ME4620 Optical Line Termination User Manual

Version 3.6-2

Last Updated December, 2015

Cisco Systems, Inc.
www.cisco.com

Cisco has more than 200 offices worldwide. Addresses, phone numbers, and fax numbers are listed on the Cisco website at www.cisco.com/go/offices.

THE SPECIFICATIONS AND INFORMATION REGARDING THE PRODUCTS IN THIS MANUAL ARE SUBJECT TO CHANGE WITHOUT NOTICE. ALL STATEMENTS, INFORMATION, AND RECOMMENDATIONS IN THIS MANUAL ARE BELIEVED TO BE ACCURATE BUT ARE PRESENTED WITHOUT WARRANTY OF ANY KIND, EXPRESS OR IMPLIED. USERS MUST TAKE FULL RESPONSIBILITY FOR THEIR APPLICATION OF ANY PRODUCTS.

THE SOFTWARE LICENSE AND LIMITED WARRANTY FOR THE ACCOMPANYING PRODUCT ARE SET FORTH IN THE INFORMATION PACKET THAT SHIPPED WITH THE PRODUCT AND ARE INCORPORATED HEREIN BY THIS REFERENCE. IF YOU ARE UNABLE TO LOCATE THE SOFTWARE LICENSE OR LIMITED WARRANTY, CONTACT YOUR CISCO REPRESENTATIVE FOR A COPY.

The Cisco implementation of TCP header compression is an adaptation of a program developed by the University of California, Berkeley (UCB) as part of UCB's public domain version of the UNIX operating system. All rights reserved. Copyright © 1981, Regents of the University of California.

NOTWITHSTANDING ANY OTHER WARRANTY HEREIN, ALL DOCUMENT FILES AND SOFTWARE OF THESE SUPPLIERS ARE PROVIDED "AS IS" WITH ALL FAULTS. CISCO AND THE ABOVE-NAMED SUPPLIERS DISCLAIM ALL WARRANTIES, EXPRESSED OR IMPLIED, INCLUDING, WITHOUT LIMITATION, THOSE OF MERCHANTABILITY, FITNESS FOR A PARTICULAR PURPOSE AND NONINFRINGEMENT OR ARISING FROM A COURSE OF DEALING, USAGE, OR TRADE PRACTICE.

IN NO EVENT SHALL CISCO OR ITS SUPPLIERS BE LIABLE FOR ANY INDIRECT, SPECIAL, CONSEQUENTIAL, OR INCIDENTAL DAMAGES, INCLUDING, WITHOUT LIMITATION, LOST PROFITS OR LOSS OR DAMAGE TO DATA ARISING OUT OF THE USE OR INABILITY TO USE THIS MANUAL, EVEN IF CISCO OR ITS SUPPLIERS HAVE BEEN ADVISED OF THE POSSIBILITY OF SUCH DAMAGES.

Cisco and the Cisco Logo are trademarks of Cisco Systems, Inc. and/or its affiliates in the U.S. and other countries. A listing of Cisco's trademarks can be found at www.cisco.com/go/trademarks. Third party trademarks mentioned are the property of their respective owners. The use of the word partner does not imply a partnership relationship between Cisco and any other company.

Any Internet Protocol (IP) addresses and phone numbers used in this document are not intended to be actual addresses and phone numbers. Any examples, command display output, network topology diagrams, and other figures included in the document are shown for illustrative purposes only. Any use of actual IP addresses or phone numbers in illustrative content is unintentional and coincidental.

© 2015 Cisco Systems, Inc. All rights reserved.

CONTENTS

Chapter 1 SUMMARY 1

Chapter 2 TECHNICAL DESCRIPTION 3

ME4620 OLT SERVICES 5
USAGE SCENARIOS 5
GPON SERVICE SCENARIOS 6
N:1 SERVICES 7
1:1 SERVICES 9
TRANSPARENT LAN SERVICES (TLS) 10
ACTIVE ETHERNET SERVICES SCENARIOS 11
1:1 SERVICES 11
N:1 SERVICES 12
ME4620 OLT SYSTEM FEATURES 13
SERVICES 13
INTEROPERABILITY 14
PLOAM 14
OMCI 14
ONU RELATED ME4620 OLT OS SUPPORTED FEATURES 15
OMCI AND ONU SOFTWARE UPGRADE 15
FEC (UPSTREAM/DOWNSTREAM) CONFIGURATION AND MONITORING 16
ETHERNET 16
VLAN PROVISIONING 16
MULTICAST 16
SUPPORTED FEATURES 16
MULTICAST CHANNEL PACKAGES PER CLIENT SERVICE 17
IGMP SNOOPING/PROXY 17
AUTHENTICATION, AUTHORIZATION AND ACCOUNTING SETTINGS 19
TACACS+ 19
RADIUS 19
AUTHENTICATION: DHCP RELAY 19
DHCP RELAY AGENT OPTION 82 20
LIGHTWEIGHT DHCPv6 RELAY AGENT 20
SECURITY 21
ACL - ACCESS CONTROL LISTS SUPPORT 21
WHITE LIST FOR MULTICAST GROUP ADDRESSES 21
IP SOURCE GUARD 21
MAC DUPLICATION 22
MAC/IP SPOOFING 22
STORM CONTROL OF UNKNOWN UNICASTA, MULTICAST AND BROADCAST TRAFFIC PER INTERFACE 22
USER ISOLATION 22
DYNAMIC ARP INSPECTION, DAI 22
HTTPS 22
QOS 23
MTU 24
OAM 24
ETHERNET COUNTERS (RFC2819) 24

MAC 24
DYNAMIC BANDWIDTH ALOCATION (DBA) 25
MAC GPON DBA ALGORITHM 27
OVERBOOKING 27
PON 27
SPLITTING RATIO OPTIONS 27
SUPPORTED PON CLASSES 27
PROTECTION 27
HARDWARE PROTECTION AND SYSTEM AVAILABILITY 27
ME4620 OLT SUPPORTED PROTECTION MECHANISMS 28
TYPE B REDUNDANCY FOR GPON PORTS 28
ETHERNET UPLINK PORTS PROTECTION 28
LINK AGGREGATION CONTROL PROTOCOL (LACP) 28
ETHERNET RING PROTECTION SWITCHING 29
SOFTWARE PROTECTION 31
SYNCHRONIZATION 31
BITS (BUILDING INTEGRATED TIME SOURCE) INTERFACE 32
HYBRID SYNCHRONIZATION WITH THE ME4620 OLT EQUIPMENT FAMILY 32
ETHERNET SYNCHRONIZATION MESSAGING CHANNEL (ESMC) 32
SYNCHRONOUS ETHERNET (SyncE) 32
ETHERNET WITHOUT SyncE (e.g. 1000Base-T) 33
ETHERNET WITH SyncE (e.g. 1000Base-T) 33
IEEE 1588v2 33
CLIENT/SERVER MODEL 34
SYNC-E AND IEEE 1588v2/PTP AT THE ME4620 OLT EQUIPMENT 35
CLOCK CONFIGURATIONS SUPPORTED BY THE ME4620 OLT 35
BASIC OPERATION OF 1588V2 35
SUPPORT MULTIPLE TRAP DESTINATION SERVERS 38
SUPPORT OF ONU-ID SNMP TRAP 39
SUPPORT SNMP MANAGERS 39
EXTERNAL ALARM CONDITIONS 39
MANAGERS' CONFIGURATION 39
CONNECTIVITY FAULT MANAGEMENT (CFM) 39
REBOOT FEATURES 39
IP FEATURES 39
STANDARDS AND PROTOCOLS 41
Chapter 3 SYSTEM SPECIFICATIONS 43
ME4620 OLT EQUIPMENT CHASSIS FEATURES 43
ME4620 OLT EQUIPMENT BOARDS FEATURES 45
OPTICAL INTERFACES 46
10GE INTERFACES 46
1GE ETHERNET INTERFACES 47
GPON Interfaces 48
B+ LINK BUDGET 49
C+ LINK BUDGET 49
POWER SUPPLY 50
POWER CONNECTIONS 51
POWER CONSUMPTION 53
SYSTEM HEAT RELEASE 54
WEIGHT & PHYSICAL DIMENSIONS 56
MTBF 58
ENVIRONMENTAL CONDITIONS 59
ELECTROMAGNETIC COMPATIBILITY 60
SYSTEM PARTS 61

UPLINK LINE BOARD :: UMX-4x10GE 62
INTERFACES 62
LED INDICATORS 62
INTERFACE INTERCONNECTION CABLES 63
GPON LINE BOARD :: AMX-16GPON 63
INTERFACES 63
LED INDICATORS 63
INTERFACE INTERCONNECTION CABLES 64
ACTIVE ETHERNET (EFM) LINE BOARD :: AMX-48GE 64
INTERFACES 65
LED INDICATORS 65
INTERFACE INTERCONNECTION CABLES 65
SWITCH FABRIC BOARDS :: XCO-640 65
INTERFACES 66
LED INDICATORS 66
INTERFACE INTERCONNECTION CABLES 67
Chapter 4 SETUP 69
MECHANICAL PACKAGING 69
ESD PRECAUTIONS 70
ME4620 OLT SYSTEM 71
RESTRITED ACCESS LOCATION 71
ME4620 OLT ETSI RACK SETUP EXAMPLE 72
ETSI RACK OCCUPANCY 72
ME4620 OLT SETUP EXAMPLE 73
INSTALLATION PROCEDURES 75
ME4620 OLT CHASSIS INSTALLATION 75
ME4620 OLT BOARD INSTALLATION 78
SFP/XFPs MODULE INSTALLATION 81
OPTICAL CONNECTION AND CABLING ROUTING 83
ELECTRICAL POWER SUPPLY 87
DISCONNECT DEVICE 87
INSTALLATION IN EITHER A CBN OR AN IBN 87
DC RETURN CONDUCTOR TREATMENT 87
MULTIPLE POWER SOURCE 87
POWER SUPPLY CONNECTION PROCEDURES 88
CHASSIS FRONTAL TOP GRID REMOVAL (see Figure 52) 88
AIR DEFLECTOR REMOVAL (see Figure 53) 88
POWER SUPPLY CABLES CONNECTION 89
MOUNT THE AIR DEFLECTOR AND THE CHASSIS FRONTAL TOP GRID 90
CARD INSERTION AND REMOVAL 91
CARD INSERTION HANDLING PROCEDURES 91
CARD REMOVAL HANDLING PROCEDURES 92
XFP/SFP INSERTION AND REMOVAL 94
XFP/SFP MODULE INSERTION HANDLING PROCEDURES 95
XFP/SFP MODULE REMOVAL HANDLING PROCEDURES 95
MAINTENANCE 96
COOLING SYSTEM 96
FAN MODULE 98
LED INDICATOR 99
AIR FILTER 99
AIR DEFLECTOR 99
FAN MODULE REPLACEMENT PROCEDURES 100
FAN MODULE REMOVAL 100
FAN MODULE REPLACEMENT (see Figure 66 and Figure 67) 101

AIR FILTER REPLACEMENT PROCEDURES 102
AIR FILTER REMOVAL (see Figure 68) 102
AIR FILTER REPLACEMENT (see Figure 68) 102
AIR DEFLECTOR INSTALLATION PROCEDURES 102
AIR DEFLECTOR INSTALLATION (see Figure 69) 103
CABLES 104
ELECTRICAL POWER SUPPLY 104
ETH 10/100/1000 BASE-T 104
ALARMS & SYNCHRONISM 105
SYNCHRONISM JUNCTION CONFIGURATION 106
OPTICAL 108
OPTICAL INTERFACES 109
TRANSCEIVERS 109
SFP AND XFP OPTICAL TRANSCEIVERS 109
ELECTRICAL INTERFACES 110
ELECTRICAL FAST ETHERNET 110
Chapter 5 OPERATION 111
SYSTEM MANAGEMENT 111
EQUIPMENT IP DEFAULT 113
RESET DEFAULTS 113
UPGRADING TO A NEW ME4600 OLT OS SOFTWARE RELEASE 114
DETERMINING THE SOFTWARE VERSION 114
UPGRADING TO A NEW SOFTWARE RELEASE 114
ME4600 OLT OS INSTALLATION PROCEDURE 114
WEBTI INTERFACE 116
SYSTEM REQUIREMENTS 116
ACCESS TO THE EQUIPMENT 116
ACCESS CONTROL 117
WEBTI GENERAL DESCRIPTION 117
HEADING 118
WEBTI ICONS 119
INVALID CHARACTERS 121
MENU 121
RESOURCES MAIN WINDOW 124
Chapter 6 CLI 129
SYSTEM MANAGEMENT 129
ACCESS TO THE EQUIPMENT 130
SYSTEM ACCESS CONTROL 131
CLI OVERVIEW 132
FEATURES: 132
COMMANDS 132
GENERAL USAGE COMMANDS 132
COMMOM USAGE COMMANDS 134
COMMAND STRUCTURE 135
CLI NAVIGATION 136
HELP ON COMMANDS AND ARGUMENTS USAGE: ? 139
COMMON NODE NAMES 141
ABOUT THE “showconfig” COMMAND 142
ERROR CODES 143
SYNTAX ERRORS 143
OPERATIONAL ERRORS 144
WRITING CLI SCRIPTS 144
PARTICULAR ARGUMENT CASES 145

ARGUMENTS slot and port 145
ARGUMENTS ID AND admin 145
Remote equipment – connect 145
CLI TREE 147
NODES, SUB-NODES AND COMMANDS 152
"acl" node 152
"config" command 152
"create" command 153
"remove" command 153
"show" command 154
"showconfig" command 155
"interface" sub-node 155
"add" command 155
"config" command 156
"remove" command 156
"network-service" sub-node 157
"add" command 157
"config" command 157
"remove" command 158
"rule" sub-node 158
"config" command 158
"remove" command 159
"rule-ipv4-ext" sub-node 160
"config" command 160
"create" command 161
"show" command 161
"rule-ipv4-std" sub-node 163
"config" command 163
"create" command 163
"show" command 164
"rule-ipv6-ext" sub-node 165
"config" command 165
"create" command 166
"show" command 166
"rule-mac" sub-node 167
"config" command 167
"create" command 168
"show" command 169
"applications" node 170
APPLICATION CONFIGURATION 170
PRIVILEGE CONFIGURATION 170
TACACS+ 171
RADIUS 171
"aaa" sub-node 172
"config" command 172
"show" command 172
"showconfig" command 173
"cli" sub-node 173
"aaa" sub-node 174
"firmware-upgrade" sub-node 175
"files" sub-node 175
"onu-upgrade" sub-node 181
"http" sub-node 185
"config" command 185

"show" command 185
"showconfig" command 186
"https" sub-node 187
"config" command 187
"show" command 187
"showconfig" command 188
"certificate" sub-node 188
"manager" sub-node 189
"config" command 190
"show" command 190
"showconfig" command 191
"olt-upgrade" sub-node 192
"apply-file" command 192
"import" command 192
"time" sub-node 193
"ntp" sub-node 193
"time-zone" sub-node 197
"webti" sub-node 200
"aaa" sub-node 200
"arp-inspection" node 202
"acl" sub-node 202
"config" command 202
"create" command 203
"remove" command 203
"show" command 204
"showconfig" command 204
"rule" sub-node 205
"global" sub-node 208
"config" command 208
"show" command 208
"showconfig" command 209
"services" sub-node 209
"config" command 209
"show" command 210
"show-all" command 211
"showconfig" command 211
"backup-manager" node 212
"create" command 212
"del-serv-conf" command 212
"export" command 213
"import" command 213
"remove" command 214
"restore" command 214
"show" command 215
"cfm-probe" node 216
"config" command 216
"create" command 217
"remove" command 218
"show" command 218
"showconfig" command 220
"status" command 220
"unx-ccm" sub-node 221
"remove" command 221
"show" command 222

"class-map" node....223
"ip-dscp-to-tc" sub-node....223
"config" command....223
"create" command....224
"remove" command....224
"show" command....225
"showconfig" command....226
"ip-prec-to-tc" sub-node....227
"config" command....227
"create" command....227
"remove" command....228
"show" command....228
"showconfig" command....230
"pbits-to-tc" sub-node....230
"config" command....230
"create" command....231
"remove" command....231
"show" command....232
"showconfig" command....234
"dhcp" node....234
Circuit ID template String Syntax....234
"dhcp-services" sub-node....235
"config" command....235
"show" command....236
"showconfig" command....236
"global" sub-node....237
"config" command....237
"show" command....237
"showconfig" command....238
"leases" sub-node....238
"remove" command....238
"show" command....239
"equipment" node....240
"status" command....240
"boards" sub-node....241
"config" command....241
"reboot" command....242
"show" command....242
"showconfig" command....243
"slot" sub-node....244
"apply" command....244
"config" command....244
"show" command....245
"showconfig" command....246
"switch-fabric" sub-node....247
"show" command....247
"switch" command....248
"update" command....248
"upgrade-sw" command....249
"system" sub-node....249
"config" command....249
"reboot" command....250
"show" command....250
"showconfig" command....252

"status" command 252
"erp-ring" node 253
"config" command 253
"create" command 254
"remove" command 255
"show" command 256
"showconfig" command 258
"status" sub-node 258
"command" command 258
"show" command 259
"aps-channel" sub-node 260
"eth-protection" node 263
"command" command 263
"config" command 263
"create" command 264
"remove" command 265
"show" command 265
"showconfig" command 267
"status" command 267
"gpon-protection" node 268
"command" command 268
"config" command 269
"create" command 269
"remove" command 270
"show" command 271
"showconfig" command 272
"status" command 273
"interfaces" node 274
"config" command 275
"show" command 276
"showconfig" command 277
"ethernet" sub-node 278
"config" command 278
"show" command 278
"showconfig" command 280
"arp-inspection" sub-node 280
"blocking-traffic" sub-node 283
"cos" sub-node 286
"cos-queue" sub-node 292
"dhcp" sub-node 295
"mac-limit" sub-node 297
"multicast" sub-node 301
"services" sub-node 304
"statistics" sub-node 321
"status" sub-node 323
"storm-control" sub-node 327
"traffic-shape" sub-node 330
"vlan" sub-node 333
"gpon" sub-node 335
"config" command 335
"show" command 336
"showconfig" command 338
"arp-inspection" sub-node 338
"blocking-traffic" sub-node 342

"cos" sub-node 345
"cos-queue" sub-node 351
"dhcp" sub-node 354
"mac-limit" sub-node 357
"multicast" sub-node 361
"statistics" sub-node 364
"status" sub-node 368
"storm-control" sub-node 374
"traffic-shape" sub-node 378
"lag" sub-node 381
"config" command 381
"create" command 381
"remove" command 382
"show" command 382
"showconfig" command 384
"arp-inspection" sub-node 384
"cos" sub-node 386
"cos-queue" sub-node 390
"mac-limit" sub-node 394
"mapping" sub-node 397
"statistics" sub-node 399
"status" sub-node 400
"traffic-shape" sub-node 401
"vlan" sub-node 403
"ip" node 405
"apply" command 405
"save" command 405
"interfaces" sub-node 406
"inband" sub-node 406
"ip" sub-node 408
"networking" sub-node 410
"config" command 410
"show" command 410
"showconfig" command 411
"route" sub-node 412
"create" command 412
"remove" command 412
"show" command 413
"showconfig" command 414
"ip-source-guard" node 414
"config" command 414
"create" command 415
"remove" command 416
"show" command 416
"showconfig" command 417
"logs" node 417
"alarms" sub-node 418
"clear" command 418
"show" command 418
"mac-table" node 420
"config" command 420
"show" command 420
"showconfig" command 421
"status" sub-node 422

"gpon" sub-node 422
"switch" sub-node 424
"multicast" node 425
"active-groups" sub-node 426
"status" command 426
"group-list" sub-node 428
"config" command 428
"create" command 428
"remove" command 429
"show" command 429
"showconfig" command 430
"igmp" sub-node 431
"global" sub-node 431
"proxy" sub-node 433
"querier" sub-node 435
"packages" sub-node 437
"config" command 437
"create" command 437
"remove" command 438
"show" command 438
"showconfig" command 439
"association" node 440
"probes" sub-node 442
"config" command 442
"create" command 443
"remove" command 444
"show" command 444
"showconfig" command 445
"statistics" sub-node 446
"profiles" node 447
"dscp-to-pbits" sub-node 447
"config" command 447
"create" command 448
"remove" command 448
"show" command 449
"showconfig" command 450
"ethernet" sub-node 451
"config" command 451
"create" command 451
"remove" command 452
"show" command 452
"showconfig" command 453
"onu" sub-node 454
"config" command 454
"create" command 454
"remove" command 455
"show" command 456
"showconfig" command 457
"pbits-to-pq" sub-node 457
"config" command 457
"create" command 458
"remove" command 458
"show" command 459
"showconfig" command 460

"upstream-dba" sub-node 460
"config" command 460
"create" command 461
"remove" command 462
"show" command 462
"showconfig" command 463
"voip" sub-node 464
"server" sub-node 464
"specific" sub-node 468
"radius" node 470
"config" command 472
"show" command 472
"showconfig" command 473
"server" sub-node 473
"config" command 473
"create" command 474
"remove" command 475
"show" command 475
"showconfig" command 476
"server-group" sub-node 477
This node allows managing Radius server-group configuration parameters. 477
"config" command 477
"show" command 477
"showconfig" command 478
"remote-eq" node 478
"config-onu-id" command 479
"connect" command 480
"disconnect" command 481
"showconnected" command 481
"discovery" sub-node 482
"change-reg-type" command 482
"command" command 483
"config" command 483
"create" command 484
"insert" command 485
"insert-all" command 485
"reboot" command 486
"reboot-all" command 486
"remove" command 487
"remove-all" command 487
"show" command 488
"showconfig" command 489
"onu" sub-node 490
"show" command 490
"showconfig" command 492
"analog-rf" sub-node 492
"e1" sub-node 495
"esmc" sub-node 499
"ethernet" sub-node 501
"ext-vlan-tag-op" sub-node 503
"ptp" sub-node 509
"services" sub-node 511
"system" sub-node 522
"t-cont" sub-node 524

"voip" sub-node 527
"statistics" sub-node 530
"fec" sub-node 530
"status" sub-node 530
"show" command 530
"ethernet" sub-node 534
"firmware" sub-node 536
"gem-port" sub-node 538
"services" sub-node 539
"t-cont" sub-node 549
"routing" node 550
"arp-table" sub-node 550
"remove" command 550
"status" command 551
"ipv4-interface" sub-node 552
"config" command 552
"create" command 552
"remove" command 553
"show" command 553
"showconfig" command 554
"ping" sub-node 555
"create" command 555
"remove" command 555
"show" command 556
"showconfig" command 557
"status" command 557
"route-table" sub-node 558
"config" command 558
"create" command 559
"remove" command 559
"show" command 560
"showconfig" command 561
"status" command 561
"traceroute" sub-node 562
"create" command 562
"remove" command 563
"show" command 563
"showconfig" command 564
"status" command 565
"services" node 566
"availableValues" command 566
"config" command 567
"create" command 569
"remove" command 570
"show" command 570
"showconfig" command 573
"statistics" sub-node 573
"arp-inspection" sub-node 573
"counters" sub-node 575
"dhcp" sub-node 580
"igmp" sub-node 583
"synchronism" node 586
"global" sub-node 587
"config" command 587

"show" command 587
"showconfig" command 589
"sources" sub-node 589
"showconfig" command 593
"ptp" sub-node 593
"config" command 593
"show" command 594
"showconfig" command 595
"port" sub-node 596
"status" sub-node 603
"global" sub-node 603
"ptp" sub-node 606
"tacacs+" node 608
"config" command 609
"show" command 610
"showconfig" command 611
"server" sub-node 611
"config" command 611
"create" command 612
"remove" command 612
"show" command 613
"showconfig" command 614
"server-group" sub-node 614
This node allows managing TACACS+ server-group configuration parameters. 614
"config" command 614
"show" command 615
"showconfig" command 616
"users" node 617
"config" command 617
"create" command 618
"remove" command 618
"show" command 619
"status" command 620
"utils" node 621
"ping" command 621
"tcpdump" command 621
"telnet" command 622
"traceroute" command 622
Chapter 7 TROUBLESHOOTING 625
COMMON PROBLEM HANDLING 626
EQUIPMENT ERROR CODES 627

