACE command, they are not supported in this release.

Command Mode

Privileged Executive, Configuration Terminal, Interface Configuration, VLAN Configuration, and Line modes

Examples

To display the status of the SHOW RUNNING-CONFIG INTERFACE command on port 4, enter the following command:

```
switch#show running-config interface vlan1
```

See Figure 150 for an example display.

```
!
interface vlan1
  ip address 192.168.8.10/8
!
```

Figure 150. SHOW RUNNING-CONFIG INTERFACE Port Example

To display the status of the current running configuration of port 1 for a bridge, enter the following command:

```
switch#show running-config interface ge1 bridge
```

See Figure 151 for an example display.

```
!
interface ge1
  switchport mode trunk
  switchport trunk allowed vlan add2
  switchport trunk allowed vlan add3
!
```

Figure 151. SHOW RUNNING-CONFIG INTERFACE Bridge Example

To display the status of the current running configuration of port 2 for the 802.1x Access Control feature, enter the following command:

```
switch#show running-config interface ge2 dot1x
```

See Figure 152 for an example display.

```
!
interface ge2
  dot1x port-control force-authorized
  dot1x port-control dir both
!
```

Figure 152. SHOW RUNNING-CONFIG INTERFACE DOT1X Example

Related Commands

“SHOW RUNNING-CONFIG” on page 420

SHOW VLAN ALL

Syntax

```
show vlan all
```

Parameters

none

Description

Use the SHOW VLAN ALL command to display information about all of the VLANs, both static and dynamic, configured on the switch.

Command Mode

View and Privileged Executive modes

Example

The following example shows the SHOW VLAN ALL command and a sample of the output:

```
switch3#show vlan all
```

See Figure 153 for an example display.

```
(switch3)# show vlan all
VLAN ID      Name          Type      State      Member ports
=====      =====      =====      =====      =====
1            default      STATIC    ACTIVE     ge1(u) ge2(u) ge3(u) ge4(u) ge6(u)
              ge8(u) ge9(u) ge10(u) ge11(u) ge12(u)
              ge13(u) ge14(u) ge15(u) ge16(u)
              ge17(u) ge18(u) ge19(u) ge20(u)
              ge21(u) ge22(u) ge23(u) ge24(u)
              ge25(u) ge26(u) ge27(u) ge28(u) ge7(u)
3            VLAN0003     STATIC    ACTIVE     ge5(u) ge7(t)
4            VLAN0004     STATIC    ACTIVE     ge7(t)
```

Figure 153. SHOW VLAN ALL

Related Commands

“SHOW MAC ADDRESS-TABLE VLAN” on page 315

“SHOW VLAN BRIEF” on page 596

“SHOW VLAN DYNAMIC” on page 598

“SHOW VLAN STATIC” on page 599

SHOW VLAN BRIEF

Syntax

```
show vlan brief
```

Parameters

none

Description

Use the SHOW VLAN BRIEF command to display information about all of the VLANs, both static and dynamic, configured on the switch.

Command Mode

View and Privileged Executive modes

Example

The following example shows the SHOW VLAN BRIEF command and a sample of the output:

```
switch3#show vlan brief
```

See Figure 154 for an example display.

```
(switch3)# show vlan brief
VLAN ID    Name          Type      State      Member ports
=====    =====    =====    =====    =====
1          default      STATIC    ACTIVE    ge1(u) ge2(u) ge3(u) ge4(u) ge6(u)
           ge8(u) ge9(u) ge10(u) ge11(u) ge12(u)
           ge13(u) ge14(u) ge15(u) ge16(u)
           ge17(u) ge18(u) ge19(u) ge20(u)
           ge21(u) ge22(u) ge23(u) ge24(u)
           ge25(u) ge26(u) ge27(u) ge28(u) ge7(u)
3          VLAN0003     STATIC    ACTIVE    ge5(u) ge7(t)
4          VLAN0004     STATIC    ACTIVE    ge7(t)
```

Figure 154. SHOW VLAN BRIEF

Related Commands

“SHOW MAC ADDRESS-TABLE VLAN” on page 315

“SHOW VLAN ALL” on page 594

“SHOW VLAN BRIEF” on page 596

“SHOW VLAN DYNAMIC” on page 598

“SHOW VLAN STATIC” on page 599

SHOW VLAN DYNAMIC

Syntax

```
show vlan dynamic
```

Parameters

none

Description

Use the SHOW VLAN DYNAMIC command to display information about dynamic VLANs on the switch.

Command Mode

View and Privileged Executive modes

Example

The following example shows the SHOW VLAN DYNAMIC command and a sample of the output:

```
switch3#show vlan dynamic
```

See Figure 155 for an sample display.

```
(switch3)# show vlan dynamic
VLAN ID      Name          Type          State          Member ports
=====      =====      =====      =====      =====
9            VLAN0009      DYNAMIC      ACTIVE         ge11(u) ge12(u) ge33(u) ge14(u)
```

Figure 155. SHOW VLAN DYNAMIC

Related Commands

“SHOW VLAN ALL” on page 594

“SHOW VLAN BRIEF” on page 596

“SHOW VLAN STATIC” on page 599

SHOW VLAN STATIC

Syntax

```
show vlan static
```

Parameters

none

Description

Use the SHOW VLAN STATIC command to display information about all of the VLANs, both static and dynamic, configured on the switch.

Command Mode

View and Privileged Executive modes

Example

The following example shows the SHOW VLAN STATIC command and a sample of the output:

```
switch3#show vlan static
```

See Figure 156 for an sample display.

```
(switch3)# show vlan static
VLAN ID   Name           Type      State      Member ports
          (u)-Untagged, (t) Tagged
=====
1         default       STATIC    ACTIVE    ge1(u) ge2(u) ge3(u) ge4(u) ge6(u)
          ge8(u) ge9(u) ge10(u) ge11(u) ge12(u)
          ge13(u) ge14(u) ge15(u) ge16(u)
          ge17(u) ge18(u) ge19(u) ge20(u)
          ge21(u) ge22(u) ge23(u) ge24(u)
          ge25(u) ge26(u) ge27(u) ge28(u) ge7(u)
3         VLAN0003      STATIC    ACTIVE    ge5(u) ge7(t)
4         VLAN0004      STATIC    ACTIVE    ge7(t)
```

Figure 156. SHOW VLAN STATIC

Related Commands

“SHOW VLAN ALL” on page 594

“SHOW VLAN BRIEF” on page 596

“SHOW VLAN DYNAMIC” on page 598

SWITCHPORT TRUNK ALLOWED VLAN

Syntax

```
switchport trunk allowed vlan add|remove VLANID  
no switchport trunk vlan
```

Parameters

- | | |
|--------|---|
| add | Add a VLAN to transmit and receive through the Layer-2 interface. |
| remove | Remove a VLAN that transmits and receives through the Layer-2 interface. |
| VLANID | Specifies a VLAN ID or a list of VLAN IDs. Enter a value from 2 to 4094. Set a single VLAN, VLAN range, or a VLAN list.

For a VLAN range, specify the lowest VLAN, then the highest VLAN number in the range, and separate them with a hyphen.

For a VLAN list, specify VLAN IDs separated by commas. |

Note

Do not enter spaces between hyphens or commas when setting parameters for VLAN ranges or lists.

Description

Use the SWITCHPORT TRUNK ALLOWED VLAN command to change the default VLAN for an interface. Use the no form of this command to remove a previously created VLAN with the specified VLAN ID.

Command Mode

Interface Configuration mode

Examples

The following commands add a single VLAN, VLAN 2, to the member set of port 6:

```
switch#configure terminal  
switch(config)#interface ge6
```

```
switch(config-if)#switchport mode trunk
```

```
switch(config-if)#switchport trunk allowed vlan add 2
```

The following commands add VLANs 3 through 6 to the member set of port 7:

```
switch#configure terminal
```

```
switch(config)#interface ge7
```

```
switch(config-if)#switchport mode trunk
```

```
switch(config-if)#switchport trunk allowed vlan add 3-6
```

The following commands remove a list of VLANs from port 5:

```
switch#configure terminal
```

```
switch(config)#interface ge5
```

```
switch(config-if)#switchport mode trunk
```

```
switch(config-if)#switchport trunk allowed vlan remove 3-5
```

Related Commands

“SHOW VLAN ALL” on page 594

“SWITCHPORT MODE TRUNK” on page 479

VLAN

Syntax

```
vlan <2-4094> name NAME state enable|disable
```

Parameters

<2-4094>	Indicates the VLAN ID. Enter a value between 2 and 4094.				
name	Indicates the name of the VLAN. Enter a text value.				
state	Indicates the active state of the VLAN. Choose from the following: <table> <tr> <td>enable</td> <td>Activates the VLAN.</td> </tr> <tr> <td>disable</td> <td>Inactivates the VLAN.</td> </tr> </table>	enable	Activates the VLAN.	disable	Inactivates the VLAN.
enable	Activates the VLAN.				
disable	Inactivates the VLAN.				



Caution

You may not create a VLAN with a VLAN ID of 1. This is the default VLAN.

Command Mode

VLAN Configuration mode

Description

Use the VLAN command to create a VLAN, assign a name to it, and set the state of the VLAN.

Example

The following commands create a VLAN 2 with a name of “Sales” and enable it:

```
switch# configure terminal
switch(config)# vlan database
switch(config-vlan)# vlan 2 name sales state enable
```

Related Commands

“VLAN DATABASE” on page 604

VLAN DATABASE

Syntax

```
vlan database
```

Parameters

none

Command Mode

Configuration Terminal mode

Description

Use the VLAN DATABASE command to enter the VLAN configuration mode. After you enter the VLAN mode, the prompt changes to indicate the new mode and you can enter commands to add, delete, or modify values associated with a single VLAN.