LIST OF FIGURES

Figure 1. PON network architecture 2
Figure 2: ME4620 OLT architecture 3
Figure 3. ME4620 OLT services Usage Scenario 5
Figure 4. N:1- Unicast Unstacked Services 7
Figure 5. N:1- MAC Bridge Services 8
Figure 6. 1:1 1:1 Unicast Stacked Services 9
Figure 7: TLS- Bitstream Services 10
Figure 8. AE 1:1 Services 11
Figure 9. AE N:1 Services 12
Figure 10. Multiservice architecture &requirement, interoperability according to BBF TR-156 14
Figure 11. IGMP Packets Processing/Forwarding Diagram 18
Figure 12. ME4620 OLT as a DHCP relay agent 20
Figure 13.Downstream QoS Diagram 23
Figure 14. Upstream QoS Diagram 24
Figure 15. Traffic distribution by service/client 26
Figure 16. Type B redundancy for GPON ports 28
Figure 17. Normal ring operation 30
Figure 18. Link failure 30
Figure 19. Ring Protection Link operation 31
Figure 20. With and without SyncE 33
Figure 21. Delay from Master-Clock Device to Slave-Clock Device 36
Figure 22. Delay from Slave-Clock Device to Master-Clock Device 37
Figure 23. Boundary Clock Synchronization mechanism (Mobile Backhaul Example) 38
Figure 24: Switch Fabric Card power connection and distribution diagram 51
Figure 25: Line Card power connection and distribution diagram 52
Figure 26. ME4620 OLT 3 D chassis schematic and dimensions (mm) 56
Figure 27.ME4620 OLT chassis front and side view 57
Figure 28. ME4620 OLT top view 57
Figure 29.ME4620 OLT system Front View (14U chassis) 61
Figure 30. UMX-4x10GE Front panel 62
Figure 31. GPON AMX-16GPON line board front view 63
Figure 32. Active Ethernet AMX-48GE line board front view 64
Figure 33. XCO-640 Front panel 65
Figure 34. ME4620 OLT Front View 71
Figure 35 - Recommended setup for 2 ME4620 OLT in an ETSI rack 73
Figure 36. ME4620 OLT assembly example -Front View 74
Figure 37. ESTI RACK 75
Figure 38. ESTI RACK – air deflector installed 76
Figure 39. ESTI RACK – power supply connection cables 77

Figure 40. Fastening the ME4620 OLT chassis to the ETSI rack 77
Figure 41. Final appearance of the assembly 78
Figure 42. Inserting a board in the ME4620 OLT chassis 79
Figure 43. Inserting a blank panel in an empty slot 80
Figure 44. Tightening a board to the chassis 80
Figure 45. Example of an ME4620 OLT assembly 81
Figure 46. Inserting SFP modules 82
Figure 47. Disassembly of a SFP module 83
Figure 48: Connection and routing of optical patch cords 84
Figure 49: Optical patch cords aggregation 84
Figure 50: Organization and routing of cabling with different patch cords lengths 85
Figure 51: Organization and routing of cabling for used patch cords with same length. 86
Figure 52. Frontal top grid removal 88
Figure 53. Air deflector removal 89
Figure 54. ME4620 OLT chassis power supply input connectors 90
Figure 55. ME4620 OLT chassis power supply input connectors 90
Figure 56: Card insertion handling procedures 92
Figure 57: Card removal handling procedures 93
Figure 58. XFP/SFP module handle 94
Figure 59. Chassis cooling system - Air flow 97
Figure 60. ME4620 OLT blank panels 97
Figure 61. XFP/SFP interface covers 97
Figure 62: Installed air deflector in the bottom of an ETSI rack with ME4620 OLT systems 98
Figure 63. ME4620 OLT cooling module with eight redundant FANS 98
Figure 64. ME4620 OLT air filter 99
Figure 65. ME4620 OLT air deflector 100
Figure 66. FAN module removal –step 1 101
Figure 67. FAN module removal –step 2 101
Figure 68. Air Filter removal 102
Figure 69. Air deflector installation place on an ETSI rack 103
Figure 70: Electrical power supply H03VV-F cables connection kit with eyelet terminals 104
Figure 71. Ethernet Cable 105
Figure 72. Switch Fabric card alarm/conditions and ACK Plug and PIN out 106
Figure 73. XCO640 Switch Fabric Board - I3 switch location at the PCB 107
Figure 74. SC-PC connector 108
Figure 75. Connector LC-PC 108
Figure 76.Ethernet uplink XFP optical transceivers 109
Figure 77. GPON optical pluggable transceiver 109
Figure 78. RJ45 connector 110
Figure 79. Managing ME4620 OLT locally 112
Figure 80. Managing ME4620 OLT by the Management Network 113
Figure 81. Web Ti equipment main window for access 116
Figure 82. Access Control 117
Figure 83. WebTi Areas 118
Figure 84. Configurations main window 119

Figure 85. Resources Main Window 126
Figure 86. Cards Main Window....127
Figure 87. Accessing to the ME4620 OLT equipment via SSH....130
Figure 88. ME4620 OLT access and CLI Initial window 131
Figure 89. Use of help....133
Figure 90. Use of ?....133
Figure 91. dir command....134
Figure 92. IP tree, sub-nodes and commands 134
Figure 93. CLI initial window and prompt 136
Figure 94. dir command output at root node....136
Figure 95. Tab key displays commands and sub-nodes in that node....137
Figure 96. Auto-complete with tab key 138
Figure 97. CLI prompt displays current location node 138
Figure 98. tree command output: current node, applications, sub-nodes list 138
Figure 99. show ?: information on the usage of the show command in the interfaces/gpon node context 139
Figure 100. Output of show command without arguments....140
Figure 101. Output of show command in gpon sub-node for slot 3 140
Figure 102. interfaces/gpon tree 141
Figure 103. CLI on line help on " showconfig" usage in this node context 142
Figure 104. showconfig command screen output example....143
Figure 105. Syntax error 143
Figure 106. Operational error 144
Figure 107. CLI script usage example 145
Figure 108. Complete CLI tree 147
Figure 109. "acl" node tree 152
Figure 110. CLI on line help on "config" command usage in this node context....152
Figure 111. CLI on line help on "create" command usage in this node context 153
Figure 112. CLI on line help on "remove" command usage in this node context....153
Figure 113. CLI on line help on "show" command usage in this node context 154
Figure 114.Output of "show" command without arguments in this node context....154
Figure 115. CLI on line help on "showconfig" command usage in this node context 155
Figure 116. CLI on line help on "add" command usage in this node context 155
Figure 117. CLI on line help on "config" command usage in this node context....156
Figure 118. CLI on line help on "remove" command usage in this node context....156
Figure 119. CLI on line help on "add" command usage in this node context 157
Figure 120. CLI on line help on "config" command usage in this node context....158
Figure 121. CLI on line help on "remove" command usage in this node context....158
Figure 122. CLI on line help on "config" command usage in this node context....159
Figure 123. CLI on line help on "remove" command usage in this node context....159
Figure 124. CLI on line help on "config" command usage in this node context....160
Figure 125. CLI on line help on "create" command usage in this node context 161
Figure 126. CLI on line help on "show" command usage in this node context 162
Figure 127.Output of "show" command without arguments in this node context....162
Figure 128. CLI on line help on "config" command usage in this node context....163
Figure 129. CLI on line help on "create" command usage in this node context 164

Figure 130. CLI on line help on “show” command usage in this node context 164
Figure 131.Output of ”show” command without arguments in this node context 164
Figure 132. CLI on line help on “config” command usage in this node context 165
Figure 133. CLI on line help on “create” command usage in this node context 166
Figure 134. CLI on line help on “show” command usage in this node context 167
Figure 135.Output of ”show” command without arguments in this node context 167
Figure 136. CLI on line help on “config” command usage in this node context 168
Figure 137. CLI on line help on “create” command usage in this node context 168
Figure 138. CLI on line help on “show” command usage in this node context 169
Figure 139.Output of ”show” command without arguments in this node context 169
Figure 140. “applications” node tree 170
Figure 141: User with administrator permission (group 15) login 171
Figure 142. CLI on line help on “config” command usage in this node context 172
Figure 143. . CLI on line help on “show” command usage in this node context 172
Figure 144.Output of ”show” command in this node context 173
Figure 145. CLI on line help on “showconfig” command usage in this node context 173
Figure 146. CLI on line help on “config” command usage in this node context 174
Figure 147. . CLI on line help on “show” command usage in this node context 174
Figure 148.Output of ”show” command in this node context 175
Figure 149. CLI on line help on “showconfig” command usage in this node context 175
Figure 150. CLI on line help on “check” command usage in this node context 176
Figure 151. CLI on line help on “config” command usage in this node context 176
Figure 152. . CLI on line help on “export” command usage in this node context 177
Figure 153. . CLI on line help on “import” command usage in this node context 177
Figure 154. . CLI on line help on “remove” command usage in this node context 178
Figure 155. . CLI on line help on “show” command usage in this node context 179
Figure 156.Output of ”show” command without arguments in this node context 179
Figure 157. Output of ”show” command with argument fileID in this node context 180
Figure 158. . CLI on line help on “status” command usage in this node context 180
Figure 159. Output of ”status” command in this node context 180
Figure 160. CLI on line help on “apply-file” command usage in this node context 181
Figure 161. CLI on line help on “availableValues” command usage in this node context 182
Figure 162. Output of ”availableValues” command in this node context 183
Figure 163. Output of ”availableValues” command in this node context with arguments 184
Figure 164. CLI on line help on “execute” command usage in this node context 184
Figure 165. CLI on line help on “config” command usage in this node context 185
Figure 166. . CLI on line help on “show” command usage in this node context 186
Figure 167.Output of ”show” command in this node context 186
Figure 168. CLI on line help on “showconfig” command usage in this node context 186
Figure 169. CLI on line help on “config” command usage in this node context 187
Figure 170. . CLI on line help on “show” command usage in this node context 187
Figure 171.Output of ”show” command in this node context 188
Figure 172. CLI on line help on “showconfig” command usage in this node context 188
Figure 173. CLI on line help on “import” command usage in this node context 189
Figure 174. CLI on line help on “reset” command usage in this node context 189

Figure 175. CLI on line help on “config” command usage in this node context.....190
Figure 176. CLI on line help on “show” command usage in this node context 190
Figure 177. Output of ”show” command in this node context 191
Figure 178. CLI on line help on “showconfig” command usage in this node context 191
Figure 179. CLI on line help on “apply-file” command usage in this node context 192
Figure 180. CLI on line help on “import” command usage in this node context 192
Figure 181. CLI on line help on “config” command usage in this node context.....193
Figure 182. CLI on line help on “create” command usage in this node context 194
Figure 183. CLI on line help on “disable” command usage in this node context.....194
Figure 184. CLI on line help on “enable” command usage in this node context 195
Figure 185. CLI on line help on “remove” command usage in this node context.....195
Figure 186. CLI on line help on “show” command usage in this node context 195
Figure 187. Output of ”show” command in this node context 196
Figure 188. CLI on line help on “showconfig” command usage in this node context 196
Figure 189. CLI on line help on “availableValues” command usage in this node context 197
Figure 190. Partial output of ”availableValues” command in this node context.....198
Figure 191. CLI on line help on “config” command usage in this node context.....199
Figure 192. CLI on line help on “show” command usage in this node context 199
Figure 193. Output of ”show” command in this node context 199
Figure 194. CLI on line help on “showconfig” command usage in this node context 200
Figure 195. CLI on line help on “config” command usage in this node context.....201
Figure 196. . CLI on line help on “show” command usage in this node context 201
Figure 197.Output of ”show” command in this node context 201
Figure 198. CLI on line help on “showconfig” command usage in this node context 202
Figure 199. CLI on line help on “config” command usage in this node context.....202
Figure 200. CLI on line help on “create” command usage in this node context 203
Figure 201. CLI on line help on “remove” command usage in this node context.....203
Figure 202. . CLI on line help on “show” command usage in this node context 204
Figure 203.Output of ”show” command in this node context 204
Figure 204. CLI on line help on “showconfig” command usage in this node context 205
Figure 205. CLI on line help on “config” command usage in this node context.....205
Figure 206. CLI on line help on “create” command usage in this node context 206
Figure 207. CLI on line help on “remove” command usage in this node context.....206
Figure 208. CLI on line help on “show” command usage in this node context 207
Figure 209.Output of ”show” command in this node context 207
Figure 210. CLI on line help on “config” command usage in this node context.....208
Figure 211. . CLI on line help on “show” command usage in this node context 208
Figure 212.Output of ”show” command in this node context 209
Figure 213. CLI on line help on “showconfig” command usage in this node context 209
Figure 214. CLI on line help on “config” command usage in this node context.....210
Figure 215. . CLI on line help on “show” command usage in this node context 210
Figure 216.Output of ”show” command in this node context 210
Figure 217. . CLI on line help on “show” command usage in this node context 211
Figure 218.Output of ”show-all” command in this node context.....211
Figure 219. CLI on line help on “showconfig” command usage in this node context 212

Figure 220. CLI on line help on “create” command usage in this node context 212
Figure 221. CLI on line help on “del-serv-conf” command usage in this node context 213
Figure 222. CLI on line help on “export” command usage in this node context 213
Figure 223. CLI on line help on “import” command usage in this node context 214
Figure 224. CLI on line help on “remove” command usage in this node context 214
Figure 225. CLI on line help on “restore” command usage in this node context 215
Figure 226. CLI on line help on “show” command usage in this node context 215
Figure 227. Output of ”show” command in this node context 216
Figure 228. “cfm-node” tree 216
Figure 229. CLI on line help on “config” command usage in this node context 216
Figure 230. CLI on line help on “create” command usage in this node context 217
Figure 231. CLI on line help on “remove” command usage in this node context 218
Figure 232. CLI on line help on “show” command usage in this node context 219
Figure 233. Output of ”show” command without arguments in this node context 219
Figure 234. Output of ”show” command with arguments ID and slot in this node context 219
Figure 235. CLI on line help on “showconfig” command usage in this node context 220
Figure 236. CLI on line help on “status” command usage in this node context 220
Figure 237. Output of ”status” command in this node context 221
Figure 238. CLI on line help on “remove” command usage in this node context 222
Figure 239. CLI on line help on “show” command usage in this node context 222
Figure 240. Output of ”show” command in this node context 222
Figure 241. “class-map” tree 223
Figure 242. CLI on line help on “config” command usage in this node context 223
Figure 243. CLI on line help on “create” command usage in this node context 224
Figure 244. CLI on line help on “remove” command usage in this node context 224
Figure 245. CLI on line help on “show” command usage in this node context 225
Figure 246. Output of ”show” command in this node context 225
Figure 247. Output of ”show” command, with argument ID, in this node context 226
Figure 248. CLI on line help on “showconfig” command usage in this node context 226
Figure 249. CLI on line help on “config” command usage in this node context 227
Figure 250. CLI on line help on “create” command usage in this node context 227
Figure 251. CLI on line help on “remove” command usage in this node context 228
Figure 252. CLI on line help on “show” command usage in this node context 228
Figure 253. Output of ”show” command in this node context 229
Figure 254. Output of ”show” command, with argument ID, in this node context 229
Figure 255. CLI on line help on “showconfig” command usage in this node context 230
Figure 256. CLI on line help on “config” command usage in this node context 230
Figure 257. CLI on line help on “create” command usage in this node context 231
Figure 258. CLI on line help on “remove” command usage in this node context 232
Figure 259. CLI on line help on “show” command usage in this node context 232
Figure 260. Output of ”show” command in this node context 233
Figure 261. Output of ”show” command, with argument ID, in this node context 233
Figure 262. CLI on line help on “showconfig” command usage in this node context 234
Figure 263. “dhcp” tree 235
Figure 264. CLI on line help on “config” command usage in this node context 235

Figure 265. CLI on line help on “show” command usage in this node context 236
Figure 266. Output of ”show” command in this node context 236
Figure 267. CLI on line help on “showconfig” command usage in this node context 237
Figure 268. CLI on line help on “config” command usage in this node context.....237
Figure 269. CLI on line help on “show” command usage in this node context 238
Figure 270. Output of ”show” command in this node context 238
Figure 271. CLI on line help on “showconfig” command usage in this node context 238
Figure 272. CLI on line help on “remove” command usage in this node context.....239
Figure 273. CLI on line help on “show” command usage in this node context 239
Figure 274. Output of ”show” command in this node context 240
Figure 275. “equipment” node tree.....240
Figure 276. CLI on line help on “status” command usage in this node context.....241
Figure 277. Output of ”status” command in this node context.....241
Figure 278. CLI on line help on “config” command usage in this node context.....241
Figure 279. CLI on line help on “reboot” command usage in this node context.....242
Figure 280. CLI on line help on “show” command usage in this node context 242
Figure 281. Output of ”show” command in this node context”.....243
Figure 282. CLI on line help on “showconfig” command usage in this node context 244
Figure 283. CLI on line help on “apply” command usage in this node context.....244
Figure 284. CLI on line help on “config” command usage in this node context.....245
Figure 285. CLI on line help on “show” command usage in this node context 245
Figure 286. Output of ”show” command in this node context”.....246
Figure 287. CLI on line help on “showconfig” command usage in this node context 247
Figure 288. CLI on line help on “show” command usage in this node context 247
Figure 289. Output of ”show” command in this node context”.....247
Figure 290. CLI on line help on “switch” command usage in this node context 248
Figure 291. CLI on line help on “update” command usage in this node context 248
Figure 292. CLI on line help on “upgrade-sw” command usage in this node context 249
Figure 293. CLI on line help on “config” command usage in this node context.....249
Figure 294. CLI on line help on “reboot” command usage in this node context.....250
Figure 295. CLI on line help on “show” command usage in this node context 250
Figure 296. Output of ”show” command in this node context”.....251
Figure 297. CLI on line help on “showconfig” command usage in this node context 252
Figure 298. CLI on line help on “status” command usage in this node context.....252
Figure 299. Output of ”status” command in this node context” 253
Figure 300. “erp-ring” node tree.....253
Figure 301. CLI on line help on “config” command usage in this node context.....254
Figure 302. CLI on line help on “create” command usage in this node context 255
Figure 303. CLI on line help on “remove” command usage in this node context.....255
Figure 304. CLI on line help on “show” command usage in this node context 256
Figure 305. Output of ”show” command without arguments in this node context”.....256
Figure 306. Output of ”show” command with argument ID in this node context” 257
Figure 307. CLI on line help on “showconfig” command usage in this node context 258
Figure 308. CLI on line help on “command” command usage in this node context 259
Figure 309. CLI on line help on “show” command usage in this node context 259

Figure 310. Output of ”show” in this node context” 259
Figure 311. CLI on line help on “show” command usage in this node context 260
Figure 312. Output of ”show” without arguments in this node context” 261
Figure 313. Output of ”show” command with argument ID in this node context” 262
Figure 314. “eth-protection” node tree 263
Figure 315. CLI on line help on “command” command usage in this node context 263
Figure 316. CLI on line help on “config” command usage in this node context 264
Figure 317. CLI on line help on “create” command usage in this node context 264
Figure 318. CLI on line help on “remove” command usage in this node context 265
Figure 319. CLI on line help on “show” command usage in this node context 265
Figure 320. Output of ”show” command without arguments in this node context” 266
Figure 321. Output of ”show” command with argument ID in this node context” 266
Figure 322. CLI on line help on “showconfig” command usage in this node context 267
Figure 323. CLI on line help on “status” command usage in this node context 267
Figure 324. Output of ”status” command in this node context” 268
Figure 325. “gpon-protection” node tree 268
Figure 326. CLI on line help on “command” command usage in this node context 268
Figure 327. CLI on line help on “config” command usage in this node context 269
Figure 328. CLI on line help on “create” command usage in this node context 270
Figure 329. CLI on line help on “remove” command usage in this node context 270
Figure 330. CLI on line help on “show” command usage in this node context 271
Figure 331. Output of ”show” command without arguments in this node context” 271
Figure 332. Output of ”show” command with argument ID in this node context” 272
Figure 333. CLI on line help on “showconfig” command usage in this node context 273
Figure 334. CLI on line help on “status” command usage in this node context 273
Figure 335. Output of ”status” command in this node context” 273
Figure 336. “interfaces” node tree 274
Figure 337. CLI on line help on “config” command usage in this node context 275
Figure 338. CLI on line help on “show” command usage in this node context 276
Figure 339. Output of ”show” command without arguments in this node context 276
Figure 340. Output of ”show” command, with argument slot, in this node context 277
Figure 341. CLI on line help on “showconfig” command usage in this node context 278
Figure 342. CLI on line help on “config” command usage in this node context 278
Figure 343. CLI on line help on “show” command usage in this node context 279
Figure 344. Output of ”show” command without arguments in this node context 279
Figure 345. Output of ”show” command used with argument --slot, in this node context 280
Figure 346. CLI on line help on “showconfig” command usage in this node context 280
Figure 347. CLI on line help on “config” command usage in this node context 281
Figure 348. CLI on line help on “show” command usage in this node context 282
Figure 349. “show” command, without arguments, output in this node context 282
Figure 350. “show” command, with argument slot, output in this node context 283
Figure 351. CLI on line help on “showconfig” command usage in this node context 283
Figure 352. CLI on line help on “config” command usage in this node context 284
Figure 353. CLI on line help on “show” command usage in this node context 284
Figure 354. “show” command, without arguments, output in this node context 285

Figure 355. “show” command, with argument slot, output in this node context....285
Figure 356. CLI on line help on “showconfig” command usage in this node context....286
Figure 357. CLI on line help on “config” command usage in this node context....286
Figure 358. CLI on line help on “show” command usage in this node context....287
Figure 359. “show” command, without arguments, output in this node context....287
Figure 360. “show” command, with argument slot, output in this node context....288
Figure 361. CLI on line help on “showconfig” command usage in this node context....289
Figure 362. CLI on line help on “config” command usage in this node context....289
Figure 363. CLI on line help on “show” command usage in this node context....290
Figure 364. “show” command, without arguments, output in this node context....290
Figure 365. “show” command, with arguments slot and port, output in this node context....291
Figure 366. CLI on line help on “showconfig” command usage in this node context....291
Figure 367. CLI on line help on “config” command usage in this node context....292
Figure 368. CLI on line help on “show” command usage in this node context....293
Figure 369. “show” command, with arguments slot and port, output in this node context....294
Figure 370. CLI on line help on “showconfig” command usage in this node context....295
Figure 371. CLI on line help on “config” command usage in this node context....295
Figure 372. CLI on line help on “show” command usage in this node context....296
Figure 373. Output of ”show” command without arguments in this node context....296
Figure 374. Partial view of ”show” command output, with argument slot, in this node context....297
Figure 375. CLI on line help on “showconfig” command usage in this node context....297
Figure 376. CLI on line help on “config” command usage in this node context....298
Figure 377. CLI on line help on “show” command usage in this node context....298
Figure 378. Output of ”show” command, without arguments, in this node context....299
Figure 379. Partial view of ”show” command output, with argument slot, in this node context....299
Figure 380. CLI on line help on “showconfig” command usage in this node context....300
Figure 381. CLI on line help on “status” command usage in this node context....301
Figure 382. Output of ”status” command in this node context....301
Figure 383. CLI on line help on “config” command usage in this node context....302
Figure 384. CLI on line help on “show” command usage in this node context....302
Figure 385. Output of ”show” command without arguments in this node context....303
Figure 386. Partial view of ”show” command output, with argument slot, in this node context....303
Figure 387. CLI on line help on “showconfig” command usage in this node context....304
Figure 388. CLI on line help on “add” command usage in this node context....304
Figure 389. CLI on line help on “show” command usage in this node context....305
Figure 390. Output of ”availableValues” command in this node context....306
Figure 391. CLI on line help on “config” command usage in this node context....307
Figure 392. CLI on line help on “remove” command usage in this node context....308
Figure 393. CLI on line help on “show” command usage in this node context....309
Figure 394. Output of ”show” command in this node context....309
Figure 395. Output of ”show” command used with argument slot, in this node context....310
Figure 396. CLI on line help on “showconfig” command usage in this node context....311
Figure 397. CLI on line help on “create” command usage in this node context....311
Figure 398. CLI on line help on “remove” command usage in this node context....312
Figure 399. CLI on line help on “show” command usage in this node context....312

Figure 400. Output of ”show” command in this node context” 312
Figure 401. CLI on line help on “showconfig” command usage in this node context 313
Figure 402. CLI on line help on “availableValues” command usage in this node context 314
Figure 403. Output of ”availableValues” command in this node context 314
Figure 404. CLI on line help on “show” command usage in this node context 315
Figure 405. Output of ”show” command in this node context 315
Figure 406. CLI on line help on “show” command usage in this node context 316
Figure 407. Output of ”show-active” command in this node context 316
Figure 408. CLI on line help on “start” command usage in this node context 317
Figure 409. CLI on line help on “stop” command usage in this node context 317
Figure 410. CLI on line help on “show” command usage in this node context 318
Figure 411: Output of ”show” command in this node context 318
Figure 412. CLI on line help on “show” command usage in this node context 319
Figure 413:”show” command output in this node context 320
Figure 414. CLI on line help on “show” command usage in this node context 321
Figure 415. Output of ”show” command in this node context 322
Figure 416. CLI on line help on “show” command usage in this node context 323
Figure 417.”show” command output in this node context 324
Figure 418. CLI on line help on “show” command usage in this node context 325
Figure 419. Output of ”show” command in this node context 326
Figure 420. CLI on line help on “show” command usage in this node context 327
Figure 421. Output of ”show” command in this node context 327
Figure 422. CLI on line help on “config” command usage in this node context 328
Figure 423. CLI on line help on “show” command usage in this node context 328
Figure 424. Output of ”show” command without arguments in this node context 329
Figure 425. Partial view of ”show” command output, with argument slot, in this node context 329
Figure 426. CLI on line help on “showconfig” command usage in this node context 330
Figure 427. CLI on line help on “config” command usage in this node context 331
Figure 428. CLI on line help on “show” command usage in this node context 331
Figure 429. Output of ”show” command without arguments in this node context 331
Figure 430. Partial view of ”show” command output, with argument slot, in this node context 332
Figure 431. CLI on line help on “showconfig” command usage in this node context 333
Figure 432. CLI on line help on “config” command usage in this node context 333
Figure 433. CLI on line help on “show” command usage in this node context 334
Figure 434. Output of ”show” command in this node context- partial view 334
Figure 435. CLI on line help on “showconfig” command usage in this node context 335
Figure 436. CLI on line help on “config” command usage in this node context 335
Figure 437. CLI on line help on “show” command usage in this node context 336
Figure 438. Output of ”show” command in this node context 337
Figure 439. Output of ”show” command used with argument --slot, in this node context 337
Figure 440. CLI on line help on “showconfig” command usage in this node context 338
Figure 441. CLI on line help on “config” command usage in this node context 339
Figure 442. CLI on line help on “show” command usage in this node context 339
Figure 443. “show” command, without arguments, output in this node context 340
Figure 444. “show” command, with argument slot, output in this node context 341