Example

The following commands permits access to the VLAN Configuration mode and displays the new prompt that indicates the new mode:

```
switch# configure terminal  
switch(config)# vlan database  
switch(config-vlan)#
```

Related Commands

“VLAN” on page 603

Index

Numerics

802.1x Port-based Network Access Control
described 66
displaying status 66
DOT1X PORT-CONTROL command 453, 500
enabling 66, 383, 501
IP RADIUS SOURCE-INTERFACE command 502
LOGIN REMOTELOCAL command 489
RADIUS-SERVER HOST command 506
RADIUS-SERVER KEY command 504, 508
RADIUS-SERVER RETRANSMIT command 509
RADIUS-SERVER TIMEOUT command 510
setting 66
SHOW DOT1X ALL command 105, 253, 512
SHOW DOT1X command 104, 252, 511
SHOW DOT1X INTERFACE command 108, 256, 515
SHOW DOT1X SESSIONSTATISTICS command 110, 258
SHOW DOT1X STATISTICS INTERFACE command 112, 260, 517

A

ARP command 371, 373

B

BOOT CONFIG-FILE command 207

C

CAT command 208
CHANNEL GROUP command 451
CLEAR ARP CACHE command 209
CLEAR COUNTERS command 84, 210
CLEAR GMRP STATISTICS command 85, 211
CLEAR GVRP STATISTICS command 86, 212
CLEAR IP IGMP command 213
CLEAR IP IGMP GROUP command 214
CLEAR IP IGMP INTERFACE command 215
CLEAR LACP COUNTERS command 87, 216
CLEAR LINE VTY command 217, 488
CLEAR LOG command 436
CLEAR MAC ADDRESS-TABLE DYNAMIC command 41, 88, 218
CLEAR MAC ADDRESS-TABLE MULTICAST command 90, 220
CLEAR MAC ADDRESS-TABLE STATIC command 92, 222
CLEAR SPANNING-TREE DETECTED PROTOCOL command 94

CLEAR SPANNING-TREE DETECTED PROTOCOLS command 224
CLOCK SET command 95, 225
CLOCK SUMMER-TIME command 374
CLOCK TIMEZONE command 376
commands, formatting 32
community names
SNMPv1 and SNMPv2c 69
CONFIGURATION TERMINAL command 226
Configuration Terminal mode
ARP command 371, 373
assigning a password 384
CLEAR LOG command 436
CLOCK SUMMER-TIME command 374
CLOCK TIMEZONE command 376
CRYPTO KEY GENERATE command 378
CRYPTO KEY ZEROIZE command 380
CRYPTO SSHSERVER command 381
DOT1X SYSTEM-AUTH-CTRL command 383, 501
ENABLE SECRET command 384
EXIT command 241, 385, 454
exiting 241, 385, 454
HELP command 98, 386
HOSTNAME command 388
INTERFACE command 389
IP IGMP LIMIT command 391
IP IGMP SNOOPING command 393
IP ROUTE command 37, 394
IP SSH AUTHENTICATION-TRIES command 395
IP SSH RSA KEYPAIR-NAME command 397, 398
IP SSH TIMEOUT command 396
LACP SYSTEM-PRIORITY command 399
LINE CONSOLE command 400, 490
LINE VTY command 491
LOG BUFFERED command 437
LOG CONSOLE command 438
LOG RECORD-PRIORITY command 443
LOG STDOUT command 444
LOG SYSLOG command 446
LOG TRAP command 447
MAC ADDRESS-TABLE AGING-TIME command 41, 401
MAC ADDRESS-TABLE STATIC DISCARD command 42, 402
MAC ADDRESS-TABLE STATIC FORWARD command 42, 404
MLS QOS command 406
MLS QOS ENABLE command 408
NTP AUTHENTICATE command 38, 409, 410

NTP SERVER command 37, 412
 NTP TRUSTED-KEY command 38, 414
 SERVICE ADVANCED-VTY command 415
 SERVICE PASSWORD-ENCRYPTION command 416
 SERVICE TERMINAL-LENGTH command 417
 SHOW LIST command 418
 SHOW RUNNING-CONFIG command 420
 SHOW RUNNING-CONFIG FULL command 335, 424
 SHOW RUNNING-CONFIG INTERFACE command 426
 SHOW RUNNING-CONFIG IP IGMP SNOOPING command 428
 SPANNING-TREE ACQUIRE command 575
 SPANNING-TREE ENABLE command 440, 442, 580
 SPANNING-TREE ERDDISABLE-TIMEOUT ENABLE command 576
 SPANNING-TREE ERDDISABLE-TIMEOUT INTER-VAL command 578
 SPANNING-TREE FORWARD-TIME command 582
 SPANNING-TREE HELLO-TIME command 583
 SPANNING-TREE MAX-AGE command 584
 SPANNING-TREE MODE command 585
 SPANNING-TREE PORTFAST BPDU-FILTER command 586
 SPANNING-TREE PORTFAST BPDU-GUARD command 587
 SPANNING-TREE PRIORITY command 590
 USERNAME command 39, 434
 COPY DEFAULT.CFG command 229, 231
 COPY RUNNING-CONFIG STARTUP-CONFIG command 39, 47, 228
 COPY WORD XMODEM command 233
 COPY XMODEM WORD command 234
 CoS. *See* Class of Service (CoS)
 CP command 235
 CRYPTO KEY GENERATE command 378
 CRYPTO KEY ZEROIZE command 380
 CRYPTO SSHSERVER command 381

D

destination port in a port mirror 52
 DHCP
 IP ADDRESS DHCP command 37, 461
 setting 37
 DISABLE command 236
 document conventions 18
 DOT1X INITIALIZE INTERFACE command 237
 DOT1X PORT-CONTROL command 453, 500
 DOT1X SYSTEM-AUTH-CTRL command 383, 501
 downgrading software 43
 DOWNLOAD A.B.C.D FILE-NAME command 43
 DOWNLOAD SERIAL XMODEM command 238
 DOWNLOAD TFTP command 240
 dynamic GVRP port 520
 dynamic GVRP VLAN 520

E

ENABLE command 96

ENABLE SECRET command 384
 EXIT command 97, 241, 385, 454

F

FLOW CONTROL BACKPRESSURE command 59, 455
 FLOW CONTROL RECEIVE command 456
 FLOW CONTROL SEND command 60, 457

G

GARP
 timer, setting 527, 535, 537
 GARP VLAN Registration Protocol (GVRP)
 described
 guidelines 521
 gateway address
 setting 37
 GMRP
 creating dynamic VLANs 531, 532
 SET GMRP EXTENDED-FILTERING 531
 SET GMRP FDWALL 532
 GVRP
 creating dynamic VLANs 524
 disabling 62, 522, 530
 disabling ports 523
 enabling 62, 522, 530
 enabling dynamic VLANs 63
 enabling ports 523
 setting GVRP registration 63
 setting registration 525, 533
 setting the applicant state 63
 setting the join and leave timers 64
 GVRP. *See* GARP VLAN Registration Protocol (GVRP)

H

help
 selecting context-sensitive help 32
 HELP command 98, 242, 386
 HOSTNAME command 388

I

interface
 assigning secure MAC addresses 57
 creating port trunks 58, 475
 disabling backpressure 59
 disabling ports 54
 displaying 52, 118, 267, 282, 284
 enabling backpressure 59
 enabling flow control 60
 enabling ports 54
 preventing broadcast storms 61
 setting duplex mode 53
 setting maximum number of MAC addresses 57
 setting MDI 54, 463
 setting MDIX 54, 463
 setting MTU value 39, 466
 setting port mirroring 52
 setting port security 55, 539
 setting port speed 53
 setting port-security violation 58, 545

- setting the maximum number of MAC addresses 540, 542
 - setting the security mode 57, 543
 - setting the threshold level 61, 476
 - INTERFACE command 389
 - Interface Configuration mode
 - FLOW CONTROL BACKPRESSURE command 59, 455
 - FLOW CONTROL RECEIVE command 456
 - FLOW CONTROL SEND command 60, 457
 - IP ADDRESS command 36, 458
 - IP ADDRESS DHCP command 37, 461
 - LACP PORT-PRIORITY command 462
 - SHOW RUNNING-CONFIG INTERFACE command 467
 - SHUTDOWN command 54, 469
 - SPANNING-TREE PORTFAST BPDU-GUARD command 470, 588
 - SPEED command 53, 472
 - STATIC-CHANNEL-GROUP command 58, 475
 - USER-PRIORITY-REGEN-TABLE command 485
 - Interface mode
 - accessing the Interface mode 389
 - HELP command 98, 386
 - MDIX command 54, 463
 - MIRROR INTERFACE DIRECTION command mode 52, 464
 - MTU command 39, 466
 - SHOW RUNNING-CONFIG command 46
 - SHOW RUNNING-CONFIG FULL command 424
 - SHOW RUNNING-CONFIG SWITCH command 340, 429
 - SHOW RUNNING-CONFIG SWITCH LACP command 431
 - SHOW RUNNING-CONFIG SWITCH RADIUS-SERVER command 432
 - SHOW RUNNING-CONFIG SWITCH VLAN command 433
 - STORM-CONTROL command 61, 476
 - SWITCHPORT ACCESS VLAN command 50, 478
 - SWITCHPORT MODE TRUNK command 479
 - SWITCHPORT PORT-SECURITY MAXIMUM command 57, 540, 542
 - SWITCHPORT PORT-SECURITY MODE command 57, 58, 543, 545
 - SWITCHPORT TRUNK ALLOWED VLAN command 50, 481, 601
 - TRAFFIC-CLASS-TABLE USER-PRIORITY NUM-TRAFFIC-CLASSES command 483
 - USER-PRIORITY command 484
 - IP address
 - assigning 36
 - IP ADDRESS command 36, 458
 - IP ADDRESS DHCP command 37, 461
 - IP IGMP LIMIT command 391
 - IP IGMP SNOOPING command 393
 - IP RADIUS SOURCE-INTERFACE command 502
 - IP ROUTE command 37, 394
 - IP SSH AUTHENTICATION-TRIES command 395
 - IP SSH RSA KEYPAIR-NAME command 397, 398
 - IP SSH TIMEOUT command 396
- ## K
- keyword abbreviations 32
- ## L
- LACP
 - setting 65
 - LACP PORT-PRIORITY command 462
 - LACP SYSTEM-PRIORITY command 399
 - limited port security mode 55
 - LINE CONSOLE command 400, 490
 - Line mode
 - SHOW RUNNING-CONFIG INTERFACE command 493
 - TELENET command 495
 - LINE VTY command 491
 - Link Access Control Protocol
 - CHANNEL GROUP command 451
 - locked port security mode 56
 - LOG BUFFERED command 437
 - LOG CONSOLE command 438
 - log output
 - modifying 371, 373, 374, 376, 378, 380, 381
 - LOG RECORD-PRIORITY command 443
 - LOG STDOUT command 444
 - LOG SYSLOG command 446
 - LOG TRAP command 371, 373, 374, 376, 378, 380, 381, 447
 - Logging
 - CLEAR LOG command 436
 - LOG BUFFERED command 437
 - LOG CONSOLE command 438
 - LOGIN REMOTELOCAL command 489
 - LOGOUT command 100, 243
 - LS command 244
- ## M
- MAC address
 - adding a static MAC address 42
 - assigning secure MAC addresses 57
 - clearing 41
 - displaying the MAC address table 40, 156, 305
 - removing a static MAC address 42
 - setting 40
 - setting a maximum number 57
 - setting the aging time 41
 - MAC address table
 - aging time 401, 402
 - MAC ADDRESS-TABLE AGING-TIME command 41, 401
 - MAC ADDRESS-TABLE STATIC DISCARD command 42, 402
 - MAC ADDRESS-TABLE STATIC FORWARD command 42, 404
 - MDI mode 54, 463
 - MDIX command 54, 463
 - MDIX mode 54, 463
 - MIRROR INTERFACE DIRECTION command 52, 464