Figure 445. CLI on line help on “showconfig” command usage in this node context 342
Figure 446. CLI on line help on “config” command usage in this node context.....342
Figure 447. CLI on line help on “show” command usage in this node context 343
Figure 448. “show” command, without arguments, output in this node context.....343
Figure 449. “show” command, with argument slot, output in this node context.....344
Figure 450. CLI on line help on “showconfig” command usage in this node context 345
Figure 451. CLI on line help on “config” command usage in this node context.....345
Figure 452. CLI on line help on “show” command usage in this node context 346
Figure 453. Output of ”show” command, without arguments, in this node context 346
Figure 454. Output of ”show” command, without arguments, in this node context 347
Figure 455. CLI on line help on “showconfig” command usage in this node context 348
Figure 456. CLI on line help on “config” command usage in this node context.....348
Figure 457. CLI on line help on “show” command usage in this node context 349
Figure 458. “show” command, without arguments, output in this node context.....349
Figure 459. “show” command, with argument slot, output in this node context –partial view.....350
Figure 460. CLI on line help on “showconfig” command usage in this node context 351
Figure 461. CLI on line help on “config” command usage in this node context.....351
Figure 462. CLI on line help on “show” command usage in this node context 352
Figure 463. “show” command, with arguments slot and port, output in this node context.....353
Figure 464. CLI on line help on “showconfig” command usage in this node context 354
Figure 465. CLI on line help on “config” command usage in this node context.....354
Figure 466. CLI on line help on “show” command usage in this node context 355
Figure 467.”show” command output, without arguments, in this node context.....355
Figure 468.”show” command output, with argument slot, in this node context.....356
Figure 469. CLI on line help on “showconfig” command usage in this node context 357
Figure 470. CLI on line help on “config” command usage in this node context.....357
Figure 471. CLI on line help on “show” command usage in this node context 358
Figure 472. Output of ”show” command, without arguments, in this node context 358
Figure 473. Partial view of ”show” command output, with argument slot, in this node context.....359
Figure 474. CLI on line help on “showconfig” command usage in this node context 360
Figure 475. CLI on line help on “status” command usage in this node context.....360
Figure 476. Output of ”status” command in this node context.....360
Figure 477. CLI on line help on “config” command usage in this node context.....361
Figure 478. CLI on line help on “show” command usage in this node context 362
Figure 479.”show” command output, without arguments, in this node context.....362
Figure 480.”show” command output, with argument slot, in this node context.....363
Figure 481. CLI on line help on “showconfig” command usage in this node context 364
Figure 482. CLI on line help on “show” command usage in this node context 364
Figure 483. Output of ”show” command in this node context 365
Figure 484. CLI on line help on “show” command usage in this node context 365
Figure 485. Output of ”show” command in this node context 366
Figure 486. CLI on line help on “show” command usage in this node context 367
Figure 487. Output of ”show” command in this node context 368
Figure 488. CLI on line help on “show” command usage in this node context 369
Figure 489.”show” command output, without arguments, in this node context.....369

Figure 490. Output of ”show” command, with argument slot, output in this node context 370
Figure 491. CLI on line help on “show” command usage in this node context..... 371
Figure 492. Output of ”show” command in this node context..... 372
Figure 493. CLI on line help on “read-all” command usage in this node context..... 373
Figure 494. CLI on line help on “show” command usage in this node context..... 373
Figure 495. Output of ”show” command in this node context..... 374
Figure 496. CLI on line help on “config” command usage in this node context..... 374
Figure 497. CLI on line help on “show” command usage in this node context..... 375
Figure 498. Output of ”show” command without arguments in this node context..... 376
Figure 499.”show” command output, with argument slot, in this node context..... 377
Figure 500. CLI on line help on “showconfig” command usage in this node context 378
Figure 501. CLI on line help on “config” command usage in this node context..... 378
Figure 502. CLI on line help on “show” command usage in this node context..... 379
Figure 503. Output of ”show” command without arguments in this node context..... 379
Figure 504. Partial view of ”show” command output, with argument slot, in this node context 380
Figure 505. CLI on line help on “showconfig” command usage in this node context 381
Figure 506. CLI on line help on “config” command usage in this node context..... 381
Figure 507. CLI on line help on “create” command usage in this node context..... 382
Figure 508. CLI on line help on “remove” command usage in this node context 382
Figure 509. CLI on line help on “show” command usage in this node context..... 383
Figure 510. Output of ”show” command in this node context”..... 383
Figure 511. Output of ”show” command with argument –lag-id in this node context” 383
Figure 512. CLI on line help on “showconfig” command usage in this node context 384
Figure 513. CLI on line help on “config” command usage in this node context..... 384
Figure 514. CLI on line help on “show” command usage in this node context..... 385
Figure 515. “show” command output in this node context..... 385
Figure 516. CLI on line help on “showconfig” command usage in this node context 386
Figure 517. CLI on line help on “config” command usage in this node context..... 386
Figure 518. CLI on line help on “show” command usage in this node context..... 387
Figure 519. Output of ”show” command in this node context..... 387
Figure 520. CLI on line help on “showconfig” command usage in this node context 388
Figure 521. CLI on line help on “config” command usage in this node context..... 388
Figure 522. CLI on line help on “show” command usage in this node context..... 389
Figure 523. “show” command output in this node context..... 389
Figure 524. CLI on line help on “showconfig” command usage in this node context 390
Figure 525. CLI on line help on “config” command usage in this node context..... 390
Figure 526. CLI on line help on “show” command usage in this node context..... 391
Figure 527. “show” command, with arguments slot and port, output in this node context 392
Figure 528. “show” command, with arguments –port and –queue, output in this node context 392
Figure 529. CLI on line help on “showconfig” command usage in this node context 393
Figure 530. CLI on line help on “config” command usage in this node context..... 394
Figure 531. CLI on line help on “show” command usage in this node context..... 395
Figure 532.”show” command output in this node context..... 395
Figure 533. CLI on line help on “showconfig” command usage in this node context 396
Figure 534. CLI on line help on “status” command usage in this node context..... 396

Figure 535. Output of ”status” command in this node context....396
Figure 536. CLI on line help on “attach” command usage in this node context....397
Figure 537. CLI on line help on “availableValues” command usage in this node context....398
Figure 538.”availableValues” command output partial view in this node context....398
Figure 539. CLI on line help on “detach” command usage in this node context....398
Figure 540. CLI on line help on “show” command usage in this node context....399
Figure 541. Output of ”show” command in this node context....399
Figure 542. CLI on line help on “show” command usage in this node context....400
Figure 543. Output of ”show” command in this node context....400
Figure 544. CLI on line help on “config” command usage in this node context....401
Figure 545. CLI on line help on “show” command usage in this node context....402
Figure 546.”show” command output in this node context....402
Figure 547. CLI on line help on “showconfig” command usage in this node context....402
Figure 548. CLI on line help on “config” command usage in this node context....403
Figure 549. CLI on line help on “show” command usage in this node context....404
Figure 550. Output of ”show” command in this node context....404
Figure 551. CLI on line help on “showconfig” command usage in this node context....404
Figure 552.ip node tree....405
Figure 553. CLI on line help on “apply” command usage in this node context....405
Figure 554. CLI on line help on “save” command usage in this node context....405
Figure 555. CLI on line help on “config” command usage in this node context....406
Figure 556. CLI on line help on “show” command usage in this node context....407
Figure 557. Output of ”show” command in this node context....407
Figure 558. CLI on line help on “showconfig” command usage in this node context....408
Figure 559. CLI on line help on “config” command usage in this node context....408
Figure 560. CLI on line help on “show” command usage in this node context....409
Figure 561. Output of ”show” command in this node context....409
Figure 562. CLI on line help on “showconfig” command usage in this node context....410
Figure 563. CLI on line help on “config” command usage in this node context....410
Figure 564. CLI on line help on “show” command usage in this node context....411
Figure 565. Output of ”show” command in this node context....411
Figure 566. CLI on line help on “showconfig” command usage in this node context....411
Figure 567. CLI on line help on “create” command usage in this node context....412
Figure 568. CLI on line help on “remove” command usage in this node context....413
Figure 569. CLI on line help on “show” command usage in this node context....413
Figure 570. Output of ”show” command in this node context....413
Figure 571. CLI on line help on “showconfig” command usage in this node context....414
Figure 572. ip-source-guard node tree....414
Figure 573. CLI on line help on “config” command usage in this node context....415
Figure 574. CLI on line help on “create” command usage in this node context....415
Figure 575. CLI on line help on “remove” command usage in this node context....416
Figure 576. CLI on line help on “show” command usage in this node context....416
Figure 577. Output of ”show” command in this node context....417
Figure 578. CLI on line help on “showconfig” command usage in this node context....417
Figure 579. logs node tree....418

Figure 580. CLI on line help on “clear” command usage in this node context 418
Figure 581. CLI on line help on “show” command usage in this node context..... 419
Figure 582. Output of ”show” command used with no argument in this node context – Global alarm list .. 419
Figure 583. Partial view of ”show” command with argument –slot output in this node context 419
Figure 584.”mac-table” node tree 420
Figure 585. CLI on line help on “config” command usage in this node context..... 420
Figure 586. CLI on line help on “show” command usage in this node context..... 421
Figure 587. Output of ”show” command in this node context..... 421
Figure 588. CLI on line help on “showconfig” command usage in this node context 422
Figure 589. CLI on line help on “remove” command usage in this node context 422
Figure 590. CLI on line help on “show” command usage in this node context..... 423
Figure 591. Output of ”show” command in this node context..... 423
Figure 592. CLI on line help on “remove” command usage in this node context 424
Figure 593. CLI on line help on “show” command usage in this node context..... 424
Figure 594. Output of ”show” command in this node context..... 425
Figure 595. “multicast” node tree 425
Figure 596. CLI on line help on “status” command usage in this node context 426
Figure 597. Output of ”status” command with no arguments in this node context 426
Figure 598. Output of ”status” command, with arguments ip-address and serviceID, in this node context . 427
Figure 599. CLI on line help on “config” command usage in this node context..... 428
Figure 600. CLI on line help on “create” command usage in this node context..... 429
Figure 601. CLI on line help on “remove” command usage in this node context 429
Figure 602. CLI on line help on “show” command usage in this node context..... 430
Figure 603.Partial view of ”show” command output in this node context”..... 430
Figure 604. CLI on line help on “showconfig” command usage in this node context 431
Figure 605. CLI on line help on “config” command usage in this node context..... 431
Figure 606. CLI on line help on “show” command usage in this node context..... 432
Figure 607.Partial view of ”show” command output in this node context”..... 432
Figure 608. CLI on line help on “showconfig” command usage in this node context 432
Figure 609. CLI on line help on “config” command usage in this node context..... 433
Figure 610. CLI on line help on “show” command usage in this node context..... 434
Figure 611.Output of ”show” command in this node context”..... 434
Figure 612. CLI on line help on “showconfig” command usage in this node context 435
Figure 613. CLI on line help on “config” command usage in this node context..... 435
Figure 614. CLI on line help on “show” command usage in this node context..... 436
Figure 615.Output of ”show” command in this node context”..... 436
Figure 616. CLI on line help on “showconfig” command usage in this node context 437
Figure 617. CLI on line help on “config” command usage in this node context..... 437
Figure 618. CLI on line help on “create” command usage in this node context..... 438
Figure 619. CLI on line help on “remove” command usage in this node context 438
Figure 620. CLI on line help on “show” command usage in this node context..... 439
Figure 621.Output of ”show” command in this node context”..... 439
Figure 622. CLI on line help on “showconfig” command usage in this node context 439
Figure 623. CLI on line help on “attach” command usage in this node context..... 440
Figure 624. CLI on line help on “detach” command usage in this node context..... 440

Figure 625. CLI on line help on “show” command usage in this node context 441
Figure 626.Output of ”show” command in this node context”.....441
Figure 627. CLI on line help on “showconfig” command usage in this node context 442
Figure 628. CLI on line help on “config” command usage in this node context.....442
Figure 629. CLI on line help on “create” command usage in this node context 443
Figure 630. CLI on line help on “remove” command usage in this node context.....444
Figure 631. CLI on line help on “show” command usage in this node context 444
Figure 632.Output of ”show” command in this node context”.....445
Figure 633. CLI on line help on “showconfig” command usage in this node context 445
Figure 634. CLI on line help on “show” command usage in this node context 446
Figure 635.Output of ”show” command in this node context”.....446
Figure 636.”profiles” node tree.....447
Figure 637. CLI on line help on “config” command usage in this node context.....447
Figure 638. CLI on line help on “create” command usage in this node context 448
Figure 639. CLI on line help on “remove” command usage in this node context.....448
Figure 640. CLI on line help on “show” command usage in this node context 449
Figure 641.Output of ”show” command, without arguments, in this node context”.....449
Figure 642.Output of ”show” command, with argument ID, in this node context” 450
Figure 643. CLI on line help on “showconfig” command usage in this node context 450
Figure 644. CLI on line help on “config” command usage in this node context.....451
Figure 645. CLI on line help on “create” command usage in this node context 452
Figure 646. CLI on line help on “remove” command usage in this node context.....452
Figure 647. CLI on line help on “show” command usage in this node context 453
Figure 648.Output of ”show” command in this node context”.....453
Figure 649. CLI on line help on “showconfig” command usage in this node context 453
Figure 650. CLI on line help on “config” command usage in this node context.....454
Figure 651. CLI on line help on “create” command usage in this node context 455
Figure 652. CLI on line help on “remove” command usage in this node context.....455
Figure 653. CLI on line help on “show” command usage in this node context 456
Figure 654.Output of ”show” command in this node context”.....456
Figure 655. CLI on line help on “showconfig” command usage in this node context 457
Figure 656. CLI on line help on “config” command usage in this node context.....457
Figure 657. CLI on line help on “create” command usage in this node context 458
Figure 658. CLI on line help on “remove” command usage in this node context.....458
Figure 659. CLI on line help on “show” command usage in this node context 459
Figure 660.Output of ”show” command in this node context”.....459
Figure 661. CLI on line help on “showconfig” command usage in this node context 460
Figure 662. CLI on line help on “config” command usage in this node context.....460
Figure 663. CLI on line help on “create” command usage in this node context 461
Figure 664. CLI on line help on “remove” command usage in this node context.....462
Figure 665. CLI on line help on “show” command usage in this node context 462
Figure 666.Output of ”show” command in this node context”.....463
Figure 667. CLI on line help on “showconfig” command usage in this node context 463
Figure 668. CLI on line help on “availableValues” command usage in this node context 464
Figure 669.Output of ” availableValues” command in this node context 464

Figure 670. CLI on line help on “config” command usage in this node context 465
Figure 671. CLI on line help on “create” command usage in this node context 465
Figure 672. CLI on line help on “remove” command usage in this node context 466
Figure 673. CLI on line help on “show” command usage in this node context 466
Figure 674.Output of ”show” command in this node context” 467
Figure 675. CLI on line help on “showconfig” command usage in this node context 467
Figure 676. CLI on line help on “config” command usage in this node context 468
Figure 677. CLI on line help on “create” command usage in this node context 468
Figure 678. CLI on line help on “remove” command usage in this node context 469
Figure 679. CLI on line help on “show” command usage in this node context 469
Figure 680.Output of ”show” command in this node context” 470
Figure 681. CLI on line help on “showconfig” command usage in this node context 470
Figure 682.”radius” node tree 470
Figure 683. CLI on line help on “config” command usage in this node context 472
Figure 684. CLI on line help on “show” command usage in this node context 472
Figure 685.Output of ”show” command without arguments in this node context 473
Figure 686. CLI on line help on “showconfig” command usage in this node context 473
Figure 687. CLI on line help on “config” command usage in this node context 474
Figure 688. CLI on line help on “create” command usage in this node context 474
Figure 689. CLI on line help on “remove” command usage in this node context 475
Figure 690. CLI on line help on “show” command usage in this node context 475
Figure 691.Output of ”show” command without arguments in this node context 476
Figure 692. CLI on line help on “showconfig” command usage in this node context 476
Figure 693. CLI on line help on “config” command usage in this node context 477
Figure 694. CLI on line help on “show” command usage in this node context 477
Figure 695.Output of ”show” command without arguments in this node context 478
Figure 696. CLI on line help on “showconfig” command usage in this node context 478
Figure 697.”remote-eq” node tree 479
Figure 698. CLI on line help on “config-onu-id” command usage in this node context 480
Figure 699. CLI on line help on “connect” command usage in this node context 480
Figure 700. CLI on line help on “disconnect” command usage in this node context 481
Figure 701. CLI on line help on “showconnected” command usage in this node context 481
Figure 702.Output of ”showconnected” command in this node context” 482
Figure 703. CLI on line help on “change-reg-type” command usage in this node context 482
Figure 704. CLI on line help on “command” command usage in this node context 483
Figure 705. CLI on line help on “config” command usage in this node context 483
Figure 706. CLI on line help on “create” command usage in this node context 484
Figure 707. CLI on line help on “insert” command usage in this node context 485
Figure 708. CLI on line help on “insert-all” command usage in this node context 486
Figure 709. CLI on line help on “reboot” command usage in this node context 486
Figure 710. CLI on line help on “reboot-all” command usage in this node context 487
Figure 711. CLI on line help on “remove” command usage in this node context 487
Figure 712. CLI on line help on “remove-all” command usage in this node context 488
Figure 713. CLI on line help on “show” command usage in this node context 488
Figure 714.Output of ”show” command in this node context – partial view 489

Figure 715. CLI on line help on “showconfig” command usage in this node context 489
Figure 716. CLI on line help on “show” command usage in this node context 490
Figure 717.Output of ”show” command in this node context –partial view 491
Figure 718.Output of ”show” command, with arguments slot and port, in this node context.....491
Figure 719. CLI on line help on “showconfig” command usage in this node context 492
Figure 720. CLI on line help on “config” command usage in this node context.....492
Figure 721.”show” command return error 493
Figure 722. CLI on line help on “show” command usage in this node context 493
Figure 723.Output of ”show” command in this node context 494
Figure 724. CLI on line help on “showconfig” command usage in this node context 494
Figure 725. CLI on line help on “config-e1” command usage in this node context.....495
Figure 726. CLI on line help on “config-lsp” command usage in this node context.....496
Figure 727. CLI on line help on “config-pw” command usage in this node context 496
Figure 728.”show” command return error 497
Figure 729. CLI on line help on “show” command usage in this node context 497
Figure 730. CLI on line help on “showconfig” command usage in this node context 498
Figure 731.”status” command return error 498
Figure 732. CLI on line help on “status” command usage in this node context.....498
Figure 733. CLI on line help on “config” command usage in this node context.....499
Figure 734. CLI on line help on “show” command usage in this node context 499
Figure 735.Output of ”show” command in this node context 500
Figure 736. CLI on line help on “showconfig” command usage in this node context 500
Figure 737. CLI on line help on “config” command usage in this node context.....501
Figure 738. CLI on line help on “show” command usage in this node context 501
Figure 739.Output of ”show” command in this node context 502
Figure 740. CLI on line help on “showconfig” command usage in this node context 502
Figure 741. CLI on line help on “config” command usage in this node context.....503
Figure 742. CLI on line help on “show” command usage in this node context 504
Figure 743.Output of ”show” command in this node context 504
Figure 744. CLI on line help on “showconfig” command usage in this node context 505
Figure 745. CLI on line help on “config” command usage in this node context.....505
Figure 746. CLI on line help on “create” command usage in this node context 506
Figure 747. CLI on line help on “remove” command usage in this node context.....507
Figure 748. CLI on line help on “show” command usage in this node context 507
Figure 749.Output of ”show” command in this node context”.....508
Figure 750. CLI on line help on “showconfig” command usage in this node context 508
Figure 751. CLI on line help on “config” command usage in this node context.....509
Figure 752. CLI on line help on “show” command usage in this node context 509
Figure 753.Output of ”show” command without arguments in this node context.....510
Figure 754. CLI on line help on “showconfig” command usage in this node context 510
Figure 755. CLI on line help on “add” command usage in this node context 511
Figure 756. CLI on line help on “availableValues” command usage in this node context 512
Figure 757.Output of ”availableValues” command in this node context 512
Figure 758. CLI on line help on “config” command usage in this node context.....513
Figure 759. CLI on line help on “remove” command usage in this node context.....514

Figure 760. CLI on line help on “show” command usage in this node context..... 515
Figure 761.Output of ”show” command in this node context..... 515
Figure 762.Output of ”show” command with argument –serviceID-onu in this node context..... 516
Figure 763. CLI on line help on “create” command usage in this node context..... 517
Figure 764. CLI on line help on “remove” command usage in this node context..... 518
Figure 765. CLI on line help on “show” command usage in this node context..... 518
Figure 766.Output of ”show” command in this node context”..... 519
Figure 767. CLI on line help on “showconfig” command usage in this node context..... 519
Figure 768. CLI on line help on “config” command usage in this node context..... 520
Figure 769. CLI on line help on “show” command usage in this node context..... 520
Figure 770.Output of ”show” command in this node context..... 521
Figure 771. CLI on line help on “showconfig” command usage in this node context..... 521
Figure 772. CLI on line help on “config” command usage in this node context..... 522
Figure 773. CLI on line help on “show” command usage in this node context..... 523
Figure 774.Output of ”show” command in this node context..... 523
Figure 775. CLI on line help on “showconfig” command usage in this node context..... 524
Figure 776. CLI on line help on “config” command usage in this node context..... 524
Figure 777. CLI on line help on “create” command usage in this node context..... 525
Figure 778. CLI on line help on “remove” command usage in this node context..... 525
Figure 779. CLI on line help on “show” command usage in this node context..... 526
Figure 780.Output of ”show” command in this node context”..... 526
Figure 781. CLI on line help on “showconfig” command usage in this node context..... 527
Figure 782. CLI on line help on “config” command usage in this node context..... 527
Figure 783. CLI on line help on “show” command usage in this node context..... 528
Figure 784.Output of ”show” command in this node context..... 529
Figure 785. CLI on line help on “showconfig” command usage in this node context..... 529
Figure 786. CLI on line help on “show” command usage in this node context..... 530
Figure 787. CLI on line help on “show” command usage in this node context..... 531
Figure 788.Output of ”show” command in this node context..... 532
Figure 789. CLI on line help on “show” command usage in this node context..... 534
Figure 790.Output of ”show” command in this node context..... 535
Figure 791. CLI on line help on “activate” command usage in this node context..... 536
Figure 792. CLI on line help on “commit” command usage in this node context..... 537
Figure 793. CLI on line help on “stop-transfer” command usage in this node context..... 537
Figure 794. CLI on line help on “show” command usage in this node context..... 538
Figure 795.Output of ”show” command in this node context..... 538
Figure 796. CLI on line help on “show” command usage in this node context..... 539
Figure 797. Output of ”show” command in this node context..... 539
Figure 798. CLI on line help on “show” command usage in this node context..... 540
Figure 799. Output of ”show” command in this node context..... 540
Figure 800. CLI on line help on “availableValues” command usage in this node context..... 541
Figure 801. Output of ”availableValues” command in this node context..... 541
Figure 802. CLI on line help on “show” command usage in this node context..... 542
Figure 803. Output of ”show” command in this node context..... 542
Figure 804. CLI on line help on “show” command usage in this node context..... 543

Figure 805. Output of ”show-active” command in this node context....543
Figure 806. CLI on line help on “start” command usage in this node context....544
Figure 807. CLI on line help on “stop” command usage in this node context....544
Figure 808. CLI on line help on “show” command usage in this node context....545
Figure 809. Output of ”show” command in this node context....546
Figure 810. CLI on line help on “show” command usage in this node context....547
Figure 811: Output of ”show” command in this node context....548
Figure 812. CLI on line help on “show” command usage in this node context....549
Figure 813. Output of ”show” command in this node context....549
Figure 814. “routing” node tree....550
Figure 815. CLI on line help on “remove” command usage in this node context....550
Figure 816. . CLI on line help on “status” command usage in this node context....551
Figure 817. Output of ”status” command in this node context....551
Figure 818. CLI on line help on “config” command usage in this node context....552
Figure 819. CLI on line help on “create” command usage in this node context....552
Figure 820. CLI on line help on “remove” command usage in this node context....553
Figure 821. CLI on line help on “show” command usage in this node context....554
Figure 822: Output of ”show” command in this node context....554
Figure 823. CLI on line help on “showconfig” command usage in this node context....555
Figure 824. CLI on line help on “create” command usage in this node context....555
Figure 825. CLI on line help on “remove” command usage in this node context....556
Figure 826. CLI on line help on “show” command usage in this node context....556
Figure 827. Output of ”show” command in this node context....556
Figure 828. CLI on line help on “showconfig” command usage in this node context....557
Figure 829. CLI on line help on “status” command usage in this node context....557
Figure 830. Output of ”status” command in this node context....558
Figure 831. CLI on line help on “config” command usage in this node context....558
Figure 832. CLI on line help on “create” command usage in this node context....559
Figure 833. CLI on line help on “remove” command usage in this node context....560
Figure 834. CLI on line help on “show” command usage in this node context....560
Figure 835. Output of ”show” command in this node context....560
Figure 836. CLI on line help on “showconfig” command usage in this node context....561
Figure 837. CLI on line help on “status” command usage in this node context....561
Figure 838. Output of ”status” command in this node context....562
Figure 839. CLI on line help on “create” command usage in this node context....562
Figure 840. CLI on line help on “remove” command usage in this node context....563
Figure 841. CLI on line help on “show” command usage in this node context....563
Figure 842. Output of ”show” command in this node context....564
Figure 843. CLI on line help on “showconfig” command usage in this node context....564
Figure 844. CLI on line help on “status” command usage in this node context....565
Figure 845. Output of ”status” command in this node context....565
Figure 846. “services” node tree....566
Figure 847. CLI on line help on “availableValues” command usage in this node context....566
Figure 848.Output of ”availableValues” command in this node context”....567
Figure 849. CLI on line help on “config” command usage in this node context....568

Figure 850. CLI on line help on “create” command usage in this node context..... 569
Figure 851. CLI on line help on “remove” command usage in this node context..... 570
Figure 852. CLI on line help on “show” command usage in this node context..... 571
Figure 853.Output of ”show” command in this node context..... 571
Figure 854. Output of ”show” command used with parameter –serviceID, in this node context..... 572
Figure 855. CLI on line help on “showconfig” command usage in this node context..... 573
Figure 856. CLI on line help on “show” command usage in this node context..... 574
Figure 857:”show” command, used with serviceID parameter, output in this node context..... 574
Figure 858. CLI on line help on “availableValues” command usage in this node context..... 575
Figure 859. Output of ”availableValues” command in this node context..... 576
Figure 860. CLI on line help on “show” command usage in this node context..... 577
Figure 861:”show” command output in this node context..... 577
Figure 862. CLI on line help on “show” command usage in this node context..... 578
Figure 863. Output of ”show-active” command in this node context..... 578
Figure 864. CLI on line help on “start” command usage in this node context..... 579
Figure 865. CLI on line help on “stop” command usage in this node context..... 579
Figure 866. CLI on line help on “availableValues” command usage in this node context..... 580
Figure 867. Output of ”availableValues” command in this node context..... 580
Figure 868. CLI on line help on “show” command usage in this node context..... 581
Figure 869. Output of ”show” command in this node context..... 582
Figure 870. CLI on line help on “availableValues” command usage in this node context..... 583
Figure 871. Output of ”availableValues” command in this node context..... 584
Figure 872. CLI on line help on “show” command usage in this node context..... 585
Figure 873. Output of ”show” command in this node context..... 585
Figure 874.”synchronism” node tree..... 586
Figure 875. CLI on line help on “config” command usage in this node context..... 587
Figure 876. CLI on line help on “show” command usage in this node context..... 588
Figure 877.Output of ”show” command in this node context”..... 588
Figure 878. CLI on line help on “showconfig” command usage in this node context..... 589
Figure 879. CLI on line help on “availableValues” command usage in this node context..... 590
Figure 880. Output of “availableValues” command in this node context..... 590
Figure 881. CLI on line help on “config” command usage in this node context..... 591
Figure 882. CLI on line help on “show” command usage in this node context..... 592
Figure 883.Output of ”show” command in this node context..... 592
Figure 884. CLI on line help on “showconfig” command usage in this node context..... 593
Figure 885. CLI on line help on “config” command usage in this node context..... 593
Figure 886. CLI on line help on “show” command usage in this node context..... 594
Figure 887.Output of ”show” command in this node context..... 595
Figure 888. CLI on line help on “showconfig” command usage in this node context..... 596
Figure 889. CLI on line help on “availableValues” command usage in this node context..... 596
Figure 890.Output of ”availableValues” command in this node context..... 596
Figure 891. CLI on line help on “config” command usage in this node context..... 597
Figure 892. CLI on line help on “create” command usage in this node context..... 598
Figure 893. CLI on line help on “remove” command usage in this node context..... 599
Figure 894. CLI on line help on “show” command usage in this node context..... 599

Figure 895.Output of ”show” command in this node context 599
Figure 896. CLI on line help on “showconfig” command usage in this node context 600
Figure 897. CLI on line help on “config” command usage in this node context.....601
Figure 898. CLI on line help on “create” command usage in this node context 601
Figure 899. CLI on line help on “remove” command usage in this node context.....602
Figure 900. CLI on line help on “show” command usage in this node context 602
Figure 901.Output of ”show” command in this node context 603
Figure 902. CLI on line help on “config” command usage in this node context.....603
Figure 903. CLI on line help on “show” command usage in this node context 604
Figure 904. Output of ”show” command in this node context 604
Figure 905. CLI on line help on “command” command usage in this node context 605
Figure 906. CLI on line help on “show” command usage in this node context 606
Figure 907. Output of ”show” command in this node context 606
Figure 908. CLI on line help on “show” command usage in this node context 607
Figure 909. Output of ”show” command in this node context 607
Figure 910.”tacacs+” node tree.....608
Figure 911. CLI on line help on “config” command usage in this node context.....609
Figure 912. CLI on line help on “show” command usage in this node context 610
Figure 913.Output of ”show” command without arguments in this node context.....610
Figure 914. CLI on line help on “showconfig” command usage in this node context 611
Figure 915. CLI on line help on “config” command usage in this node context.....611
Figure 916. CLI on line help on “create” command usage in this node context 612
Figure 917. CLI on line help on “remove” command usage in this node context.....612
Figure 918. CLI on line help on “show” command usage in this node context 613
Figure 919.Output of ”show” command without arguments in this node context.....613
Figure 920. CLI on line help on “showconfig” command usage in this node context 614
Figure 921. CLI on line help on “config” command usage in this node context.....614
Figure 922. CLI on line help on “show” command usage in this node context 615
Figure 923.Output of ”show” command without arguments in this node context.....616
Figure 924.Output of ”show” command , with argument ID, in this node context 616
Figure 925. CLI on line help on “showconfig” command usage in this node context 617
Figure 926. ”users” node tree.....617
Figure 927. CLI on line help on “config” command usage in this node context.....617
Figure 928. CLI on line help on “create” command usage in this node context 618
Figure 929. CLI on line help on “remove” command usage in this node context.....619
Figure 930. CLI on line help on “show” command usage in this node context 619
Figure 931.Output of ”show” command in this node context 619
Figure 932. CLI on line help on “status” command usage in this node context.....620
Figure 933.Output of ”status” command in this node context.....620
Figure 934. ”utils” node tree 621
Figure 935. CLI on line help on “ping” command usage in this node context.....621
Figure 936. CLI on line help on “tcpdump” command usage in this node context.....622
Figure 937. CLI on line help on “telnet” command usage in this node context 622
Figure 938. CLI on line help on “traceroute” command usage in this node context.....623

LIST OF TABLES

Table 1. ME4620 OLT Equipment features 4
Table 2. T-CONT type definition 25
Table 3. Alloc-ID's distribution by T-CONT type 26
Table 4. Standards and Protocols 41
Table 5. ME4620 OLT Equipment Chassis Features 43
Table 6. ME4620 OLT Equipment Board Features 45
Table 7. Optical 10Gbase interfaces characteristics 46
Table 8. Optical 1000Base interfaces characteristics 47
Table 9. GPON Interfaces Specification 48
Table 10. B+ Link Budget 49
Table 11. C+ Link Budget 49
Table 12. Power Consumption 53
Table 13. Equipment Rate Heat-Dissipation Calculation 54
Table 14. Additional calculations for shelf-level equipment only 55
Table 15. Weight & Size 56
Table 16. Mean Time Between Failures 58
Table 17. ME4620 OLT Equipment Module Features 61
Table 18. UMX-4x10GE Slot position in ME4620 OLT shelf 62
Table 19. GPON AMX-16GPON line board Slot position in ME4620 OLT shelf 63
Table 20. Active Ethernet AMX-48GE line board Slot position in ME4620 OLT shelf 64
Table 21. XCO-640 Slot position in ME4620 OLT shelf 66
Table 22. XCO640 Dip switch I3 settings 107
Table 23: WebTi window Navigation and Status most commonly used icons 120
Table 24. Common Usage Commands 134
Table 25. CLI command structure 135
Table 26. CLI command examples 135
Table 27. “showconfig” Command syntax and description 142
Table 28. "config" command information 152
Table 29. "create" command information 153
Table 30. "remove" command information 153
Table 31. "show" command information 154
Table 32. “show” command output table parameters 154
Table 33. "showconfig" command information 155
Table 34. "add" command information 155
Table 35. "config" command information 156
Table 36. "remove" command information 156
Table 37. "add" command information 157
Table 38. "config" command information 157
Table 39. "remove" command information 158

Table 40. "config" command information 158
Table 41. "remove" command information....159
Table 42. "config" command information 160
Table 43. "create" command information 161
Table 44. "show" command information 161
Table 45. “show” command output table parameters 162
Table 46. "config" command information 163
Table 47. "create" command information 163
Table 48. "show" command information 164
Table 49. “show” command output table parameters 165
Table 50. "config" command information 165
Table 51. "create" command information 166
Table 52. "show" command information 166
Table 53. “show” command output table parameters 167
Table 54. "config" command information 167
Table 55. "create" command information 168
Table 56. "show" command information 169
Table 57. “show” command output table parameters 169
Table 58. Groups’ privilege level 171
Table 59. "config" command information 172
Table 60. "show" command information 172
Table 61. "showconfig" command information....173
Table 62. "config" command information 174
Table 63. "show" command information 174
Table 64. "showconfig" command information....175
Table 65. "check" command information 175
Table 66. "config" command information 176
Table 67. "export" command information 177
Table 68. "import" command information....177
Table 69. "remove" command information....178
Table 70. "show" command information 178
Table 71. “show” command output table parameters 179
Table 72. "status" command information 180
Table 73. “status” command output table parameters 181
Table 74. "apply-file" command information....181
Table 75. "availableValues" command information....182
Table 76. “availableValues” command output table parameters 183
Table 77. "execute" command information 184
Table 78. "config" command information 185
Table 79. "show" command information 185
Table 80. "showconfig" command information....186
Table 81. "config" command information 187
Table 82. "show" command information 187
Table 83. "showconfig" command information....188
Table 84. "import" command information....188

Table 85. "reset" command information 189
Table 86. "config" command information 190
Table 87. "show" command information 190
Table 88. “show” command output table parameters 191
Table 89. "showconfig" command information 191
Table 90. "apply-file" command information 192
Table 91. "import" command information 192
Table 92. "config" command information 193
Table 93. "config" command information 193
Table 94. “disable" command information 194
Table 95. disable" command information 194
Table 96. “remove" command information..... 195
Table 97. "show" command information 195
Table 98. “show” command output table parameters 196
Table 99. "showconfig" command information 196
Table 100. "availableValues" command information 197
Table 101. “availableValues” command output table parameters 198
Table 102. "config" command information 198
Table 103. "show" command information 199
Table 104. “show” command output table parameters 200
Table 105. "showconfig" command information 200
Table 106. "config" command information 200
Table 107. "show" command information 201
Table 108. "showconfig" command information 202
Table 109. "config" command information 202
Table 110. "create" command information 203
Table 111. "remove" command information..... 203
Table 112. "show" command information 204
Table 113. "showconfig" command information 204
Table 114. "config" command information 205
Table 115. "create" command information 206
Table 116. "remove" command information..... 206
Table 117. "show" command information 207
Table 118. "config" command information 208
Table 119. "show" command information 208
Table 120. "showconfig" command information 209
Table 121. "config" command information 209
Table 122. "show" command information 210
Table 123. "show-all" command information..... 211
Table 124. "showconfig" command information 211
Table 125. "create" command information 212
Table 126. "del-serv-conf" command information 212
Table 127. "export" command information 213
Table 128. "import" command information 213
Table 129. "remove" command information..... 214

Table 130. "restore" command information....214
Table 131. "show" command information....215
Table 132. “show” command output table parameters....216
Table 133. "config" command information....216
Table 134. "create" command information....217
Table 135. "remove " command information....218
Table 136. "show" command information....218
Table 137. “show” command output table parameters....219
Table 138. "showconfig" command information....220
Table 139. "status" command information....220
Table 140. “status” command output table parameters....221
Table 141. "remove" command information....221
Table 142. "show" command information....222
Table 143. “show” command output table parameters....222
Table 144. "config" command information....223
Table 145. "create" command information....224
Table 146. "remove" command information....224
Table 147. "show" command information....225
Table 148. “show” command output table parameters....225
Table 149. “show” command, with argument ID, output table parameters....226
Table 150. "showconfig" command information....226
Table 151. "config" command information....227
Table 152. "create" command information....227
Table 153. "remove" command information....228
Table 154. "show" command information....228
Table 155. “show” command output table parameters....229
Table 156. “show” command, with argument ID, output table parameters....230
Table 157. "showconfig" command information....230
Table 158. "config" command information....230
Table 159. "create" command information....231
Table 160. "remove" command information....231
Table 161. "show" command information....232
Table 162. “show” command output table parameters....233
Table 163. “show” command, with argument ID, output table parameters....233
Table 164. "showconfig" command information....234
Table 165. Template circuit ID syntax....234
Table 166. "config" command information....235
Table 167. "show" command information....236
Table 168. “show” command output table parameters....236
Table 169. "showconfig" command information....237
Table 170. "config" command information....237
Table 171. "show" command information....237
Table 172. "showconfig" command information....238
Table 173. "remove" command information....239
Table 174. "show" command information....239

Table 175. “show” command output table parameters 240
Table 176. "status" command information 240
Table 177. “status” command output table parameters 241
Table 178. "config" command information 241
Table 179. "reboot" command information 242
Table 180. "show" command information 242
Table 181. “show” command output table parameters 243
Table 182. "showconfig" command information 243
Table 183. "apply" command information 244
Table 184. "config" command information 244
Table 185. "show" command information 245
Table 186. “show” command output table parameters 246
Table 187. "showconfig" command information 246
Table 188. "show" command information 247
Table 189. “show” command output table parameters 247
Table 190. "switch" command information 248
Table 191. "update" command information 248
Table 192. "upgrade-sw" command information 249
Table 193. "config" command information 249
Table 194. "reboot" command information 250
Table 195. "show" command information 250
Table 196. “show” command output table parameters 251
Table 197. "showconfig" command information 252
Table 198. "status" command information 252
Table 199. “status” command output table parameters 253
Table 200. "config" command information 253
Table 201. "create" command information 254
Table 202. "remove" command information 255
Table 203. "show" command information 256
Table 204. “show” command output without arguments table parameters 256
Table 205. “show” command output with argument ID table parameters 257
Table 206. "showconfig" command information 258
Table 207. "command" command information 258
Table 208. "show" command information 259
Table 209. “show” command output table parameters 259
Table 210. "show" command information 260
Table 211. “show” command without arguments output table parameters 261
Table 212. “show” command output table parameters 262
Table 213. "command" command information 263
Table 214. "config" command information 263
Table 215. "create" command information 264
Table 216. "remove" command information 265
Table 217. "show" command information 265
Table 218. “show” command output without arguments table parameters 266
Table 219. “show” command output with argument ID table parameters 266

Table 220. "showconfig" command information 267
Table 221. "status" command information 267
Table 222. “status” command output table parameters 268
Table 223. "command" command information 268
Table 224. "config" command information 269
Table 225. "create" command information 269
Table 226. "remove" command information 270
Table 227. "show" command information 271
Table 228. “show” command output table parameters 271
Table 229. “show” command output with argument ID table parameters 272
Table 230. "showconfig" command information 272
Table 231. "status" command information 273
Table 232. “status” command output table parameters 274
Table 233. "config" command information 275
Table 234. "show" command information 276
Table 235. “show” command output table 277
Table 236. "showconfig" command information 277
Table 237. "config" command information 278
Table 238. "show" command information 279
Table 239. “show” command output table 279
Table 240. “show” command output used with argument --slot 280
Table 241. "showconfig" command information 280
Table 242. "config" command information 281
Table 243. "show" command information 281
Table 244. “show” command, without arguments, output table 282
Table 245. “show” command output table 283
Table 246. "showconfig" command information 283
Table 247. "config" command information 284
Table 248. "show" command information 284
Table 249. “show” command, without arguments, output table 285
Table 250. “show” command output table 286
Table 251. "showconfig" command information 286
Table 252. "config" command information 286
Table 253. "show" command information 287
Table 254. “show” command output table 288
Table 255. “show” command, with argument slot, output table 288
Table 256. "showconfig" command information 288
Table 257. "config" command information 289
Table 258. "show" command information 290
Table 259. “show” command, without arguments, output table 290
Table 260. “show” command, with arguments slot and port, output table 291
Table 261. "showconfig" command information 291
Table 262. "config" command information 292
Table 263. "show" command information 293
Table 264. “show” command, with arguments slot and port, output table 294

Table 265. "showconfig" command information 295
Table 266. "config" command information 295
Table 267. "show" command information 296
Table 268. “show” command without arguments output table parameters 296
Table 269. “show” command with argument slot output table parameters 297
Table 270. "showconfig" command information 297
Table 271. "config" command information 298
Table 272. "show" command information 298
Table 273. “show” command without arguments output table parameters 299
Table 274. “show” command with argument slot output table parameters 300
Table 275. "showconfig" command information 300
Table 276. "status" command information 300
Table 277. “status” command output table parameters 301
Table 278. "config" command information 301
Table 279. "show" command information 302
Table 280. “show” command without arguments output table parameters 303
Table 281. “show” command with argument slot output table parameters 303
Table 282. "showconfig" command information 304
Table 283. "add" command information 304
Table 284. "availableValues" command information 305
Table 285. “availableValues” command output table parameters- Table “Available interfaces for client services” 306
Table 286. “availableValues” command output table parameters- Table “Available network services to associate with client services” 307
Table 287. "config" command information 307
Table 288. "remove" command information 308
Table 289. "show" command information 308
Table 290. “show” command output table parameters 309
Table 291. “show” command output table parameters 310
Table 292. "showconfig" command information 310
Table 293. "create" command information 311
Table 294. "remove" command information 311
Table 295. "show" command information 312
Table 296. “show” command output table parameters 313
Table 297. "showconfig" command information 313
Table 298. "availableValues" command information 313
Table 299. “availableValues” command output table parameters 314
Table 300. "show" command information 314
Table 301. “show” command output table 315
Table 302. "show-active" command information 316
Table 303. “show-active” command output table 316
Table 304. "start" command information 316
Table 305. "stop" command information 317
Table 306. "show" command information 317
Table 307. “show” command output table parameters 318

Table 308. "show" command information 319
Table 309. “show” command output table parameters 320
Table 310. "show" command information 321
Table 311. “show” command output table....322
Table 312. "show" command information 323
Table 313. “show” command output table....324
Table 314. "show" command information 324
Table 315. "show" command information 326
Table 316. “show” command output table parameters 327
Table 317. "config" command information 327
Table 318. "show" command information 328
Table 319. “show” command without arguments output table parameters 329
Table 320. “show” command with argument slot output table parameters 329
Table 321. "showconfig" command information....330
Table 322. "config" command information 330
Table 323. "show" command information 331
Table 324. “show” command without arguments output table parameters 332
Table 325. “show” command with argument slot output table parameters 332
Table 326. "showconfig" command information....332
Table 327. "config" command information 333
Table 328. "show" command information 334
Table 329. “show” command output table....334
Table 330. "showconfig" command information....335
Table 331. "config" command information 335
Table 332. "show" command information 336
Table 333. “show” command output table....337
Table 334. “show” command output used with argument --slot 337
Table 335. "showconfig" command information....338
Table 336. "config" command information 339
Table 337. "show" command information 339
Table 338. “show” command, without arguments, output table....340
Table 339. “show” command output table....341
Table 340. "showconfig" command information....341
Table 341. "config" command information 342
Table 342. "show" command information 342
Table 343. “show” command, without arguments, output table....343
Table 344. “show” command output table....344
Table 345. "showconfig" command information....344
Table 346. "config" command information 345
Table 347. "show" command information 345
Table 348. “show” command, without arguments, output table....346
Table 349. “show” command output table parameters 347
Table 350. "showconfig" command information....347
Table 351. "config" command information 348
Table 352. "show" command information 348

Table 353. “show” command, without arguments, output table 349
Table 354. “show” command, with arguments slot and port, output table 350
Table 355. "showconfig" command information 350
Table 356. "config" command information 351
Table 357. "show" command information 352
Table 358. “show” command, with arguments slot and port, output table 353
Table 359. "showconfig" command information 354
Table 360. "config" command information 354
Table 361. "show" command information 355
Table 362. “show” command output table 355
Table 363. “show” command output, with argument slot, table parameters 356
Table 364. "showconfig" command information 356
Table 365. "config" command information 357
Table 366. "show" command information 357
Table 367. “show” command without arguments output table parameters 358
Table 368. “show” command with argument slot output table parameters 359
Table 369. "showconfig" command information 359
Table 370. "status" command information 360
Table 371. “status” command output table parameters 361
Table 372. "config" command information 361
Table 373. "show" command information 361
Table 374. “show” command output table 362
Table 375. “show” command output, with argument slot, table parameters 363
Table 376. "showconfig" command information 363
Table 377. "show" command information 364
Table 378. “show” command output table parameters 365
Table 379. "show" command information 365
Table 380. “show” command output table parameters 366
Table 381. "show" command information 367
Table 382. “show” command output table parameters 368
Table 383. "show" command information 368
Table 384. “show” command, without arguments, output table 369
Table 385. “show” command, with argument slot, output table parameters 370
Table 386. "show" command information 370
Table 387. "read-all" command information 373
Table 388. "show" command information 373
Table 389. “show” command output table parameters 374
Table 390. "config" command information 374
Table 391. "show" command information 375
Table 392. “show” command without arguments output table parameters 376
Table 393. “show” command with argument slot output table parameters 377
Table 394. "showconfig" command information 378
Table 395. "config" command information 378
Table 396. "show" command information 379
Table 397. “show” command without arguments output table parameters 379

Table 398. “show” command with argument slot output table parameters 380
Table 399. "showconfig" command information 380
Table 400. "config" command information 381
Table 401. "create" command information 381
Table 402. "remove" command information 382
Table 403. "show" command information 382
Table 404. “show” command output table parameters 383
Table 405. "showconfig" command information 384
Table 406. "config" command information 384
Table 407. "show" command information 385
Table 408. “show” command output table 385
Table 409. "showconfig" command information 386
Table 410. "config" command information 386
Table 411. "show" command information 387
Table 412. “show” command output table parameters 387
Table 413. "showconfig" command information 388
Table 414. "config" command information 388
Table 415. "show" command information 389
Table 416. “show” command, with arguments slot and port, output table 389
Table 417. "showconfig" command information 390
Table 418. "config" command information 390
Table 419. "show" command information 391
Table 420. “show” command, with arguments slot and port, output table 393
Table 421. "showconfig" command information 393
Table 422. "config" command information 394
Table 423. "show" command information 394
Table 424. “show” command with output table parameters 395
Table 425. "showconfig" command information 395
Table 426. "status" command information 396
Table 427. “status” command output table parameters 396
Table 428. "attach" command information 397
Table 429. "availableValues" command information 397
Table 430. “availableValues” command output table parameters 398
Table 431. "detach" command information 398
Table 432. "show" command information 399
Table 433. “show” command output table parameters 399
Table 434. "show" command information 400
Table 435. “show” command output table parameters 400
Table 436. "config" command information 401
Table 437. "show" command information 401
Table 438. “show” command output table parameters 402
Table 439. "showconfig" command information 402
Table 440. "config" command information 403
Table 441. "show" command information 403
Table 442. “show” command output table 404

Table 443. "showconfig" command information 404
Table 444. "apply" command information 405
Table 445. "save" command information 405
Table 446. "config" command information 406
Table 447. "show" command information 406
Table 448. “show” command output table parameters 407
Table 449. "showconfig" command information 407
Table 450. "config" command information 408
Table 451. "show" command information 408
Table 452. “show” command output table parameters 409
Table 453. "showconfig" command information 409
Table 454. "config" command information 410
Table 455. "show" command information 410
Table 456. “show” command output table parameters 411
Table 457. "showconfig" command information 411
Table 458. "create" command information 412
Table 459. "remove" command information 412
Table 460. "show" command information 413
Table 461. “show” command output table parameters 414
Table 462. "showconfig" command information 414
Table 463. "config" command information 414
Table 464. "create" command information 415
Table 465. "remove" command information 416
Table 466. "show" command information 416
Table 467. “show” command output table parameters 417
Table 468. "showconfig" command information 417
Table 469. "clear" command information 418
Table 470. "show" command information 418
Table 471. “show” command output table parameters 419
Table 472. "config" command information 420
Table 473. "show" command information 421
Table 474. “show” command output table parameters 421
Table 475. "showconfig" command information 421
Table 476. "remove" command information 422
Table 477. "show" command information 423
Table 478. “show” command output table parameters 423
Table 479. "remove" command information 424
Table 480. "show" command information 424
Table 481. “show” command output table parameters 425
Table 482. "status" command information 426
Table 483. “status” command output table parameters 427
Table 484. “status” command, with arguments ip-address and serviceID, output table parameters 427
Table 485. "config" command information 428
Table 486. "create" command information 428
Table 487. "remove" command information 429