MLS QOS command 406
 MLS QOS ENABLE command 408
 MTU command 39, 466
 MV command 247

N

Network Time Protocol (NTP)
 specifying key numbers 38, 414
 specifying the server IP address 37, 412
 Network Transport Protocol (NTP)
 turning on authentication 38, 409, 410
 NTP AUTHENTICATE command 38, 409, 410
 NTP SERVER command 37, 412
 NTP TRUSTED-KEY command 38, 414

P

PING command 245
 port-based access control. See 802.1x Port-based Network Access Control
 Privilege Executive mode
 SHOW RUNNING-CONFIG FULL command 335
 SHOW UPLINK INTERFACE command 351
 Privileged Executive mode
 BOOT CONFIG-FILE command 207
 CAT command 208
 CLEAR ARP CACHE command 209
 CLEAR COUNTERS command 210
 CLEAR GMRP STATISTICS command 211
 CLEAR GVRP STATISTICS command 212
 CLEAR IP IGMP command 213
 CLEAR IP IGMP GROUP command 214
 CLEAR IP IGMP INTERFACE command 215
 CLEAR LACP COUNTERS command 87, 216
 CLEAR LINE VTY command 217, 488
 CLEAR MAC ADDRESS-TABLE DYNAMIC command 41, 218
 CLEAR MAC ADDRESS-TABLE MULTICAST command 90, 220
 CLEAR MAC ADDRESS-TABLE STATIC command 92, 222
 CLEAR SPANNING-TREE DETECTED PROTOCOL command 94
 CLEAR SPANNING-TREE DETECTED PROTOCOLS command 224
 CLOCK SET command 225
 CONFIGURATION TERMINAL command 226
 COPY DEFAULT.CFG command 229, 231
 COPY RUNNING-CONFIG STARTUP-CONFIG command 39, 47, 228
 COPY WORD XMODEM command 233
 COPY XMODEM WORD command 234
 CP command 235
 DISABLE command 236
 DOT1X INITIALIZE INTERFACE command 237
 DOWNLOAD A.B.C.D FILE-NAME command 43
 DOWNLOAD SERIAL XMODEM command 238
 DOWNLOAD TFTP command 240
 HELP command 98, 242, 386
 LOGOUT command 243

LS command 244
 MV command 247
 PING command 245
 RM command 248
 SHOW BOOT command 249
 SHOW CLOCK command 250
 SHOW DOT1X ALL 253
 SHOW DOT1X INTERFACE command 256
 SHOW DOT1X STATISTICS SESSIONSTATISTICS command 258
 SHOW ETHERCHANNEL command 262
 SHOW ETHERCHANNEL DETAIL command 263
 SHOW ETHERCHANNEL LOAD-BALANCE command 265
 SHOW ETHERCHANNEL SUMMARY command 266
 SHOW FLOWCONTROL INTERFACE command 267
 SHOW GMRP CONFIGURATION command 269
 SHOW GMRP MACHINE command 270
 SHOW GMRP STATISTICS command 271
 SHOW GMRP TIMER command 272
 SHOW GVRP CONFIGURATION command 273
 SHOW GVRP MACHINE command 275
 SHOW GVRP STATISTICS command 277
 SHOW GVRP TIMER command 279
 SHOW HISTORY command 281
 SHOW INTERFACE command 52, 130, 282
 SHOW INTERFACE STATUS command 284
 SHOW INTERFACE SWITCHPORT ALL command 287
 SHOW IP ARP command 289
 SHOW IP IGMP GROUPS command 291
 SHOW IP IGMP INTERFACE command 293
 SHOW IP INTERFACE BRIEF command 295
 SHOW IP ROUTE command 297
 SHOW LACP SYS-ID command 301
 SHOW LACP-COUNTER command 299
 SHOW LIST command 302
 SHOW MAC ADDRESS-TABLE AGING-TIME command 41, 307
 SHOW MAC ADDRESS-TABLE command 40, 156, 305
 SHOW MAC ADDRESS-TABLE DYNAMIC command 309
 SHOW MAC ADDRESS-TABLE INTERFACE command 311
 SHOW MAC ADDRESS-TABLE STATIC command 313
 SHOW MAC ADDRESS-TABLE VLAN command 315
 SHOW MIRROR command 317
 SHOW MIRROR INTERFACE command 318
 SHOW MLS QOS INTERFACE command 319
 SHOW NTP ASSOCIATIONS command 320
 SHOW NTP STATUS command 322
 SHOW PORT-SECURITY ADDRESS command 323
 SHOW PORT-SECURITY INTERFACE command 325
 SHOW PRIVILEGE command 328
 SHOW RMON ALARM command 329
 SHOW RMON EVENT command 330
 SHOW RMON HISTORY command 331