Table 488. "show" command information 429
Table 489. “show” command output table parameters 430
Table 490. "showconfig" command information 430
Table 491. "config" command information 431
Table 492. "show" command information 431
Table 493. “show” command output table parameters 432
Table 494. "showconfig" command information 432
Table 495. "config" command information 433
Table 496. "show" command information 433
Table 497. “show” command output table parameters 434
Table 498. "showconfig" command information 434
Table 499. "config" command information 435
Table 500. "show" command information 435
Table 501. “show” command output table parameters 436
Table 502. "showconfig" command information 436
Table 503. "config" command information 437
Table 504. "create" command information 437
Table 505. "remove" command information 438
Table 506. "show" command information 438
Table 507. “show” command output table parameters 439
Table 508. "showconfig" command information 439
Table 509. "attach" command information 440
Table 510. "detach" command information 440
Table 511. "show" command information 441
Table 512. “show” command output table parameters 441
Table 513. "showconfig" command information 442
Table 514. "config" command information 442
Table 515. "create" command information 443
Table 516. "remove" command information 444
Table 517. "show" command information 444
Table 518. “show” command output table parameters 445
Table 519. "showconfig" command information 445
Table 520. "show" command information 446
Table 521. “show” command output table parameters 446
Table 522. "config" command information 447
Table 523. "create" command information 448
Table 524. "remove" command information 448
Table 525. "show" command information 449
Table 526. “show” command, without arguments, output table parameters 449
Table 527. “show” command, with argument ID, output table parameters 450
Table 528. "showconfig" command information 450
Table 529. "config" command information 451
Table 530. "create" command information 451
Table 531. "remove" command information 452
Table 532. "show" command information 452

Table 533. “show” command output table parameters 453
Table 534. "showconfig" command information 453
Table 535. "config" command information 454
Table 536. "create" command information 454
Table 537. "remove" command information 455
Table 538. "show" command information 456
Table 539. “show” command output table parameters 456
Table 540. "showconfig" command information 457
Table 541. "config" command information 457
Table 542. "create" command information 458
Table 543. "remove" command information 458
Table 544. "show" command information 459
Table 545. “show” command output table parameters 459
Table 546. "showconfig" command information 460
Table 547. "config" command information 460
Table 548. "create" command information 461
Table 549. "remove" command information 462
Table 550. "show" command information 462
Table 551. “show” command output table parameters 463
Table 552. "showconfig" command information 463
Table 553. "availableValues" command information 464
Table 554. “availableValues” command output table parameters 464
Table 555. "config" command information 465
Table 556. "create" command information 465
Table 557. "remove" command information 466
Table 558. "show" command information 466
Table 559. “show” command output table parameters 467
Table 560. "showconfig" command information 467
Table 561. "config" command information 468
Table 562. "create" command information 468
Table 563. "remove" command information 469
Table 564. "show" command information 469
Table 565. “show” command output table parameters 470
Table 566. "showconfig" command information 470
Table 567. "config" command information 472
Table 568. "show" command information 472
Table 569. “show” command output table parameters 473
Table 570. "showconfig" command information 473
Table 571. "config" command information 474
Table 572. "create" command information 474
Table 573. "remove" command information 475
Table 574. "show" command information 475
Table 575. “show” command output table parameters 476
Table 576. "showconfig" command information 476
Table 577. "config" command information 477

Table 578. "show" command information 477
Table 579. “show” command output table parameters 478
Table 580. "showconfig" command information 478
Table 581. "config-onu-id" command information....479
Table 582. "connect" command information 480
Table 583. "disconnect" command information 481
Table 584. " showconnected " command information 481
Table 585. “showconnected” command output table parameters 482
Table 586. "config" command information 482
Table 587. "command" command information....483
Table 588. "config" command information 483
Table 589. "create" command information 484
Table 590. "insert" command information....485
Table 591. "insert-all" command information 485
Table 592. "reboot" command information 486
Table 593. "reboot-all" command information 486
Table 594. "remove" command information 487
Table 595. "remove-all" command information 487
Table 596. "show" command information 488
Table 597. “show” command output table parameters 489
Table 598. "showconfig" command information 489
Table 599. "show" command information 490
Table 600. “show” command output table parameters 491
Table 601. "showconfig" command information 492
Table 602. "config" command information 492
Table 603. "show" command information 493
Table 604. “show” command output table parameters 494
Table 605. "showconfig" command information 494
Table 606. "config-e1" command information 495
Table 607. "config-lsp" command information 495
Table 608. "config-pw" command information 496
Table 609. "show" command information 497
Table 610. "showconfig" command information 497
Table 611. "status" command information 498
Table 612. "config" command information 499
Table 613. "show" command information 499
Table 614. “show” command output table parameters 500
Table 615. "showconfig" command information 500
Table 616. "config" command information 501
Table 617. "show" command information 501
Table 618. “show” command output table parameters 502
Table 619. "showconfig" command information 502
Table 620. "config" command information 503
Table 621. "show" command information 504
Table 622. “show” command output table parameters 504

Table 623. "showconfig" command information 505
Table 624. "config" command information 505
Table 625. "create" command information 506
Table 626. "remove" command information 507
Table 627. "show" command information 507
Table 628. “show” command output table parameters 508
Table 629. "showconfig" command information 508
Table 630. "config" command information 509
Table 631. "show" command information 509
Table 632. “show” command output table parameters 510
Table 633. "showconfig" command information 510
Table 634. "add " command information 511
Table 635. "availableValues" command information 512
Table 636. “availableValues” command output table parameters 513
Table 637. "config" command information 513
Table 638. "remove" command information 514
Table 639. "show" command information 515
Table 640. “show” command output table parameters 516
Table 641. “show” command, with argument serviceID-onu, output table parameters 516
Table 642. "create" command information 517
Table 643. "remove" command information 517
Table 644. "show" command information 518
Table 645. “show” command output table parameters 519
Table 646. "showconfig" command information 519
Table 647. "config" command information 520
Table 648. "show" command information 520
Table 649. “show” command output table parameters 521
Table 650. "showconfig" command information 521
Table 651. "config" command information 522
Table 652. "show" command information 522
Table 653. “show” command output table parameters 523
Table 654. "showconfig" command information 524
Table 655. "config" command information 524
Table 656. "create" command information 525
Table 657. "remove" command information 525
Table 658. "show" command information 526
Table 659. “show” command output table parameters 526
Table 660. "showconfig" command information 527
Table 661. "config" command information 527
Table 662. "show" command information 528
Table 663. “show” command output table parameters 529
Table 664. "showconfig" command information 529
Table 665. "show" command information 530
Table 666. "show" command information 530
Table 667. “show” command output table parameters –Ethernet Status table 532

Table 668. “show” command output tables parameters –Analog RF Status table 533
Table 669. “show” command output tables parameters –GPON Status table 533
Table 670. “show” command output tables parameters –Services Status table 533
Table 671. “show” command output tables parameters –Firmware Status table 533
Table 672. “show” command output tables parameters –Maintenance and Alarms status 533
Table 673. "show" command information 534
Table 674. “show” command output table parameters 535
Table 675. "activate" command information 536
Table 676. "commit" command information 536
Table 677. "stop-transfer " command information 537
Table 678. "show" command information 538
Table 679. “show” command output table parameters 538
Table 680. "show" command information 539
Table 681. “show” command output table parameters 539
Table 682. "show" command information 540
Table 683. “show” command output table parameters 540
Table 684. "availableValues" command information 541
Table 685. “availableValues” command output table parameters 541
Table 686. "show" command information 542
Table 687. “show” command output table parameters 542
Table 688. "show-active" command information 543
Table 689. “show-active” command output table 543
Table 690. "start" command information 544
Table 691. "stop" command information 544
Table 692. "show" command information 545
Table 693. “show” command output table parameters 546
Table 694. "show" command information 547
Table 695. “show” command output table parameters 548
Table 696. "show" command information 549
Table 697. “show” command output table parameters 550
Table 698. "remove" command information 550
Table 699. "status" command information 551
Table 700.“status” command output table parameters 551
Table 701. "config" command information 552
Table 702. "create" command information 552
Table 703. "remove" command information 553
Table 704. "show" command information 553
Table 705. “show” command output table parameters 554
Table 706. "showconfig" command information 554
Table 707. "create" command information 555
Table 708. "remove" command information 555
Table 709. "show" command information 556
Table 710. “show” command output table parameters 556
Table 711. "showconfig" command information 557
Table 712. "status" command information 557

Table 713. “status” command output table parameters 558
Table 714. "config" command information 558
Table 715. "create" command information 559
Table 716. "remove" command information 559
Table 717. "show" command information 560
Table 718. “show” command output table parameters 560
Table 719. "showconfig" command information 561
Table 720. "status" command information 561
Table 721. “status” command output table parameters 562
Table 722. "create" command information 562
Table 723. "remove" command information 563
Table 724. "show" command information 563
Table 725. “show” command output table parameters 564
Table 726. "showconfig" command information 564
Table 727. "status" command information 565
Table 728. “status” command output table parameters 565
Table 729. "availableValues" command information 566
Table 730. “availableValues” command output Uplink/Downlink table parameters 567
Table 731. "config" command information 567
Table 732. "create" command information 569
Table 733. "remove" command information 570
Table 734. "show" command information 570
Table 735. “show” command output table parameters 571
Table 736. “show” command, used with serviceID parameter, output table parameters 572
Table 737. "showconfig" command information 573
Table 738. "show" command information 574
Table 739. “show” command, used with serviceID parameter, output table parameters 574
Table 740. "availableValues" command information 575
Table 741. “availableValues” command output table parameters 576
Table 742. "show" command information 577
Table 743. “show” command output table parameters 577
Table 744. "show-active" command information 578
Table 745. “show-active” command output table 578
Table 746. "start" command information 579
Table 747. "stop" command information 579
Table 748. "availableValues" command information 580
Table 749. “availableValues” command output table parameters 580
Table 750. "show" command information 581
Table 751. “show” command output table 582
Table 752. "availableValues" command information 583
Table 753. “availableValues” command output table parameters 584
Table 754. "show" command information 584
Table 755. “show” command output table parameters 585
Table 756. "config" command information 587
Table 757. "show" command information 587

Table 758. “show” command output table parameters 588
Table 759. "showconfig" command information 589
Table 760. "availableValues" command information 589
Table 761. “availableValues” command output table parameters 590
Table 762. "config" command information 591
Table 763. "show" command information 591
Table 764. “show” command output table parameters 592
Table 765. "showconfig" command information 593
Table 766. "config" command information 593
Table 767. "show" command information 594
Table 768. “show” command output table parameters 595
Table 769. "showconfig" command information 595
Table 770. "availableValues " command information 596
Table 771. “availableValues” command output table parameters 597
Table 772. "config" command information 597
Table 773. "create" command information 598
Table 774. "remove" command information 598
Table 775. "show" command information 599
Table 776. “show” command output table parameters 600
Table 777. "showconfig" command information 600
Table 778. "config" command information 600
Table 779. "create" command information 601
Table 780. "remove" command information 602
Table 781. "show" command information 602
Table 782. “show” command output table parameters 603
Table 783. "command" command information 603
Table 784. "show" command information 604
Table 785. “show” command output table parameters 604
Table 786. "command" command information 605
Table 787. "show" command information 605
Table 788. “show” command output table parameters 606
Table 789. "show" command information 606
Table 790. “show” command output table parameters 607
Table 791. "config" command information 609
Table 792. "show" command information 610
Table 793. “show” command output table parameters 610
Table 794. "showconfig" command information 611
Table 795. "config" command information 611
Table 796. "create" command information 612
Table 797. "remove" command information 612
Table 798. "show" command information 613
Table 799. “show” command output table parameters 613
Table 800. "showconfig" command information 614
Table 801. "config" command information 614
Table 802. "show" command information 615

Table 803. “show” command output table parameters 616
Table 804. "showconfig" command information 616
Table 805. "config" command information 617
Table 806. "create" command information 618
Table 807. "remove" command information 618
Table 808. "show" command information 619
Table 809. “show” command output table parameters 620
Table 810. "status" command information 620
Table 811. “status” command output table parameters 620
Table 812. "ping" command information 621
Table 813. "tcpdump" command information 621
Table 814. "telnet" command information 622
Table 815. "traceroute" command information 622
Table 816. Common problem handling 626
Table 817. Equipment Error Codes List 627

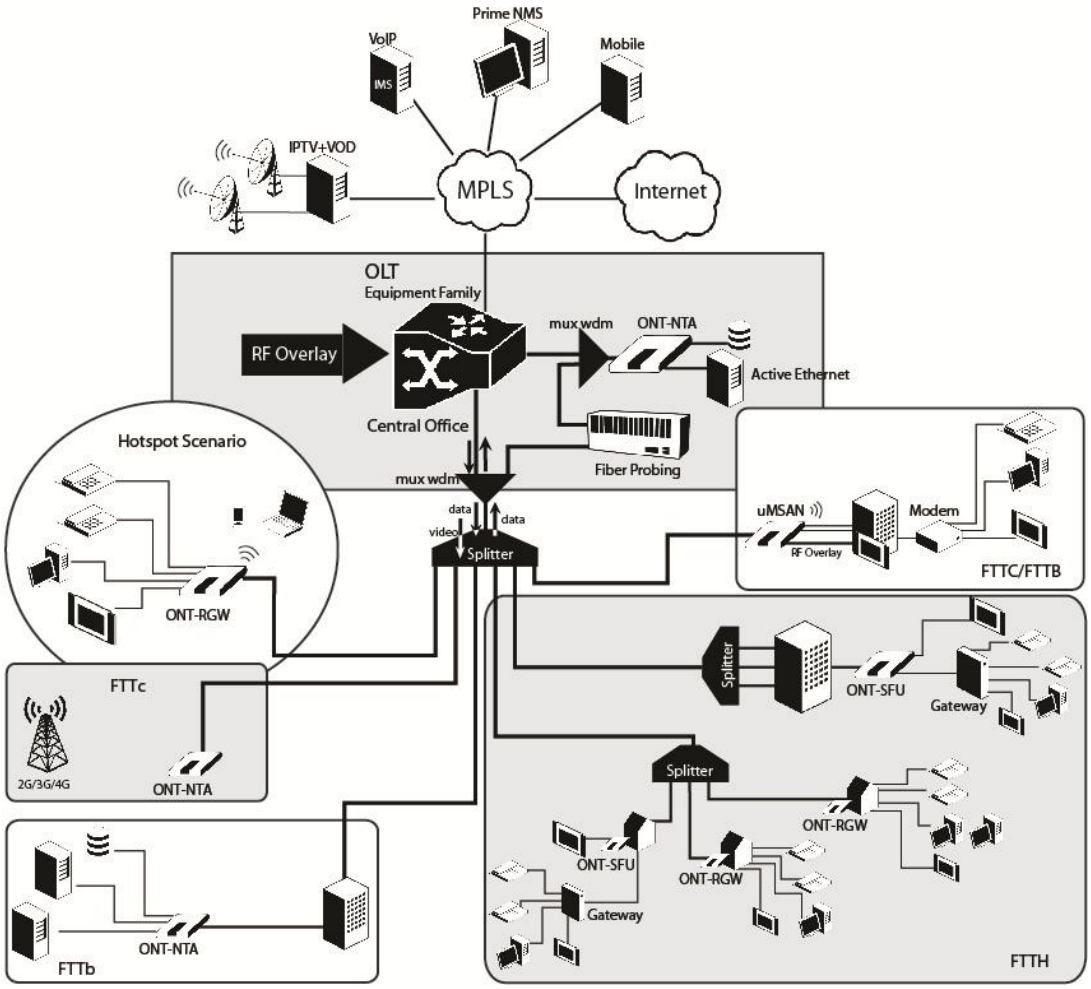
Chapter 1
SUMMARY

The ME4620 OLT is a high availability and high reliability high density scenario Optical Line Termination (OLT) equipment specially designed for fiber network infrastructures including Fiber-to-the-Home (FTTH), Fiber-to-the-Building (FTTB), Fiber-to-the-Curb (FTTC), Fiber-to-the-cell (FTTc) and Fiber-to-the-business (FTTb) and using Point-to-Multipoint (P2MP) Gigabit Passive Optical Network (GPON) or Point-to-Point (P2P) Gigabit Ethernet (GE) as depicted at Figure 1. The ME4620 OLT supports up to 256 GPON ports or 768 GE ports and can be considered the best-of-breed market offer in terms of central office density.

This equipment is intended to solve all your fiber access needs in terms of retail as well as wholesale clients. It complies with ITU-T G.984x and is able to serve multiplay services, namely Voice (VoIP), Data (High Speed Internet - HSI), TV (IPTV and RF Overlay) of up to 16384 client premises (assuming a 1:64 Splitting ratio) from a single chassis.

Wholesale and enterprise services are addressed through Business Ethernet VBES/TLS Services (Vlan Business Ethernet Services/Transparent VLAN Services). Up to 768 client premises can be supported at the P2P topology from a single chassis.

Figure 1. PON network architecture



Chapter 2
TECHNICAL DESCRIPTION

The ME4620 OLT system is reliable modular Optical Line Termination (OLT) equipment specially devoted for fiber network infrastructures either Point-to-Point (P2P) Ethernet or Point-to-Multipoint (P2MP) FTTx Gigabit Passive Optical Network (GPON) architectures

The ME4620 OLT supports Voice, Data and Video services. In parallel the transport of analog video services (RF Overlay) can be supported. Carrier class TDM services bridging is also available by means of using dedicated network termination equipments (NTA).

The ME4620 OLT is a reliable high availability system that uses common element 1+1 protection (Power, Switch Fabric & Processing) and load balancing LACP at the Uplink interfaces. To guarantee security the Advanced Encryption Standard (AES) is used in the system. Multicast and IGMPv2/v3 snooping with proxy reporting are both enablers for a flexible IPTV service delivery.

Figure 2: ME4620 OLT architecture

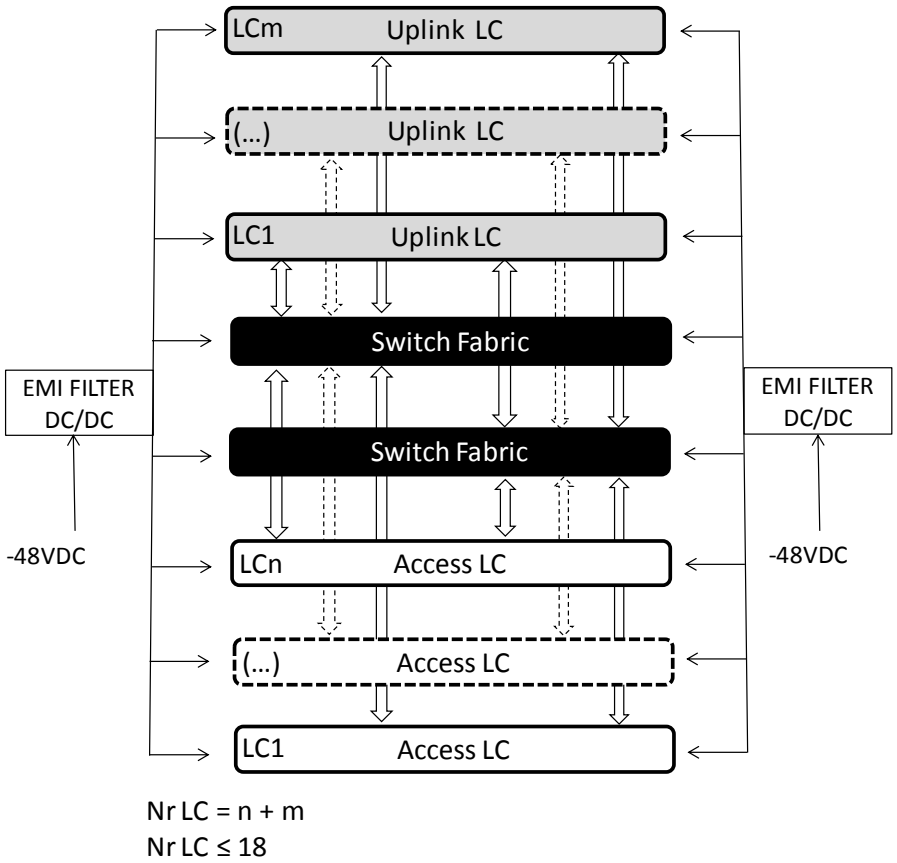


Figure 2 shows the architecture of ME4620 equipment. This consists of a closet for the placement of the two boards of switching, and a maximum of eighteen line card between uplink line cards and access line cards.

The line card may be any of the existing system ME4600.

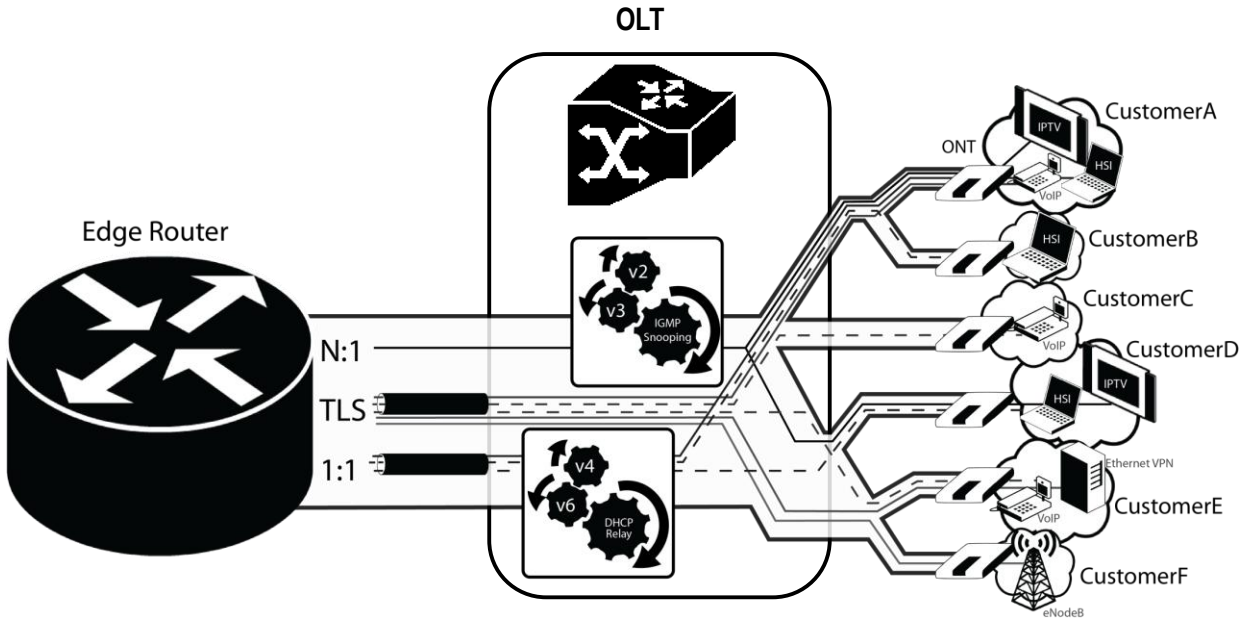
Table 1. ME4620 OLT Equipment features

Features	ME4620 OLT system
Chassis (ETSI 19”)	14 U
Number of line card slots	18
Backplane: Physical BW per slot	12x10GbE
GPON ports [max]	Up to 256
1GbE interfaces	Up to 768
10GE interfaces	Up to 72

ME4620 OLT SERVICES

USAGE SCENARIOS

Figure 3. ME4620 OLT services Usage Scenario



The ME4620 OLT system Usage services scenario include the support the provision of:

- NGN voice services: VoIP and ToIP soft switched controlled, including IP Centrex services and SIP Trunk services
- Internet services –High speed internet in the order of Mbit/s to Gbit/s, with traffic prioritization and differentiation
- Enhanced Multimedia Communications such as voice, presence, unified messaging, localization, Caller ID with IPTV, controlled by an IMS CSCF(Call Session Control Function) platform,
- Mobile Backhaul services:
    - Applicable to WiMAX, 2G, 3G and 4G (LTE) networks
    - Support transparent synchronization signals (frequency, phase and time) transport according to NTP and PTP Protocols (IEEE 1588 v2 and telecom profile)
    - Provide BITs interface for the connection of an external MHz or Mbps clock reference
- Video services:
    - IPTV
    - RF Video

- Residential multiplay services:
    - Voice: Voice over IP (VoIP);
    - Internet: High Speed Internet Services;
    - RF Overlay: Analog Video using a different wavelength (1550nm);
    - IPTV: transport of Digital Video Services;
- Business services:
    - TDM emulation services for E1 transport according to MEF-8 (CESoETH)
    - Carrier Ethernet services based on MEF 10.1 (E-LINE, E-LAN)
    - Business Ethernet Services TLS (Transparent VLAN Services)
    - BitStream (enterprise).

GPON SERVICE SCENARIOS

The ME4620 OLT system supports the following Ethernet services over GPON:

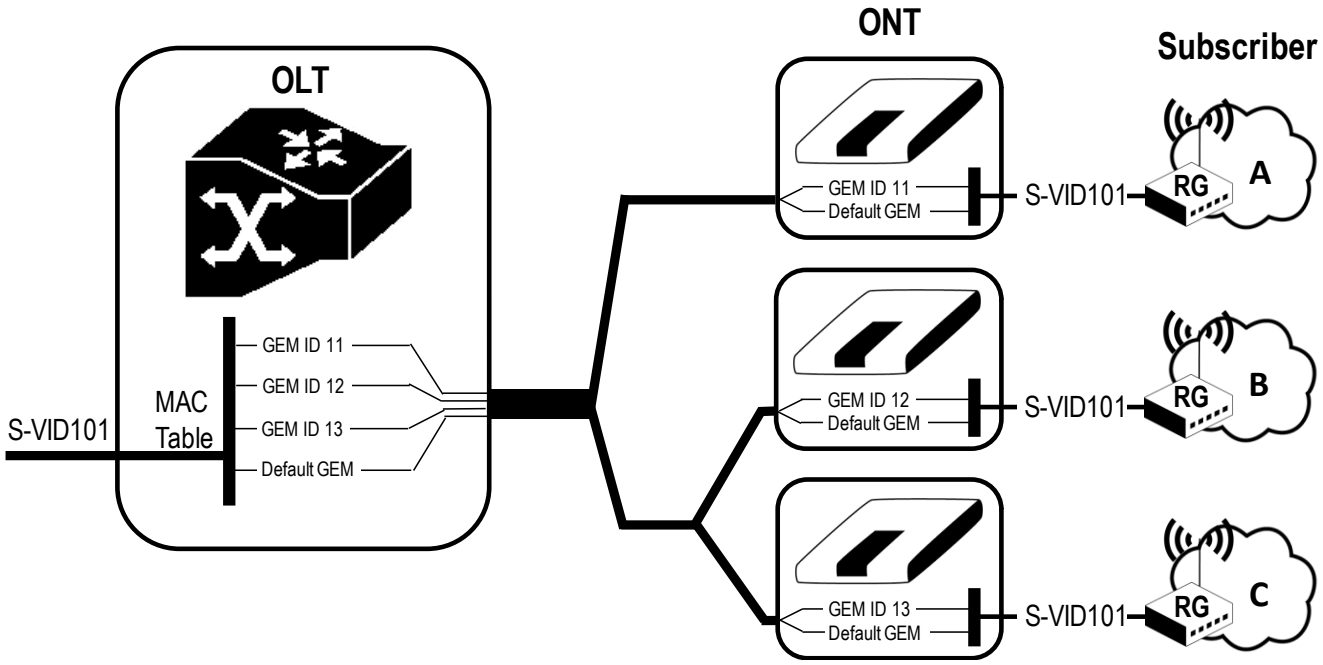
- **N:1**
    - Multiple Clients using the same Service Tag
    - Traffic Forwarding based on the S-TAG+DMAC or S-TAG+C-TAG+DMAC
- **1:1**
    - Unique S-TAG or S-TAG+C-TAG per Client Service
    - Traffic switching based on S-TAG+C-TAG or S-TAG
- **Transparent LAN Services (TLS)**
    - The traffic is not processed
    - The CPU is not part of the EVC
    - Can be use 1:1 and N:1 topology

N:1 SERVICES

Unicast Unstacked Services:

- Forwarding is based on S-VID+DMAC (e.g. Residential Gateway MAC Address).
- Default GEM Port Transports Unicast Unknown, Multicast and Broadcast MAC Addresses
- Multicast Services only have the Default GEM

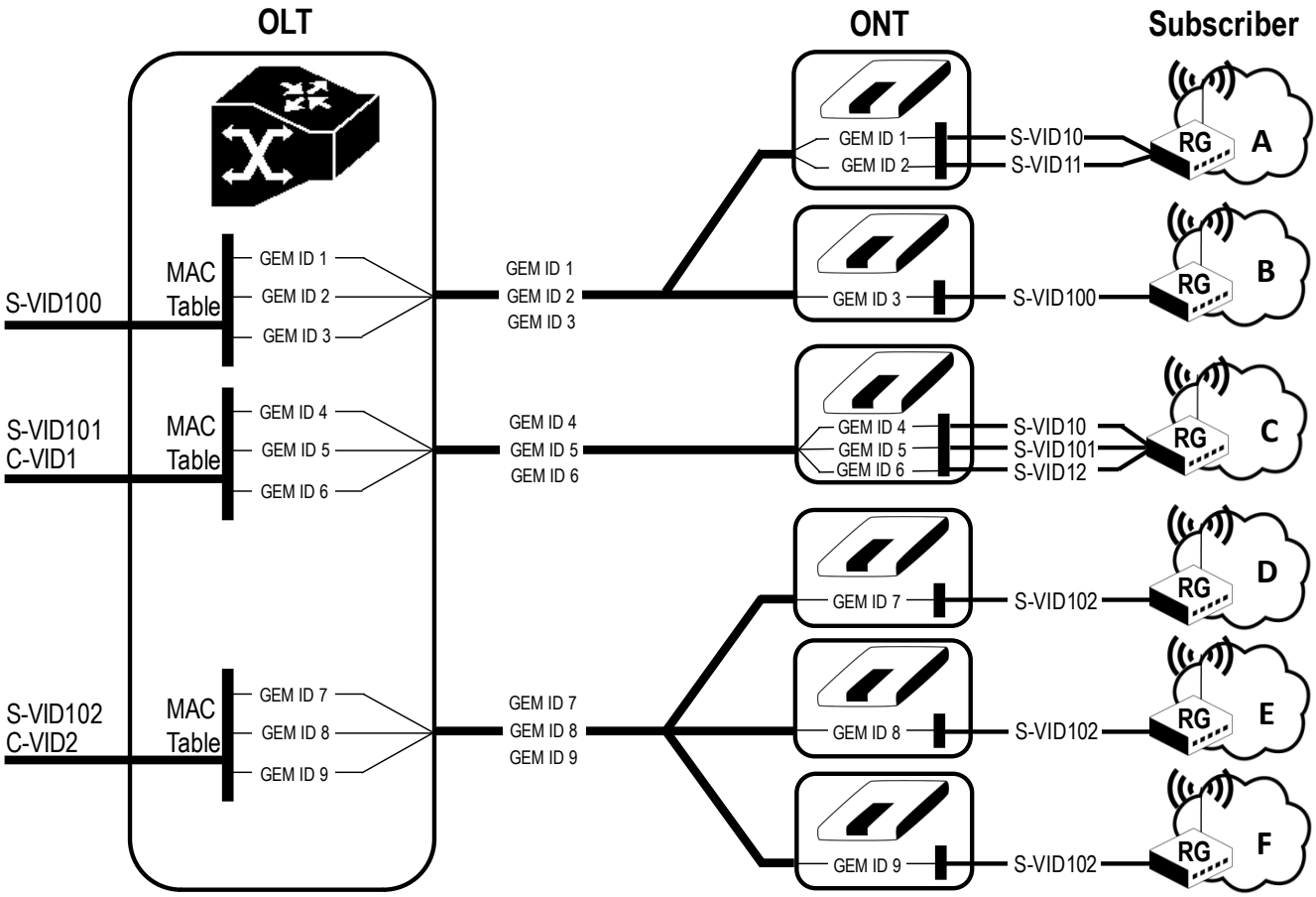
Figure 4. N:1- Unicast Unstacked Services



MAC Bridge Services:

- Forwarding Based on S-VID+DMAC or S-VID+C-VID+DMAC
- Unicast Unknown, Multicast and Broadcast MAC Addresses are replicated to all the GEM Ports that belong to the same S-VID or S-VID+C-VID

Figure 5. N:1- MAC Bridge Services

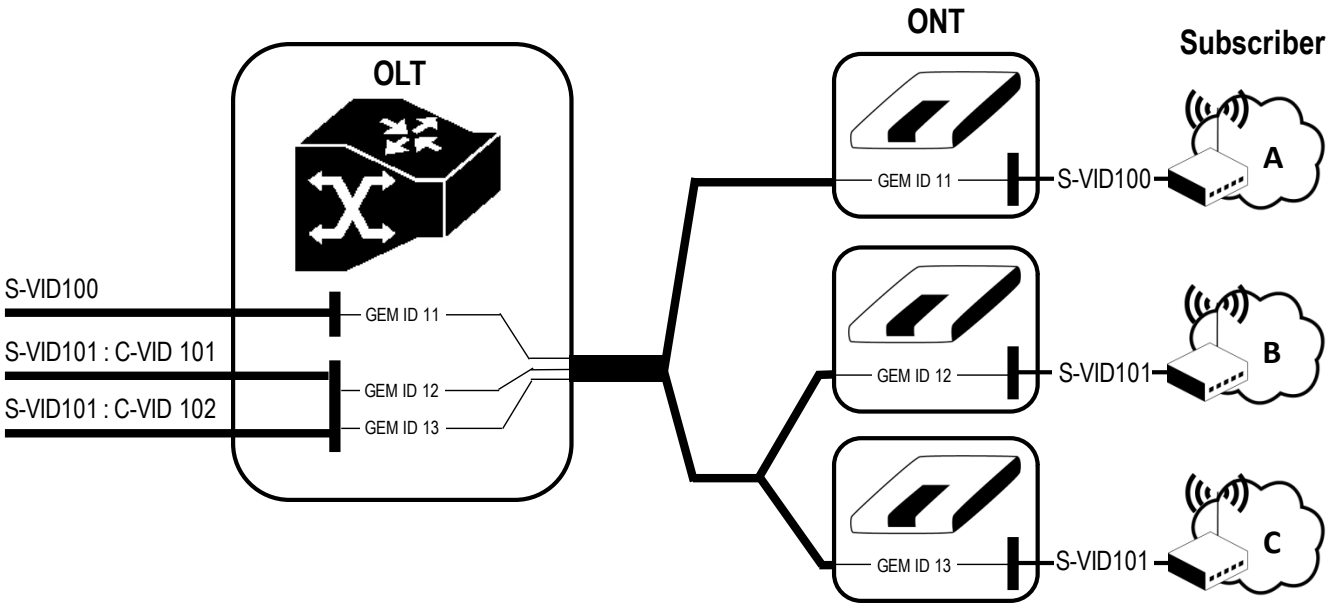


1:1 SERVICES

Unicast Stacked Services:

- Traffic is encapsulated in different GEM ports according to S-VID and C-VID;
- Traffic is forward using S-Tags + C-Tags or S-Tags.

Figure 6. 1:1 1:1 Unicast Stacked Services

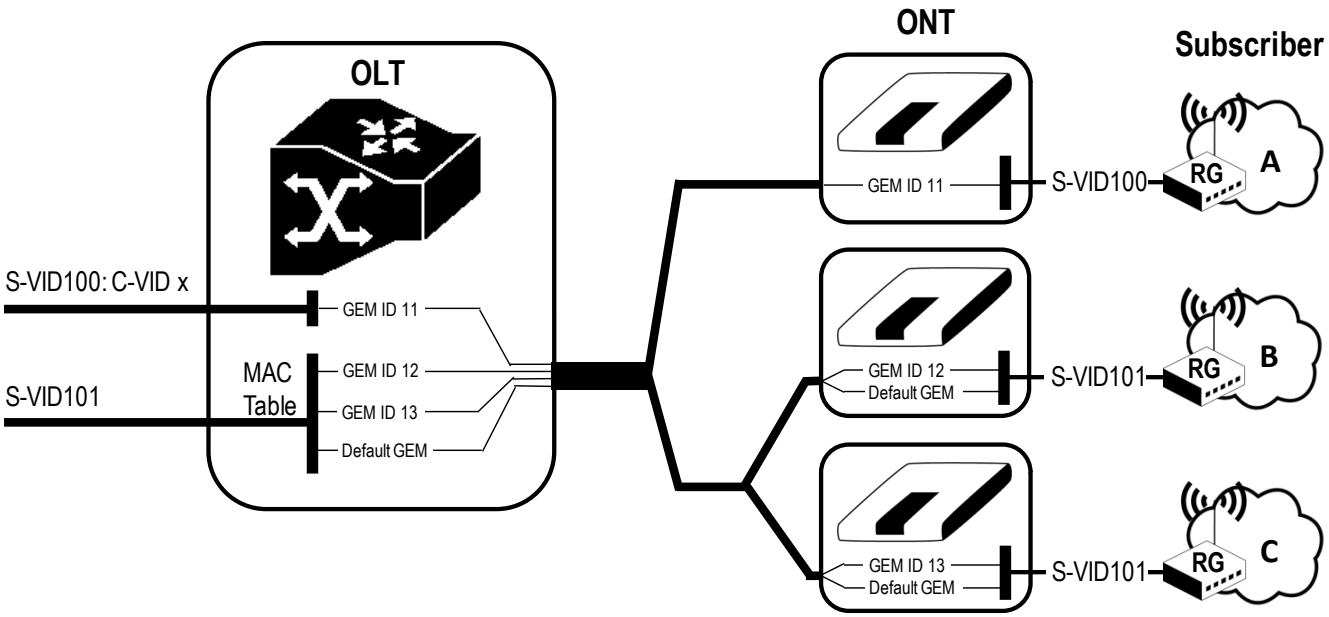


TRANSPARENT LAN SERVICES (TLS)

Bitstream Services:

- The traffic is not processed
- The CPU is not part of the EVC
- Can be use 1:1 and N:1 topology

Figure 7: TLS- Bitstream Services



ACTIVE ETHERNET SERVICES SCENARIOS

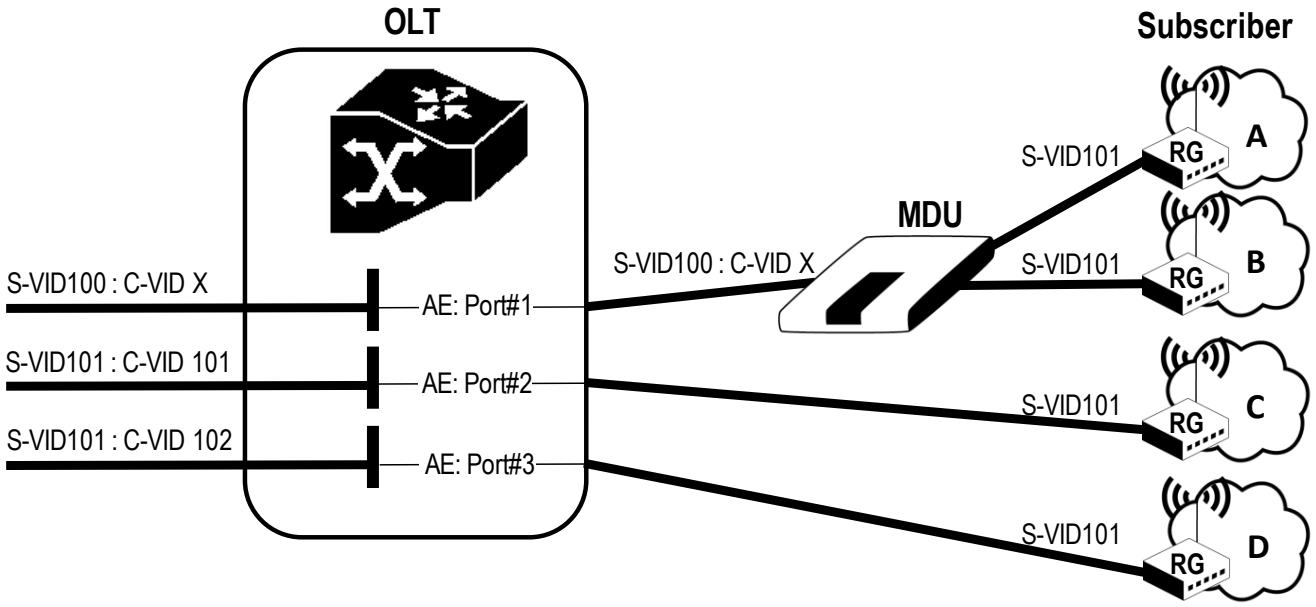
The ME4620 OLT system supports the following Ethernet services over Active Ethernet:

1:1 SERVICES

For these services:

- Traffic is encapsulated in different GEM ports according to S-VID and C-VID;
- Traffic is forward using S-Tags + C-Tags or S-Tags.

Figure 8. AE 1:1 Services

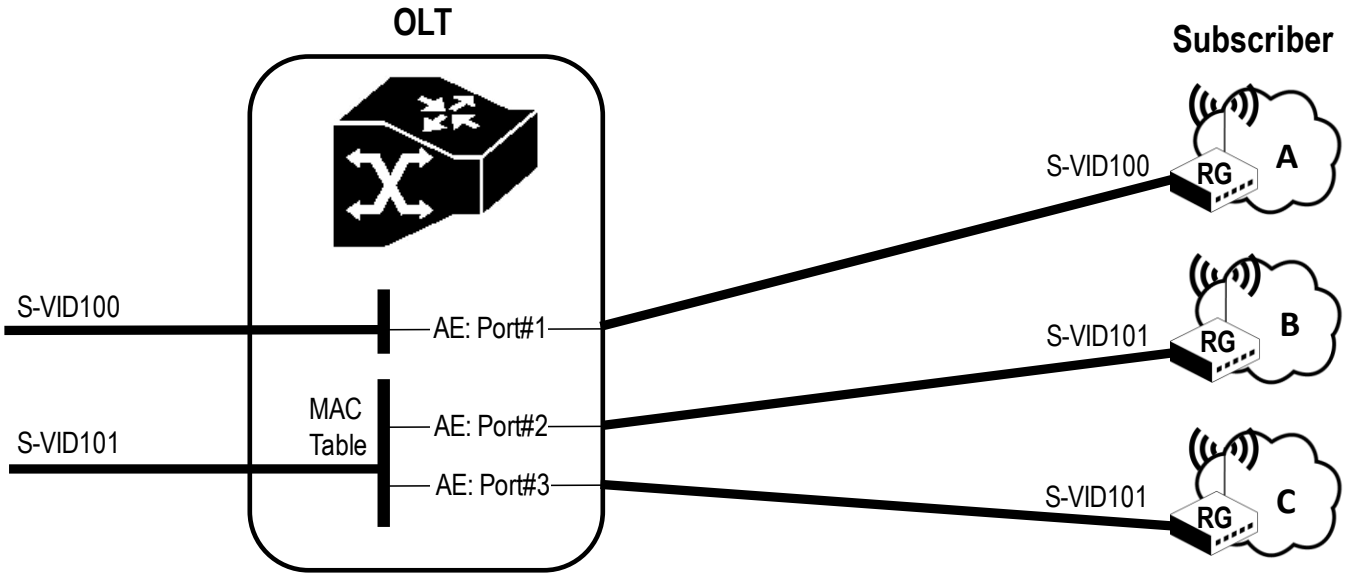


N:1 SERVICES

For these services:

- Forwarding is based on S-VID+DMAC (e.g. Residential Gateway MAC Address).

Figure 9. AE N:1 Services



ME4620 OLT SYSTEM FEATURES

The ME4620 OLT system provides the following Ethernet features distributed by the Switching and Client boards:

- VLAN Switching;
- Multicast – IGMP Snooping/Proxy;
- Load Balancing and LACP;
- DHCP Relay Agent;
- QoS.

In the client boards it is performed the interworking between the Ethernet and GPON packets. They are also responsible for managing the ONT via OMCI. The main features are:

- Downstream/Upstream bit rate: 2.488/1.244 Gbps;
- Advanced Encryption Standard (AES);
- Forward Error Correction (FEC);
- Up to 128 ONT per PON;
- L2 Manipulation: Transparent, Add/change S-Tag e C-Tag;
- Dynamic Bandwidth Allocation (DBA).

In parallel with the data services, the ME4620 OLT System allows the transport of analog video services (RF Overlay).

The ME4620 OLT System is a flexible system that can be adapted to deliver the full pack of broadband services including Ethernet for business/premium customers.

SERVICES

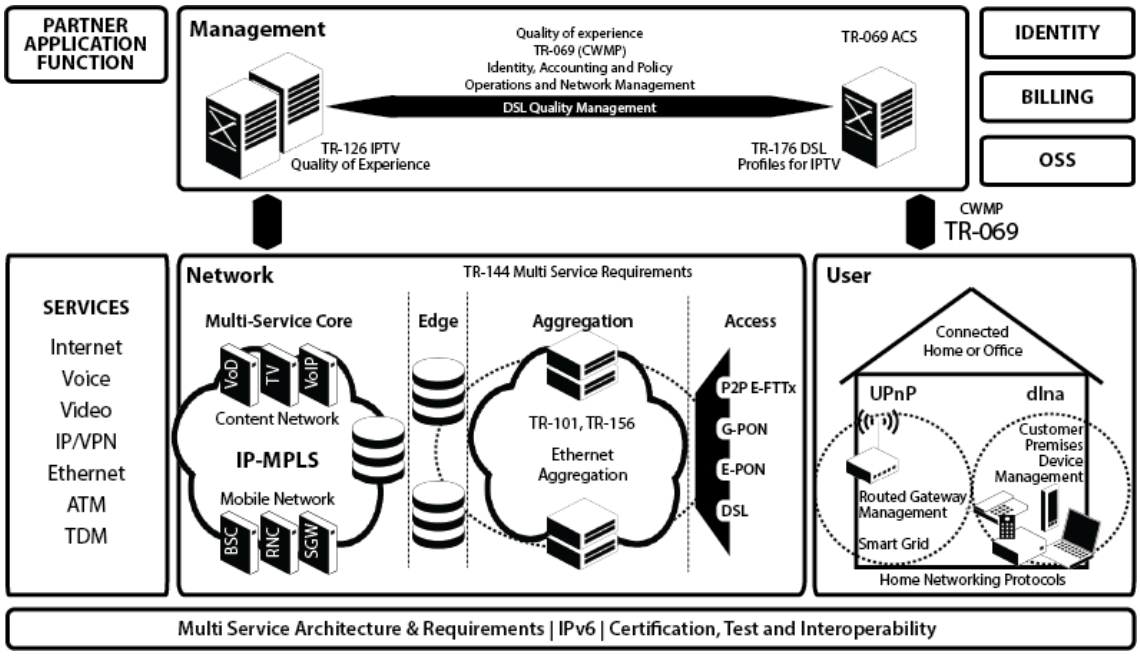
The following services' related features are supported by the ME4620 OLT:

- Up to 255 network services
- Up to 10 Client services per ONT
- Up to 32768 client services on AMX-48GE LCs per ME4620 OLT
- Up to 447 Client services per PON in VLAN+P-bit mode (8GEM per service)
- Up to 3582 Client services per PON in VLAN mode (1 GEM per service)
- Up to 1K policers per LC for:
    - Unicast and/or Bitstream Stacked
    - MAC Bridge Mac addresses
- Ingress bandwidth policers per client service on the AMX-48GE
- IPTV models for AMX-48GE board (ethernet point-to-point)
- User isolation
- Existing client services in ethernet point-to-point line cards

INTEROPERABILITY

The ME4620 OLT system assures layer 2 and layer 3 interoperability with the transport segment of the network, according to Rec BBF TR-156, Figure 10.

Figure 10. Multiservice architecture &requirement, interoperability according to BBF TR-156



PLOAM

The PLOAM channel is message based and is carried in a dedicated space of the downstream XGTC frame and upstream XGTC burst. This channel is used for all PMD and XGTC management information that is not sent via the embedded OAM channel.

The ME4620 OLT systems comply with ITU-T G.987.3 (10/2010) – 10-Gigabit-capable Passive Optical Networks physical media dependent layer specification.

This Recommendation describes the transmission convergence layer for 10-Gigabit-capable passive optical network systems.

OMCI

The ME4620 OLT systems comply with ITU-T G.988 (10/2012) - ONU management and control interface (OMCI) specification.

G.988 recommendation specifies the managed entities of a protocol-independent management information base (MIB) that models the exchange of information between an optical line termination (OLT) and an optical network unit (ONU).

Configuration of OMCI channel encryption is supported.

ONU RELATED ME4620 OLT OS SUPPORTED FEATURES

The following ONU related software features are supported by the ME4620 OLT OS:

- Changing the upstream profile of a given ONU without disconnecting the respective service
- A command "Disable Serial Number" per ONU
- ONU Authentication by Password
- ONU Password then SN registration mode (Password Once)
- A command to reset all ONUs
- A command to disable the ONU Auto-Discovery mechanism
- Allow disabling a PON interface with registered ONUs
- ONU UPS alarms
- ONU VEIP interfaces
- Changing the ONU profile of a registered ONU
- A notification when an ONU is detected as a "New equipment
- Interoperability with Zhone and Huawei ONUs
- ONU MIB synchronization
- Provide the ONU ID related to the learned MAC Address in Switch MAC table
- Display the ONU Equipment Model (in 'new' state)
- Display the T-CONT IDs for each ONU service
- Command to do ONU MIB (re)synchronization
- Improvement of the ONU SW automatic upgrade policies
- Refactoring of ONU Ethernet statistics - split TX and RX
- Get the ONT Operational Status by SNMP
- Retrieval of NTA E1/T1 and Pseudo wire ports status information via OMCI channel.