- SHOW RMON STATISTICS command 333
 - SHOW RUNNING-CONFIG FULL command 335, 424
 - SHOW RUNNING-CONFIG INTERFACE command 337
 - SHOW RUNNING-CONFIG IP IGMP SNOOPING command 339
 - SHOW SPANNING-TREE command 181, 345, 572
 - SHOW SSHFINGERPRINT command 342
 - SHOW SSHSERVER STATUS command 343
 - SHOW STARTUP-CONFIG command 347
 - SHOW STATIC-CHANNEL-GROUP command 187, 188, 189, 347, 349, 350, 351
 - SHOW STORM-CONTROL command 188, 350
 - SHOW USER-PRIORITY command 353
 - SHOW USERS command 355
 - SHOW VERSION command 356
 - SHOW VLAN ALL command 594
 - SHOW VLAN BRIEF command 596
 - SHOW VLAN DYNAMIC command 598
 - SHOW VLAN STATIC command 599
 - SYSTEM FACTORY-RESET command 43, 357
 - SYSTEM REBOOT command 43, 358
 - TELENET command 359
 - TRACEROUTE command 360
 - UPLOAD command 363
 - UPLOAD SERIAL XMODEM command 361
 - WRITE FILE command 365
 - WRITE TERMINAL command 366
- Q**
- QUIT command 101
- R**
- RADIUS authentication
 - configuring 67
 - setting 68
 - RADIUS-SERVER HOST command 506
 - RADIUS-SERVER KEY command 504, 508
 - RADIUS-SERVER RETRANSMIT command 509
 - RADIUS-SERVER TIMEOUT command 510
 - Rapid Spanning Tree Protocol (RSTP)
 - disabling 73
 - displaying 72
 - enabling 73
 - setting 71
 - setting priority 73
 - RM command 248
 - RMON ALARM command 548
 - RMON EVENT command 550
- S**
- Secure Shell (SSH)
 - described 71
 - setting 71
 - secured port security mode 56
 - SERVICE ADVANCED-VTY command 415
 - SERVICE PASSWORD-ENCRYPTION command 416
 - SERVICE TERMINAL-LENGTH command 417
 - SET GMRP EXTENDED-FILTERING command 531
 - SET GMRP FDWALL command 532
 - SET GMRP TIMER command 535, 537
 - SET GVRP APPLICANT command 523
 - SET GVRP command 522, 530
 - SET GVRP DYNAMIC-VLAN-CREATION command 524
 - SET GVRP REGISTRATION command 525, 533
 - SET GVRP TIMER command 527
 - SHOW BOOT command 249
 - SHOW CLOCK command 102, 250
 - SHOW DOT1X ALL command 105, 253, 512
 - SHOW DOT1X command 104, 252, 511
 - SHOW DOT1X INTERFACE command 108, 256, 515
 - SHOW DOT1X SESSIONSTATISTICS command 110, 258
 - SHOW DOT1X STATISTICS INTERFACE command 112, 260, 517
 - SHOW ETHERCHANNEL command 114, 262
 - SHOW ETHERCHANNEL DETAIL command 115, 263
 - SHOW ETHERCHANNEL LOAD-BALANCE command 265
 - SHOW ETHERCHANNEL SUMMARY command 117, 266
 - SHOW FLOWCONTROL INTERFACE command 118, 267
 - SHOW GMRP CONFIGURATION command 119, 269
 - SHOW GMRP MACHINE command 120, 270
 - SHOW GMRP STATISTICS command 121, 271
 - SHOW GMRP TIMER command 122, 272
 - SHOW GVRP CONFIGURATION command 123, 273
 - SHOW GVRP MACHINE command 275
 - SHOW GVRP STATISTICS command 125, 277
 - SHOW GVRP TIMER command 127, 279
 - SHOW HISTORY command 129, 281
 - SHOW INTERFACE command 52, 130, 282
 - SHOW INTERFACE STATUS ALL command 132
 - SHOW INTERFACE STATUS command 284
 - SHOW INTERFACE SWITCHPORT ALL command 135, 146, 287
 - SHOW IP ARP command 137, 289
 - SHOW IP IGMP GROUPS command 139, 291
 - SHOW IP IGMP INTERFACE command 141, 293
 - SHOW IP IGMP SNOOPING STATISTICS command 143
 - SHOW IP INTERFACE BRIEF command 144, 295
 - SHOW IP ROUTE command 148, 297
 - SHOW LACP SYS-ID command 152, 301
 - SHOW LACP-COUNTER command 150, 299
 - SHOW LIST command 153, 302, 418
 - SHOW LOG command 155, 304
 - SHOW MAC ADDRESS-TABLE AGING-TIME command 41, 307
 - SHOW MAC ADDRESS-TABLE command 40, 156, 305
 - SHOW MAC ADDRESS-TABLE DYNAMIC command 309
 - SHOW MAC ADDRESS-TABLE INTERFACE command 311
 - SHOW MAC ADDRESS-TABLE STATIC command 313
 - SHOW MAC ADDRESS-TABLE VLAN command 315
 - SHOW MIRROR command 158, 317
 - SHOW MIRROR INTERFACE command 159, 318
 - SHOW MLS QOS INTERFACE command 160, 319
 - SHOW NTP ASSOCIATIONS command 161, 320
 - SHOW NTP STATUS command 163, 322
 - SHOW PORT ETHERCHANNEL command 164
 - SHOW PORT-SECURITY ADDRESS command 166, 323

- SHOW PORT-SECURITY INTERFACE command 168, 325
- SHOW PRIVILEGE command 171, 328
- SHOW RMON ALARM command 172, 329
- SHOW RMON EVENT command 173, 330
- SHOW RMON HISTORY command 174, 331
- SHOW RMON STATISTICS command 176, 333
- SHOW RUNNING-CONFIG command 46, 420
- SHOW RUNNING-CONFIG FULL command 335, 424
- SHOW RUNNING-CONFIG INTERFACE command 337, 426, 467, 493, 592
- SHOW RUNNING-CONFIG IP IGMP SNOOPING command 339, 428
- SHOW RUNNING-CONFIG SWITCH command 340, 429
- SHOW RUNNING-CONFIG SWITCH LACP command 431
- SHOW RUNNING-CONFIG SWITCH RADIUS-SERVER command 432
- SHOW RUNNING-CONFIG SWITCH VLAN command 433
- SHOW SNMP COMMUNITY command 178
- SHOW SNMP HOST command 179
- SHOW SNMP STATUS command 180
- SHOW SPANNING-TREE command 181, 345, 572
- SHOW SSHFINGERPRINT command 184, 342
- SHOW SSHSERVER STATUS command 185, 343
- SHOW STARTUP-CONFIG command 347
- SHOW STATIC-CHANNEL-GROUP command 187, 188, 189, 347, 349, 350, 351
- SHOW STORM-CONTROL command 188, 350
- SHOW UPLINK INTERFACE command 189, 351
- SHOW USER-PRIORITY command 191, 353
- SHOW USER-PRIORITY-REGEN-TABLE command 192, 354
- SHOW USERS command 193, 355
- SHOW VERSION command 194, 356
- SHOW VLAN ALL command 195, 594
- SHOW VLAN BRIEF command 197, 596
- SHOW VLAN DYNAMIC command 199, 598
- SHOW VLAN STATIC command 200, 599
- SHUTDOWN command 54, 469
- SNMP
 - adding traps 70
 - creating communities 69
 - RMON ALARM command 548
 - RMON EVENT command 550
 - SNMP-SERVER COMMUNITY command 552
 - SNMP-SERVER CONTACT command 554
 - SNMP-SERVER ENABLE TRAPS ENVIRON command 556
 - SNMP-SERVER ENABLE TRAPS SNMP command 558
 - SNMP-SERVER GROUP command 559
 - SNMP-SERVER HOST command 561
 - SNMP-SERVER LOCATION command 563
 - SNMP-SERVER USER command 564, 566, 568
- SNMP community strings
 - access mode 69
 - default 69
 - name 69
 - trap receivers 70
- SNMP-SERVER COMMUNITY command 552
- SNMP-SERVER CONTACT command 554
- SNMP-SERVER ENABLE TRAPS ENVIRON command 556
- SNMP-SERVER ENABLE TRAPS SNMP command 558
- SNMP-SERVER GROUP command 559
- SNMP-SERVER HOST command 561
- SNMP-SERVER LOCATION command 563
- SNMP-SERVER USER command 564, 566, 568
- SNMPv1 and SNMPv2c
 - community names 69
 - described 68
 - setting 68
- software configuration
 - adding a privilege level 39
 - adding a user and password 39
 - copying 47, 228, 235, 365
 - displaying 46, 335, 366, 420, 424
 - down loading 238
 - uploading 229, 231, 233, 234, 361, 363
- source ports in a port mirror 52
- Spanning Tree Protocol (STP)
 - disabling 73
 - displaying 72
 - enabling 73
 - setting 71
 - setting priority 73
- SHOW SPANNING-TREE command 181, 345, 572
- SPANNING-TREE ACQUIRE command 575
- SPANNING-TREE ENABLE command 440, 442, 580
- SPANNING-TREE ERRDISABLE-TIMEOUT ENABLE command 576
- SPANNING-TREE ERRDISABLE-TIMEOUT INTERVAL command 578
- SPANNING-TREE FORWARD-TIME command 582
- SPANNING-TREE HELLO-TIME command 583
- SPANNING-TREE MAX-AGE command 584
- SPANNING-TREE MODE command 585
- SPANNING-TREE PORTFAST BPDU-FILTER command 586
- SPANNING-TREE PORTFAST BPDU-GUARD command 470, 587, 588
- SPANNING-TREE PRIORITY command 590
- SPANNING-TREE ACQUIRE command 575
- SPANNING-TREE ENABLE command 440, 442, 580
- SPANNING-TREE ERRDISABLE-TIMEOUT ENABLE command 576
- SPANNING-TREE ERRDISABLE-TIMEOUT INTERVAL command 578
- SPANNING-TREE FORWARD-TIME command 582
- SPANNING-TREE HELLO-TIME command 583
- SPANNING-TREE MAX-AGE command 584
- SPANNING-TREE MODE command 585
- SPANNING-TREE PORTFAST BPDU-FILTER command 586
- SPANNING-TREE PORTFAST BPDU-GUARD command 470, 587, 588
- SPANNING-TREE PRIORITY command 590
- SPEED command 53, 472
- SSH. See Secure Shell (SSH)