OMCI AND ONU SOFTWARE UPGRADE

The ME4620 OLT supports ONUs' automatic software upgrade via OMCI according to standard G.984.4/G.988.

Following the control plane start software download order the downloading process is managed autonomously by the GPON MAC.

In order to inquire on the state of the operation queries are GPON MAC control plane enabled.

FEC (UPSTREAM/DOWNSTREAM) CONFIGURATION AND MONITORING

FEC function applied to traffic GPON upstream/downstream can be set for a specified ONU at the time the ONU registration. When set this function is configured on a given ONU FEC statistics are available for the ONU upstream/downstream traffic indicating:

- Number of bytes corrected with FEC
- Number of words corrected with FEC
- Number of words with unrecoverable errors
- Total number of words processed

ETHERNET

Ethernet architectures provide a dedicated Ethernet interface, connected via a dedicated fiber, to the premium/business customer. The complete fiber capacity is available for a single customer. The supported interfaces can be FE or GbE depending on the application and the customer needs. Long distance ranges can be achieved without the use intermediate repeaters, the maximum length of the fiber cable depend on the optic components used both in the central office and at the CPE.

The ME4620 OLT equipment, besides supporting a GPON access network, also provides Ethernet access network interfaces which will meet advanced premium/business client requirements. Within each one of the Ethernet ME4620 OLT ports following features are provided:

VLAN PROVISIONING

The following VLAN related software features are supported:

- Full support of extended VLAN tagging operations (filter+treatment)
- Support Default VLAN ID and Priority on Ethernet interfaces

The Range of VLAN ID per port – VLANs are configured individually; the limits are the following:

- Switch Fabric where uplink ports are directly connected:
  - Just membership: up to 4k VLAN ID per port,
  - VLAN translation: up to 8k VLAN ID shared over existing LCs.
- GPON Line Card(LC):
  - Just membership: up to 4k VLAN ID per port,
  - VLAN translation: up to 8k VLAN ID shared over 16 GPON ports LC.
- Point to Point Line Card:
  - Just membership: up to 4k VLAN ID per port,
  - VLAN translation: up to 512k VLAN ID shared over 48 GbE/FE ports LC

MULTICAST

SUPPORTED FEATURES

- Support of IGMP v2
- Support of IGMP v3 according to RFC3376
- Multicast group features
    - Support configuring the end-point of the multicast static groups
    - Support bandwidth configuration of each multicast group
    - Display Client Service information in Multicast Active Groups list
- IGMP features:
    - Improvement of IGMP control per interface, VLAN and client
    - Support IGMP control based on multicast bandwidth and number of groups
    - Allow disabling IGMP packet processing on client services
    - Support IGMPv3 on the scenario of merged UNI multicast VLANs
- IGMP limits:
    - Up to 4096 configured Groups (Group List)
    - Up to1024 pairs of simultaneous Active Groups and Sources.
    - Up to 40 different Multicast Services per card
    - Up to 128 ONUs per AMX-16GPON card
    - Up to 128 IGMP Clients per port at the AMX-48GE card
    - Up to 512 IGMP Clients per port at the AMX-16GPON card
    - Up to 128 devices (e.g. Setop boxes) per port at the AMX-48GE card
    - Up to 8 devices (e.g. Setop boxes) per ONU at the AMX-48GE card

MULTICAST CHANNEL PACKAGES PER CLIENT SERVICE

Multicast Channel Packages per client service are supported.

A Multicast Channel Package is a multicast sub-list that aggregates one or more multicast channels, acting as an IGMP ACL with the list of permitted multicast channels. MC Packages can be assigned to client services with IGMP fag active.

- MC Packages limits
    - Up to 256 MC Packages
    - Up to 32768 channels associated to MC Packages (total)

IGMP SNOOPING/PROXY

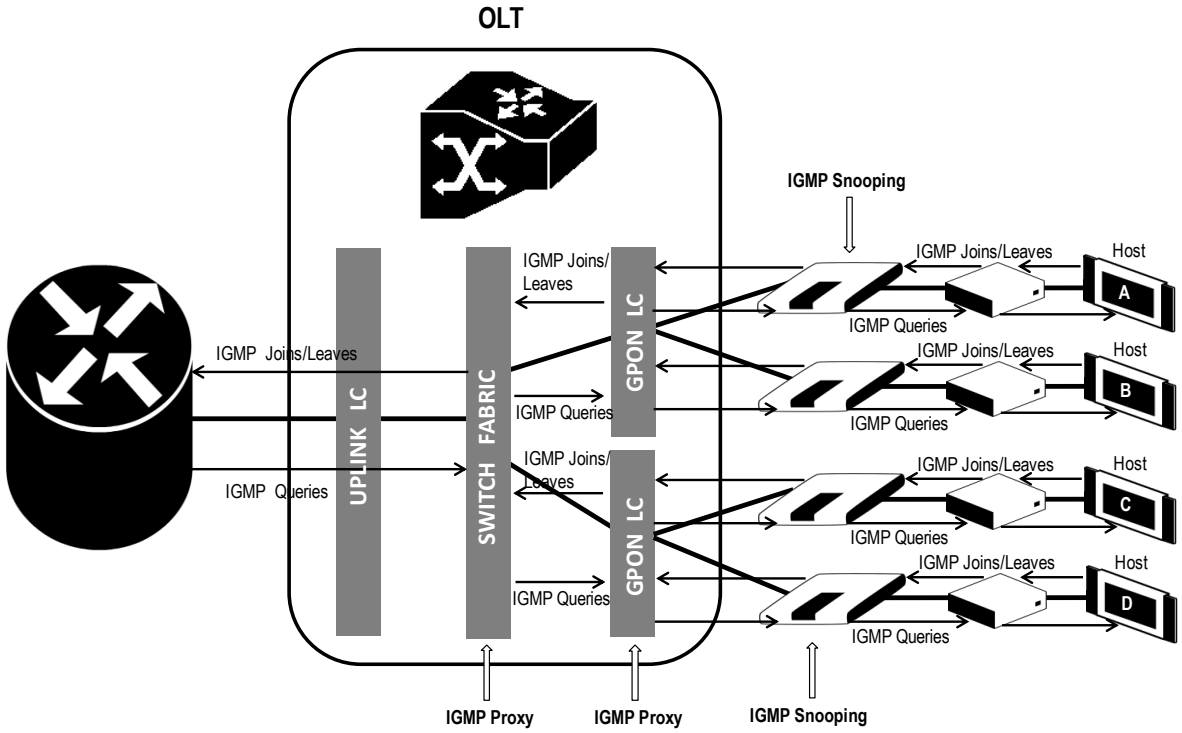
The ME4620 OLT system provides IP Multicast features by implementing an IGMP Proxy mechanism. For each Multicast Service it is defined the VLAN of the client side and the VLAN that transports the IP Multicast Groups, so that all the IGMP packets with these VLANs are intercepted and delivered to the processor to perform the following actions:

- The first Join for a certain Group received from the client side will be translated to a Join on the Network side, using the ME4620 OLT Source MAC and Source IP;

- The last Leave for a certain group received from the client side will be translated to a Leave on the Network side, using ME4620 OLT Source MAC and Source IP;
- The ME4620 OLT transmits periodical IGMP General Queries to the client side using the Multicast VLAN;
- The ME4620 OLT answers to IGMP General Queries received from the Network with all Multicast Groups active in the system (requested by the clients and statically configured).

The ME4620 OLT supports Static Multicast Groups, so that these groups are always present in the GPON interfaces even if no client demanded that Multicast group. The ME4620 OLT answers to the upstream Queries as these Groups are always in the ME4620 OLT.

Figure 11. IGMP Packets Processing/Forwarding Diagram



The Multicast IPTV traffic is controlled via the IGMP Protocol. In the several parts that make the GPON Access Network there are several modules performing their tasks in order to reduce traffic replication and bandwidth waste through the network. So each of the components perform the following tasks:

- The Host generates the Joins/Leaves according to the streams it wants to receive and plays the IP Multicast Streams;
- The ONT makes IGMP Snooping in order to transport from the Multicast GEM Port to the host, only the streams it wants to receive;
- The GPON Line card acts like an IGMP Proxy, receiving the requests from the hosts, and checking if it is already receiving or not the IP Multicast Streams from the network, sending to the Switch Fabric card the first Join message to ask for the stream and the last Leave message to stop receiving the stream from the upstream. It also answers to the IGMP Queries generated by the Switch Fabric card. It inserts the Multicast Streams in the Multicast GEM Port of the GPON interface where there are clients pretending to receive those Streams; In

order to check if the hosts are still watching the channels and they didn't disconnect without advising (send a leave) General Queries are periodical generated towards the hosts;

- The Switch Fabric card acts like an IGMP Proxy, receiving the requests from the line cards, and checking if it is already receiving or not the IP Multicast Streams from the network, sending to the Uplink Ports the first Join message to request that stream and the last Leave message to stop receiving the stream. It also answers to the IGMP Queries received on the Uplink Ports. In order to check if the line cards are still watching the channels and they didn't disconnect without advising (send a leave) General Queries are periodical generated towards the line cards.

AUTHENTICATION, AUTHORIZATION AND ACCOUNTING SETTINGS

TACACS+

Terminal Access Controller Access-Control System Plus (TACACS+) is supported for authentication, authorization and accounting

TACACS+ security protocol, developed by Cisco, provides detailed accounting information and flexible administrative control over the authentication and authorization processes.

TACACS+ allows for a single access control server (the TACACS+ daemon) to provide authentication, authorization, and accounting services independently.

Each service can be tied into its own database to take advantage of other services available on that server or on the network.

- Supported Features:
    - Multiple TACACS+ servers can be added to the system
    - TACACS+ servers can be grouped and a server priority defined within the group
    - TACACS+ can be configured as an authentication method for the SSH an ME4620 OLT CLI applications:*

RADIUS

Remote Authentication Dial In User Service (Radius) protocol is supported for user authentication, authorization and accounting.

- Supported Features:
    - Multiple Radius servers can be added to the system
    - RADIUS servers can be grouped and a server priority defined within the group
    - RADIUS can be configured as an authentication method for the SSH an ME4620 OLT CLI applications:*

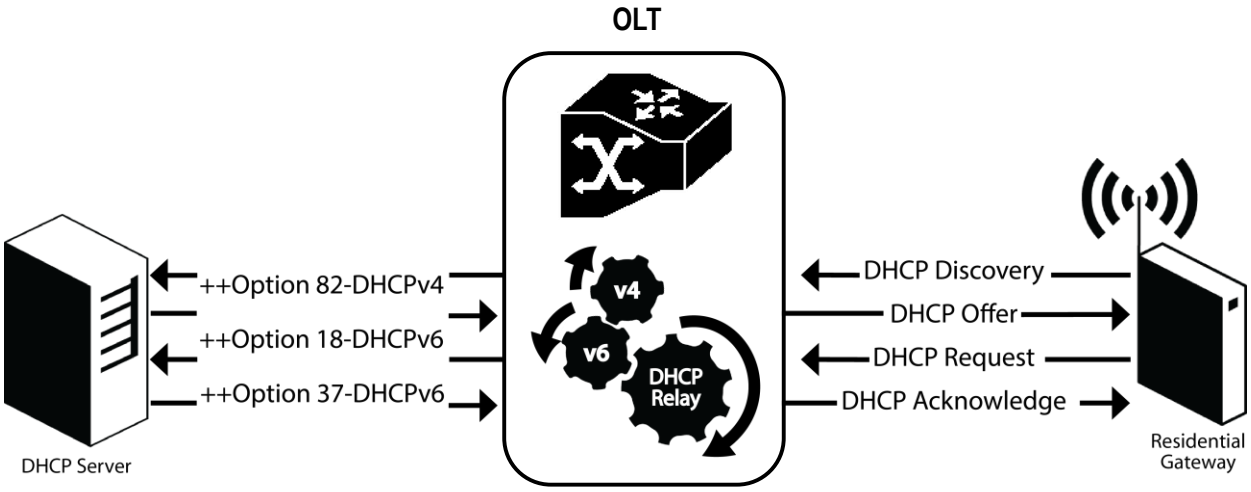
AUTHENTICATION: DHCP RELAY

The ME4620 OLT can act like a DHCP Relay Agent for DHCPv4 (RFC 3046) & v6 (RFC 6221) inserting client information (circuit id and remote id) in the DHCP packets. This information is required by authentication platform to assign IP addresses to the clients.

Circuit-id is an automatic string generated by the ME4620 OLT; the user can choose the syntax he pretends to use.

Remote-id is a string which is user configured at the time the service is provisioned to the customer.

Figure 12. ME4620 OLT as a DHCP relay agent



ME4620 OLT supported DHCP related software features

- Support the configuration of UNI interfaces as DHCP Trusted or Untrusted
- Support changing the DHCP Broadcast flag of DHCP Discover and Request messages

DHCP RELAY AGENT OPTION 82

The ME4620 OLT system provides DHCP Relay Agent feature by inserting/removing (inserting in the client→network direction and removing in the network→client direction) of Option 82 in the DHCP packets. The Option 82 has the role to introduce client specific information in the requests made to the DHCP servers. This information is added in two fields, Circuit ID and Remote ID.

The Circuit ID sub-option transports specific information of the circuit in question. In the case of the ME4620 OLT system it identifies which is the ONT in question by adding a string with the following format:

System_name eth board/pon/ont/ont_board/ont_port

The Remote ID sub-option transports client specific information, as for example, the service plan hired by the customer. This field is composed by a string with 64 characters.

LIGHTWEIGHT DHCPv6 RELAY AGENT

Lightweight DHCPv6 Relay Agent is used to insert relay agent options in DHCPv6 message exchanges identifying client interfaces. The messages received from the client interfaces of the following types will be discarded:

- Advertise
- Reply
- Reconfigure
- Relay-Reply

The other message types will be encapsulated in a Relay-Forward message towards the DHCP server. The Relay Forward Message will be composed by the Relay-Message Option (9) which will encapsulate the client request, and optionally by the Interface-ID (18) Option and/or the Remote-ID Option (37) which will add client information.

The DHCPv6 Relay Agent only accepts the following type of message from the server:

- Relay-Reply

After receiving the Relay-Reply message from the server, the DHCPv6 Relay Agent extracts the information in the Relay-Message Option (9) and forwards it to the corresponding client. At this point the Relay Agent Binding table is updated with the corresponding IPv6/MAC Address/Client/Lease information.

Up to 32768 DHCP Binding Table entries supported per Line card (AMX- 48GE and AMX-16GPON).

SECURITY

The ME4620 OLT equipment enables a group of features that avoid anti-DOS (Denial of Service) attacks and fake customer Trojan mechanisms, namely:

- ACL's
- White list support
- IP Source Guard
- MAC duplication
- MAC/IP spoofing
- Broadcast rate control
- User isolation
- Dynamic ARP Inspection, DAI

ACL - ACCESS CONTROL LISTS SUPPORT

ACL's (Access Control Lists) avoid the customers to use certain MAC or IP addresses in order to avoid them to reach certain networks MAC/IP groups. This feature is made by applying filters to source and/or destination MAC/IP addresses. These filters can be used to allow or drop the packets from a user attendance.

- ACLs Limits
    - Up to 99 supported ACLs
    - Up to 128 supported rules
    - Up to 128 supported ACL Service Apply
    - Up to 128 supported ACL Port Apply

WHITE LIST FOR MULTICAST GROUP ADDRESSES

The ME4620 OLT supports a default entry on the Multicast Groups addresses ACL (white list).

This list is used to select the upstream multicast service (VLAN) when a particular client requests a group address.

The maximum number of groups is currently limited to 1024, but can go up to 4096 in the future;

IP SOURCE GUARD

IP Source Guard provides source IP address filtering on a Layer 2 port to prevent a malicious host from impersonating a legitimate host by assuming the legitimate host's IP address. The feature uses dynamic DHCP snooping and static IP source binding to match IP addresses to hosts on untrusted Layer 2 access ports

- IP Source Guard Limits
    - Up to 1024 supported entries per line card (AMX—48GE and AMX-16GPON)

MAC DUPLICATION

MAC duplication is used to check and control if a specific customer is trying to use other MAC addresses different from its addressed one. This is a mechanism that detects duplicate MAC addresses. In order to avoid a copy of the BRAS, IPTV platform or other server MAC address, the system gives priority to the MAC address learnt in the uplink ports (network side). If the duplicate MAC addresses are both in the client side, the system forwards the traffic to the first customer that is using that MAC address.

MAC/IP SPOOFING

MAC/IP spoofing is used to allow only the authorized customers to access the network. This mechanism uses the DHCP Binding Table. The table with the client MAC address/IP address is built during the DHCP client IP attribution. The packet attributes from the client will only pass through the network in the case they have the same SMAC/SIP like those at the Binding Table.

STORM CONTROL OF UNKNOWN UNICASTA, MULTICAST AND BROADCAST TRAFFIC PER INTERFACE

The ME4620 OLT supports storm control of unknown Unicast, Multicast and Broadcast traffic per interface.

It is also possible to block unknown unicast and multicast traffic per interface.

Strom control units can be Percent or pps (packets per second).

Storm control threshold in pps (packets per second) is configurable between 0 and 14880000. Default configured value is of 5 pps.

USER ISOLATION

User isolation is achieved by the topology of the EVC's created in the system. The services are created in an EVP-TREE topology, the Root port is the uplink port and the Leaf ports are the client ports. Within this implementation, users can't communicate between themselves and just flow transparently through the Access Node.

DYNAMIC ARP INSPECTION, DAI

In order to prevent ARP spoofing attacks.

Dynamic ARP Inspection validates ARP packets in a network, based on valid IP-to-MAC address bindings stored in a trusted database. ARP packets with invalid IP-to-MAC address bindings are intercepted, logged and discarded.

HTTPS

The ME4620 OLT supports HTTPS

HTTPS features:

- Mechanism to import certificates,
- Admin and Port and SSL version configurable,
- Supported SSL versions: any, SSLv3, TLSv1, TLSv1.1, TLSv1.2

QOS

The ME4620 OLT system provides several QoS mechanisms, that can be targeted to the flow characterized by one or two VLAN according with the type of service, or can be targeted to the packets priority, where each p-bit is mapped in one of eight queues of each port.

The following QoS features are supported on each one of the Ethernet ME4620 OLT ports (Ethernet, PON or LAG):

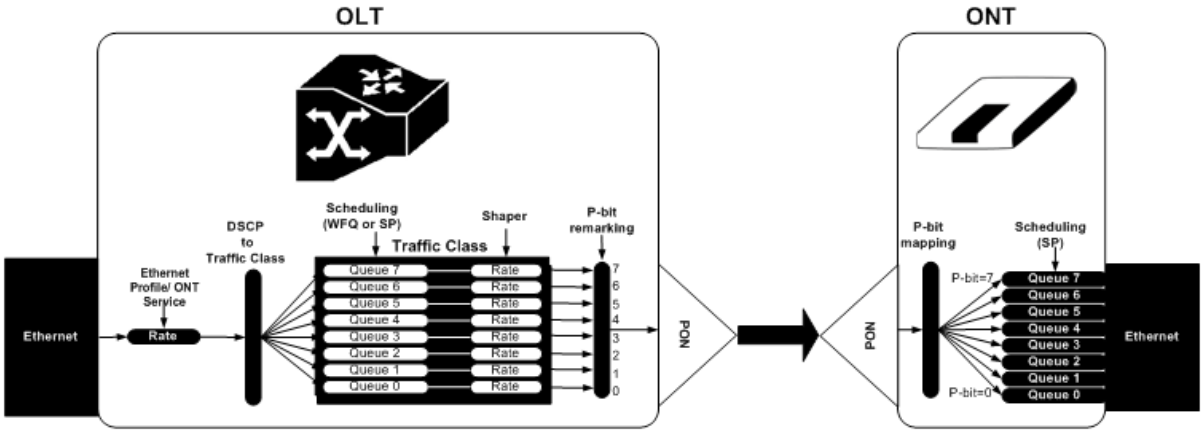
- Classification : based on P-bits, IP DSCP and IP Precedence per port,
- Ingress policing: per Traffic Class,
- Queuing,
- Queue management based on WRR Scheduling enhancement
    - Configurable queue management (tail-drop or WRED)
    - Configurable weights per egress queue for the Weighted Round Robin (WRR) scheduler
- Scheduling
- Rate Limiting (Ethernet Profiles' configurable parameters: CIR, CBS, EIR, EBS)
- Forward PON traffic based on P-bits

For each of the ME4620 OLT ports there are associated eight queues; for each of these queues is possible to configure the p-bit mapping in one of the queues, the scheduler type (Strict Priority or Weighted Fair Queuing) and the minimum and maximum bandwidth of each queue.

In the downstream direction the ingress traffic first passes by a policer configured to each ONT service, which is defined by one or two tags. After this the traffic is put in a queue according with the p-bit /DSCP-> Traffic Class mapping. Each of these Traffic Classes is associated with a scheduler (WFQ or SP) and a policer. Queue management is performed based on Tail Drop or WRED. Then Traffic Classes to P-bit remarking is done and the traffic flows to the GPON interface.

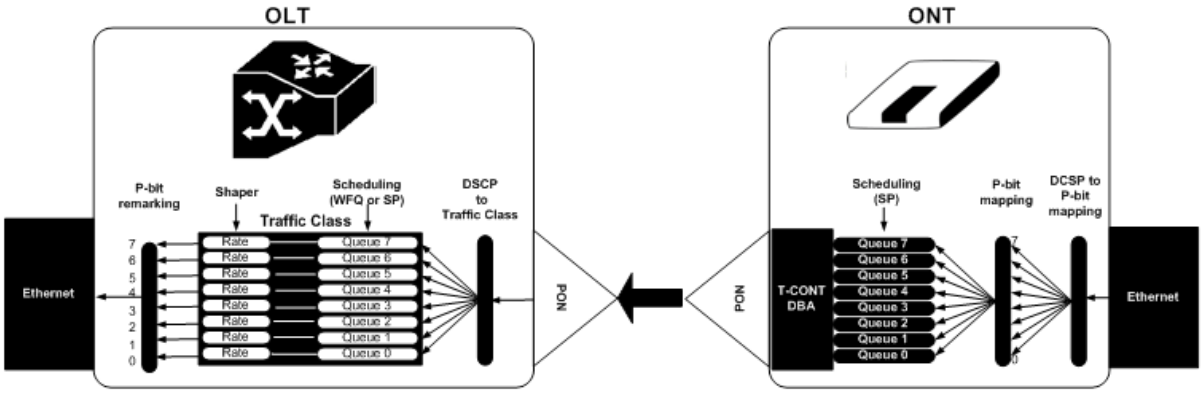
Traffic arriving to the ONT it will pass by a mapping block which will map the traffic in one of the eight queues according with the p-bits; these queues have a Strict Priority scheduler in order to guarantee that the most prioritized traffic passes first,

Figure 13.Downstream QoS Diagram



In the upstream direction, for each T-CONT DBA the ingress traffic in the ONT passes by a mapping block that maps the traffic in one of the eight queues according with the p-bit, (in case the ingress traffic is untagged a DSCP->p-bit mapping is performed), these queues have a Strict Priority Scheduler. The ONT "waits" until the ME4620 OLT assigns a transmission timeslot for that T-CONT, so that the most prioritized queues are the ones that transmit first. In the ME4620 OLT ingress, the traffic is put into a Traffic Class according with what is defined in the p-bit/DSCP->queue mapping. Each of these Traffic Classes has an associated scheduler and policer. Queue management is performed based on Tail Drop or WRED. Then Traffic Classes to P-bit remarking is done and the traffic is sent to the uplink

Figure 14. Upstream QoS Diagram



MTU

The ME4620 OLT supports MTU configuration:

- GPON interfaces: up to 2036 bytes
- GE or 10GE interfaces: up to 9600 bytes

OAM

The ME4620 OLT supports Y.1731 ETH-CC / ETH-RDI Function (CCM).

ETHERNET COUNTERS (RFC2819)

The ME4620 OLT supports Ethernet statistics (RFC2819) on all point-to-point interfaces.

MAC

The ME4620 OLT supports the following MAC related features:

- Switch MAC table
- Allow limiting the number of MAC addresses per service
- Display the total number of entries in MAC address tables
- Number of learnt MAC Addresses:
    - Switch Fabric: Up to 128K MAC addresses.

- GPON Line Card: Up to 32K MAC Addresses
- Active Ethernet Line Card: Up to 128K MAC addresses

- MAC Addresses Learning rate per second: HW based poses no rate limitation

DYNAMIC BANDWIDTH ALOCATION (DBA)

The DBA (Dynamic Bandwidth Allocation) is available in order to optimize the upstream bandwidth. This mechanism consists in defining an adequate T-CONT to the service traffic in question. There are five types of T-CONT, defined by the Fixed, Assured and Maximum Parameters:

- Type 1: Only fixed Bandwidth;
- Type 2: Only Assured Bandwidth;
- Type 3: Assured+Maximum Bandwidth;
- Type 4: Only Maximum Bandwidth (Best Effort);
- Type 5: Fixed+Assured+Maximum Bandwidth.