STATIC-CHANNEL-GROUP command 58, 475

STORM-CONTROL command 61, 476

switch

assigning an IP address 36

downloading software 43, 240

getting help 98, 386

naming 388

rebooting 43

resetting to factory defaults 43

setting a gateway address 37

setting DHCP 37

setting jumbo frames 39

setting terminal length 202

setting the network time 37

specifying a user name 39, 434

specifying passwords 39, 434

specifying the privilege level 39, 434

SWITCHPORT ACCESS VLAN command 50, 478

SWITCHPORT MODE TRUNK command 479

SWITCHPORT PORT-SECURITY MAXIMUM command

57, 540, 542

SWITCHPORT PORT-SECURITY MODE command 57,

58, 543, 545

SWITCHPORT TRUNK ALLOWED VLAN command 50,

481, 601

SYSTEM FACTORY-RESET command 43, 357

SYSTEM REBOOT command 43, 358

T

TELENET command 359, 495

Telnet

LINE VTY command 491

TERMINAL LENGTH command 202

TRACEROUTE command 360

traffic 60

TRAFFIC-CLASS-TABLE USER-PRIORITY NUM-TRAF-

FIC-CLASSES command 483

trap receivers 70

U

upgrading software 43

UPLOAD command 363

UPLOAD SERIAL XMODEM command 361

USERNAME command 39, 434

USER-PRIORITY command 484

USER-PRIORITY-REGEN-TABLE command 485

V

View mode 156

CLEAR COUNTERS command 84

CLEAR GMRP STATISTICS command 85

CLEAR GVRP STATISTICS command 86

CLEAR LACP COUNTERS command 87

CLEAR MAC ADDRESS-TABLE DYNAMIC command

88

CLOCK SET command 95

ENABLE command 96

EXIT command 97

exiting 97, 100, 101

HELP command 98

LOGOUT command 100

QUIT command 101

SHOW CLOCK command 102

SHOW DOT1X ALL 105

SHOW DOT1X ALL command 512

SHOW DOT1X INTERFACE command 108, 515

SHOW DOT1X STATISTICS INTERFACE command
112, 260, 517

SHOW DOT1X STATISTICS SESSIONSTATISTICS
command 110

SHOW ETHERCHANNEL command 114

SHOW ETHERCHANNEL DETAIL command 115

SHOW ETHERCHANNEL SUMMARY command 117

SHOW FLOWCONTROL INTERFACE command 118

SHOW GMRP CONFIGURATION command 119

SHOW GMRP MACHINE command 120

SHOW GMRP STATISTICS command 121

SHOW GMRP TIMER command 122

SHOW GVRP CONFIGURATION command 123

SHOW GVRP STATISTICS command 125

SHOW GVRP TIMER command 127

SHOW HISTORY command 129

SHOW INTERFACE STATUS ALL command 132

SHOW INTERFACE SWITCHPORT ALL command
135, 146

SHOW IP ARP command 137

SHOW IP IGMP GROUPS command 139

SHOW IP IGMP INTERFACE command 141

SHOW IP IGMP SNOOPING STATISTICS command
143

SHOW IP INTERFACE BRIEF command 144

SHOW IP ROUTE command 148

SHOW LACP SYS-ID command 152

SHOW LACP-COUNTER command 150

SHOW LIST command 153

SHOW LOG command 155, 304

SHOW MIRROR command 158

SHOW MIRROR INTERFACE command 159

SHOW MLS QOS INTERFACE command 160

SHOW NTP ASSOCIATIONS command 161

SHOW NTP STATUS command 163

SHOW PORT ETHERCHANNEL command 164

SHOW PORT-SECURITY ADDRESS command 166

SHOW PORT-SECURITY INTERFACE command 168

SHOW PRIVILEGE command 171

SHOW RMON ALARM command 172

SHOW RMON EVENT command 173

SHOW RMON HISTORY command 174

SHOW RMON STATISTICS command 176

SHOW SSHFINGERPRINT command 184

SHOW SSHSERVER STATUS command 185

SHOW UPLINK INTERFACE command 189

SHOW USER-PRIORITY command 191

SHOW USER-PRIORITY-REGEN-TABLE command
192, 354

SHOW USERS command 193

SHOW VERSION command 194

SHOW VLAN ALL command 195

Index

- SHOW VLAN BRIEF command 197
- SHOW VLAN DYNAMIC command 199
- SHOW VLAN STATIC command 200
- SNMP COMMUNITY command 178
- SNMP HOST command 179
- SNMP STATUS command 180
- TERMINAL LENGTH command 202

Virtual LAN. *See* VLAN

VLAN

- adding tagged ports 50
- adding untagged ports 50
- changing the default 50, 478, 481, 601
- creating 49, 50, 603

VLAN command 50, 603

VLAN Configuration mode

- SHOW RUNNING-CONFIG INTERFACE command 592

VLAN DATABASE command 604

VLAN mode

- HELP command 98, 386
- SHOW RUNNING-CONFIG FULL command 335, 424

W

WRITE FILE command 365

WRITE TERMINAL command 366