Table 2. T-CONT type definition

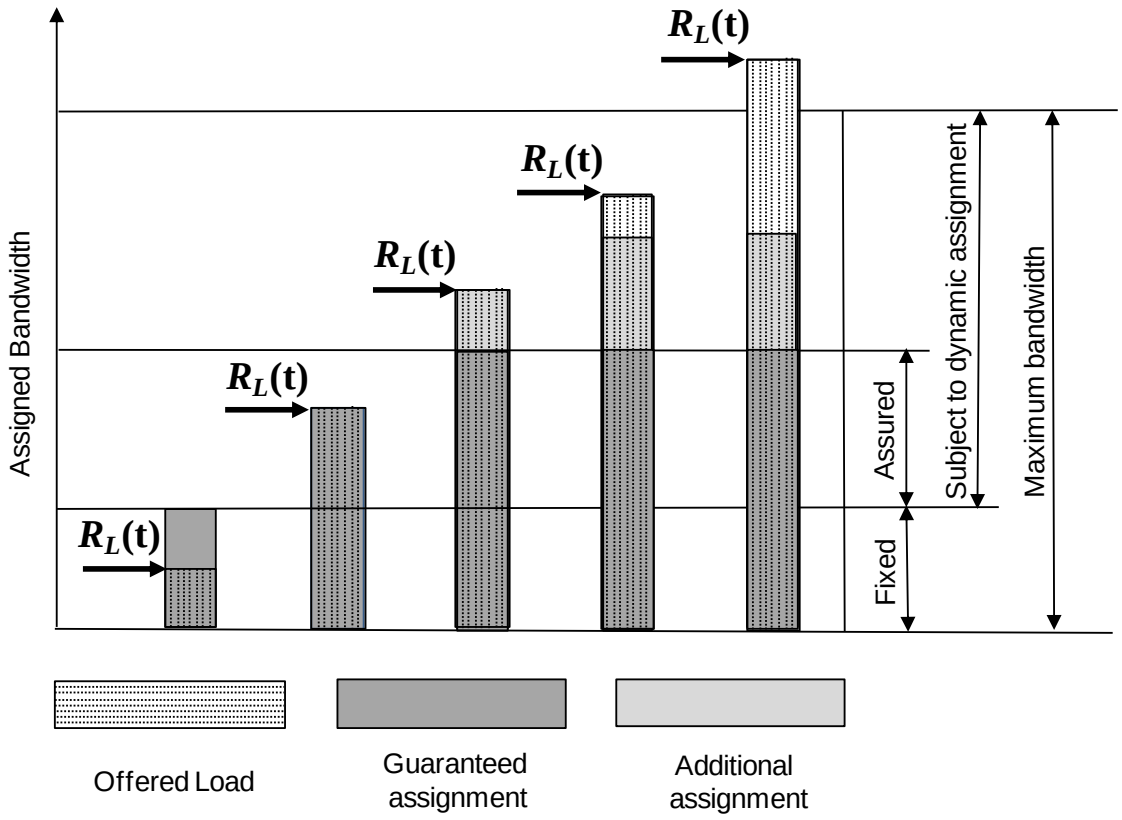
T-CONT	Type 1	Type 2	Type 3	Type 4	Type 5	Units
Fixed BW- ***RF***	***RF1***	0	0	0	***RF5***	[b/s]
Assured BW- ***RA***	0	***RA2***	***RA3***	0	***RA5***	[b/s]
Max Bw - ***RM***	***RM1 = RF1***	***RM2 = RA2***	***RM3 > RA3***	***RM4***	***RM5 > RF5 + RA5***	[b/s]
Bandwidth Eligibility	0	0	Non-Assured BW - ***RNA***	Best-Effort - ***RBE***	***RNA / RBE***	

In each GPON interface there is 1024 Alloc-ID (T-CONT identifiers) available, provided to manage ONT services. They are distributed in the following way:

Table 3. Alloc-ID's distribution by T-CONT type

Alloc-ID	Allocation Type
0-127	Default Alloc-ID (Dynamic or Static)
128-255	Reserved
256-639	Dynamic or Static
640-1023	Static

Figure 15. Traffic distribution by service/client



MAC GPON DBA ALGORITHM

The MAC GPON DBA algorithm can use two different algorithms:

- **Status Reporting:**

  Based on the information that each ONU sends to the GPON MAC frames upstream. This information allows the GPON MAC to know the use of queues of each of the ONUs and adjusting the bandwidth allocated to each application in terms of this

- **Traffic Monitoring:**

  Based on occupancy of bandwidth of each UN in recent broadcasts.

It is possible to configure the type of algorithm to use in allocating bandwidth for CBR non-profiles as Status Reporting or Traffic Monitoring at the time of the creation of service corresponding traffic. The change of the type of DBA services already provisioned is in principle possible, except for the hardware limitation.

The ME4620 OLT supports removing validations in GPON Upstream bandwidth allocation.

OVERBOOKING

The ME4620 OLT system allows the overbooking of the GPON ports allowing the allocation of more than the overall aggregated port bandwidth in the downstream (2,5Gb/s) and upstream (1,25Gb/s). The Downstream (DS) allocation is done by configuring the Bandwidth Profiles – BWP that are responsible for assuring that the high priority packets (p.bit) are send to the ME4620 OLT port in case of congestion. In the Upstream (US) the subscription is assured via Dynamic Bandwidth Allocation (DBA) applied to the ONTs centrally controlled by the ME4620 OLT.

PON

SPLITTING RATIO OPTIONS

ME4620 OLT system GPON ports currently support a splitting ratio of 1:128 in accordance with ITU-T rec. G.984.

SUPPORTED PON CLASSES

The ME4620 OLT system currently supports B+ and C+ PON interfaces.

PROTECTION

HARDWARE PROTECTION AND SYSTEM AVAILABILITY

Common element redundancy and software protection is implemented at the ME4620 OLT system by means of 1:1 hot-standby features. Automatic switching to redundant units is assured without service cutoff. The ME4620 OLT system internal architecture (start architecture topology) guarantees that the failure of any unit does not impact the overall system. All single card units are hot swappable and switching protection features are performed without service disruption.

ME4620 OLT system 1:1 common element redundancy is of:

- Processing and Switch Fabric unit
- Power feed Inputs

ME4620 OLT SUPPORTED PROTECTION MECHANISMS

The following protection mechanisms are supported by the ME4620 OLT system:

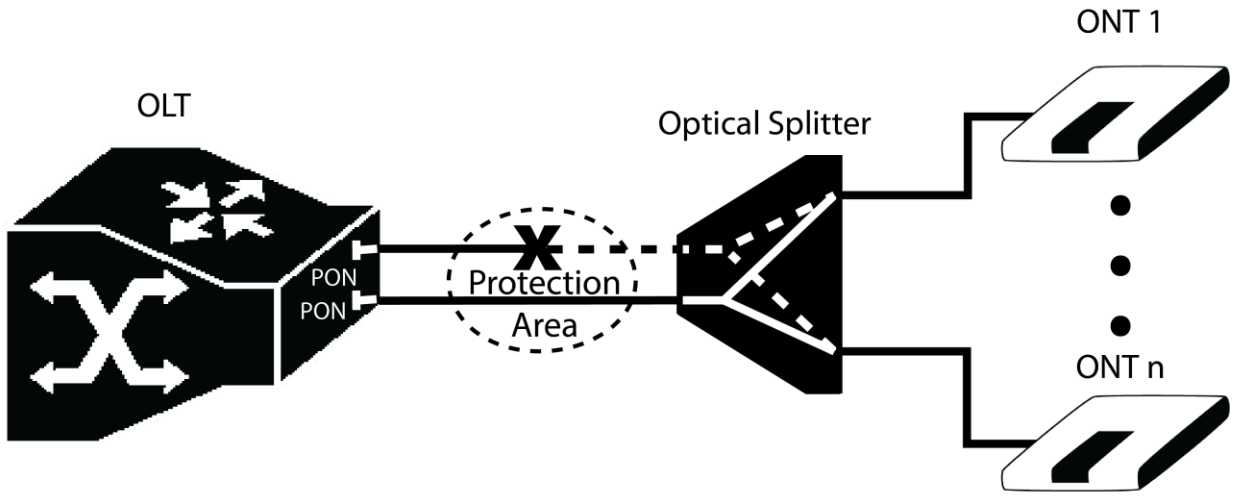
- GPON type-B protection
- Uplink 1:1 protection
- LACP
- ERPS

TYPE B REDUNDANCY FOR GPON PORTS

Configuration of type B redundancy for GPON ports (according to G.984), is a functionality that enables the protection of a GPON port with another GPON port on a different tributary unit.

This feature is hardware enabled on the ME4620 OLT system. It allows1+1 GPON Line card protection for at least 4k ONTs (margin for splitter N:2 & 20km).

Figure 16. Type B redundancy for GPON ports



ETHERNET UPLINK PORTS PROTECTION

Configuration of Ethernet Uplink ports protection is a functionality that enables the 1+1 protection of an uplink port with another uplink port on a different uplink card unit.

LINK AGGREGATION CONTROL PROTOCOL (LACP)

The Link Aggregation Control Protocol (LACP) provides the system with Aggregation, Protection and Load Balancing features.

The Aggregation consists in a Logical Group of Physical 10GbE Ports that form a Link Aggregation Group (LAG).

Up to 8x 10GbE uplink Ports can be aggregated in the same LAG with the protection mechanisms flexibly configured by the management system.

The Protection is done when one of the LAG ports becomes inactive (Link Down) or there are losses or errors in LACPDU Messages (only in Dynamic LAG). In this case all the traffic that was going through this port is sent to the other ports that belong to the same LAG.

The Load Balancing can be made according with:

- Source MAC;
- Destination MAC;
- Source and Destination MAC.

ETHERNET RING PROTECTION SWITCHING

The ME4620 OLT allows the implementation of ring protection according to ITU-T G.8032/Y.1344 Ethernet Ring Protection Switching.

- Support of "open ring" mode, i.e., access ring is configured as G.8032 sub-ring without R-APS Virtual Channel;
- Support of ETH-CC / ETH-RDI Function (CCM), Connectivity Fault Management (CFM) monitoring per VLAN, according to ITU-T Y.1731 / IEEE 802.1ag;
- Support of R-APS Channel.
- Up to 256 CFM probes supported

PRINCIPLE OF OPERATION

The basic idea is to dedicate a link as Ring protection Link (RPL) that is normally blocked, but will be unblocked when a failure occurs in the ring.

This ensures that there is connectivity among all nodes on the ring without having a loop.

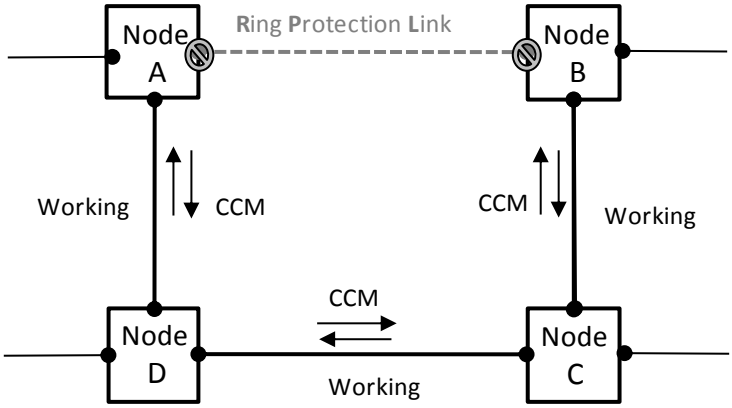
Connectivity Fault Management Messages (CCM) are used to detect link and node failure and

Ring Automatic Protection Switching Messages are used to coordinate the activity on the RPL.

MAC learning is enabled on all nodes and ports except on ports facing the RPL.

In normal operation RPL is blocked.

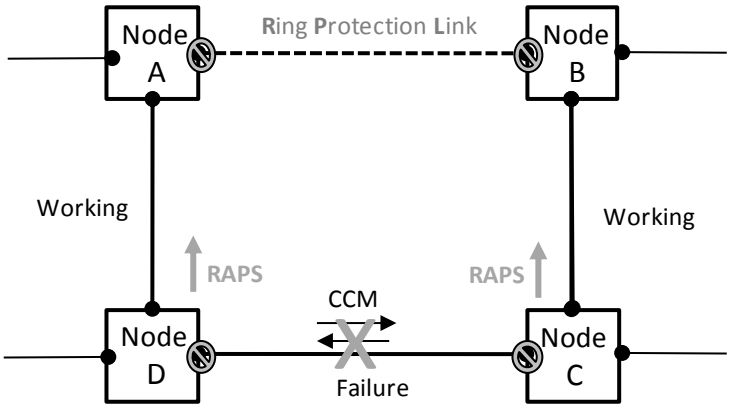
Figure 17. Normal ring operation



Any failure along the ring causes a CCM fault at the failure link adjacent nodes (nodes D and C in the example). These nodes after having blocked the ports facing the failure link, generate multicast an RAPS message via CPU on the dedicated VLAN, which is received by all other nodes on the ring, including nodes adjacent to RPL, in this case nodes A and B.

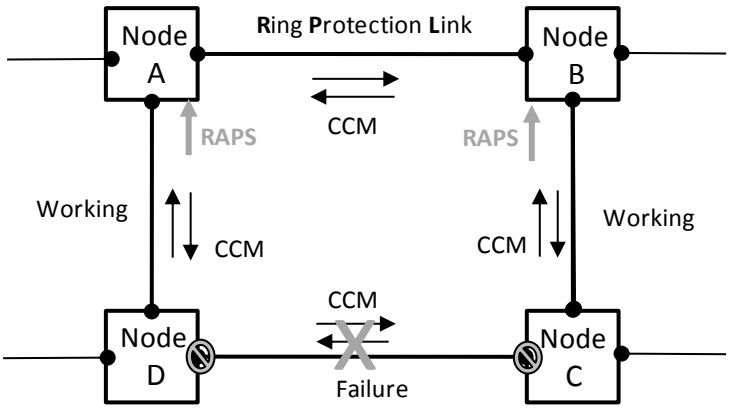
Nodes receiving the RAPS message send a copy to the Ethernet Ring Protection (ERP) entity and also forward the received RAPS to the next node

Figure 18. Link failure



Upon receiving the RPAS signal failure message Node A and B adjacent to RPL unblocks the RPL ports and traffic flows through the RPL.

Figure 19. Ring Protection Link operation



ERP TIMERS

WTR timer

- May be configured by the operator in 1 minute steps between 1 and 12 minutes, the default value being 5 minutes.

WTB timer

- Is defined to be 5 seconds longer than the guard timer.

Guard Timer

- The period of the guard timer may be configured by the operator in 10 ms steps between 10 ms and 2 seconds, with a default value of 500 ms.

Hold off timer

- The suggested range of the hold off timer is 0 to 10 seconds in steps of 100 ms with an accuracy of ±5 ms. the default value for hold off timer is 0 seconds.

SOFTWARE PROTECTION

Central processing OS software features and equipment resident databases are both available at the working and at the protection processing and Switch Fabric units. Both working and processing units are synchronized to the same software version.

SYNCHRONIZATION

The ME4620 OLT equipment implements SyncE and IEEE 1588v2/PTP synchronization schemes. Timing over Packet (ToP) enables transfer of timing over an asynchronous network. The SyncE feature requires that each network element along the synchronization path need to support SyncE.

BITS (BUILDING INTEGRATED TIME SOURCE) INTERFACE

The BITS interface supports the following configuration modes:

- 2 MHz - 75 Ohm
- 2 MHz - 120 Ohm
- 2 Mbit/s - 75 HDB3
- 2 Mbit/s - 120 HDB3

HYBRID SYNCHRONIZATION WITH THE ME4620 OLT EQUIPMENT FAMILY

Within the ME4620 OLT equipment, SyncE may co-exist with 1588 (PTP) in a hybrid configuration mode. The hybrid mode uses the clock derived from 1588 (PTP) to drive the system clock.

ETHERNET SYNCHRONIZATION MESSAGING CHANNEL (ESMC)

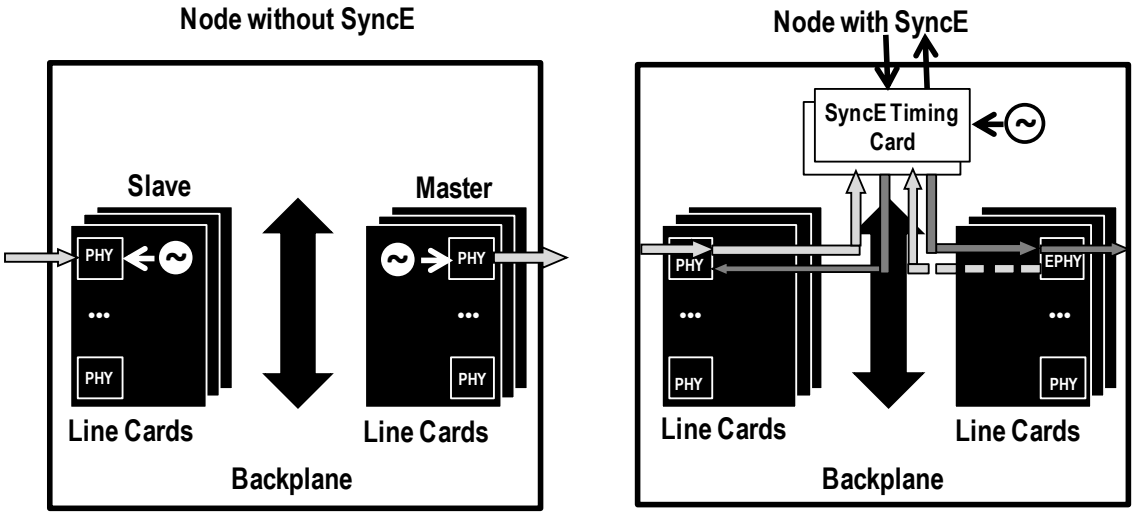
In order to maintain a logical communication channel in synchronous network connections, Ethernet relies on a channel called Ethernet Synchronization Messaging Channel (ESMC) based on IEEE 802.3 Organization Specific Slow Protocol standards. ESMC relays the SSM code that represents the quality level of the Ethernet Equipment Clock (EEC) in a physical layer.

To enable communications between various nodes, the ME4620 OLT equipment (SyncE mode) provides an Ethernet Synchronization Status Messaging (ESMC, G.8264) channel, similar to SDH Synchronization Status Messaging (SSM) bytes that allow nodes to deliver their Synchronization Status to downstream nodes. The downstream nodes use this information to select between various references or possibly switch to their internal clock in case of failure on reference clocks.

SYNCHRONOUS ETHERNET (SyncE)

SyncE is defined by the ITU-T standards G.8261, G.8262, G.8264, and G.781. Frequency distribution protocol based Ethernet physical layer of Ethernet. The purpose of SyncE is to distribute frequency information through an Ethernet device. In this context “frequency” and “bit-rate” effectively have the same meaning, since SyncE attempts to determine frequency information from incoming bit streams. The basic operation of SyncE interfaces is deriving the frequency from the received bit stream and passing that information up to the system clock.

Figure 20. With and without SyncE



ETHERNET WITHOUT SyncE (e.g. 1000Base-T)

Systems without SyncE have the following characteristics:

- Rx clock extracted from line (line timed)
- Tx clock generated from free-running XO
    - Clock within 100 ppm (125 MHz+/- 0.01 percent)
- No relationship between Rx and Tx
- Each Ethernet interface (uni-dir or bi-dir) has own independent timing

ETHERNET WITH SyncE (e.g. 1000Base-T)

Systems with SyncE have the following characteristics:

- Rx clock extracted from line & transferred to timing engine
- Tx clock generated from the timing card
    - Clock within 4.6 ppm when free-running
- Tx clock uses traceable to PRC/PRS
- Note SyncE clock input may replace XO or may be in addition to normal XO input

IEEE 1588v2

IEEE1588v2 (also known as Precision Time Protocol, PTP) is a two-way precision protocol independent of the physical layer with time and frequency distribution protocol based on time-stamp information exchange to synchronize clocks over packet--based Ethernet networks. It synchronizes the local slave clock on each network device with a system Grandmaster clock and uses traffic time--stamping, with sub--nanoseconds granularity, to deliver the very high accuracies of synchronization needed to ensure the stability of base station frequency and handovers. Timestamps

between master and slave devices are sent within specific PTP packets and in its basic form the protocol is administration--free.

The ITU-T defined profile of the IEEE 1588-2008 specification has been specifically optimized to support telecommunications applications such as wireless Mobile Backhaul, GPON and LTE.

The ME4620 OLT Equipment supports IEEE 1588v2 as the following standard type devices:

- Ordinary Clock (Can be a Master or Slave clock)
- Boundary Clock (Acts as a Master and a Slave clock)
- Transparent clock

Following elements are defined:

Grandmaster

- An ordinary clock is a 1588 clock with a single PTP port that can operate in one of the following modes:
    - PTP Master: Distributes timing information over the network to one or more slave clocks, thus allowing the slave to synchronize its clock to the master.
    - PTP Slave: Recovers the frequency and phase clock, from the timestamps sent by the Master.

Boundary Clock

- The Boundary clock functions as both PTP master and slave. It acts as the slave to a Grand Master and derives the reference from the Grand Master. Boundary clock starts its own PTP session with a number of downstream slaves. The boundary clock mitigates the number of network hops and results in packet delay variations in the packet network between the Grand Master and Slave.

Transparent clock

- A transparent clock is a device or a switch that calculates the time it requires to forward traffic and updates the PTP time correction field to account for the delay, making the device transparent in terms of time calculations.

CLIENT/SERVER MODEL

- Master clock, slave clock (ordinary clock)
- Intermediary nodes may or may not support IEEE1588 PTP (unlike SyncE)
- On-path support mechanisms:
    - Boundary clock
        - It acts as a slave clock at port that connects to the grandmaster, and as a master to all other ports
        - It isolates the “downstream” clocks from any delays and jitter within the switch/routers

- Transparent clock
  - It measures residence time of PTP events

SYNC-E AND IEEE 1588v2/PTP AT THE ME4620 OLT EQUIPMENT

Network clocking is supported on the following cards:

- GPON Line Cards
  - AMX-16GPON,
- 10GbE Uplink Line Card
  - UMX-4x10GE,

CLOCK CONFIGURATIONS SUPPORTED BY THE ME4620 OLT

Different configurations are supported:

- Clock Recovery: System clock is recovered from the clocking source (GbE, 10Gbe and 100Gbe).
- Clock Recovery from External Interface: System clock is recovered from clocking source or a GPS interface.
- Line to External: The clock received from an interface is forwarded to an external Synchronization Supply Unit (SSU).

The following sync. parameters are configurable in the ME4620 OLT

- Quality level Mode – Active or inactive
- Reversibility level Mode– Active or inactive
- Reversibility time – 0 to 3600 s
- Holdover Message delay switching Message delay – 500 to 2000 ms
- Switching Message delay – 180 to 500 s
- Minimum Quality Before Squelch – Inactive, PRC G.811, SSU-A, SSU-B,SEC or DNU
- Send value after Quality Unknown - PRC G.811, SSU-A, SSU-B,SEC or DNU
- Number of external sync.- 2 IN and 2 OUT

BASIC OPERATION OF 1588V2

SOFTWARE TIME-STAMP VS HARDWARE TIME-STAMP

There are two techniques to time-stamp packets:

1. Software time-stamp occurs when the messages are handled by the software. Usually occurring in the message's receive/ transmit interrupt service routine (ISR), the time-stamp is the current value of the system time.

2. Hardware time-stamp occurs when the messages physically arrive at or leave the device. The time-stamp operation is executed by hardware, which maintains its own continuous time information.

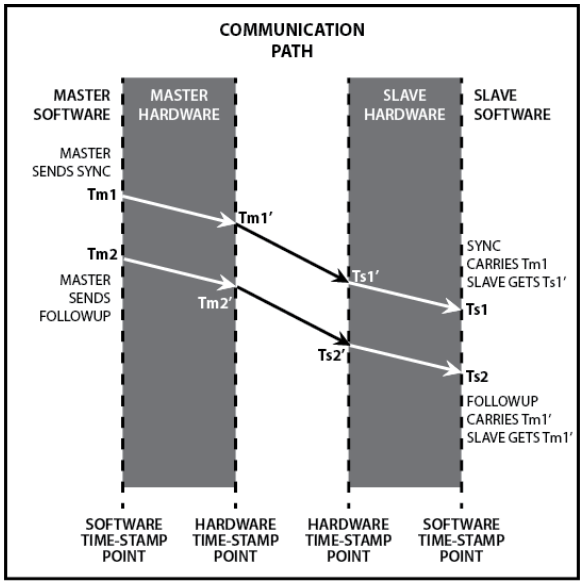
Either time-stamp method is acceptable in IEEE 1588, but a hardware time-stamp can provide significantly better precision.

The ME4620 OLT equipment provides HW time stamp.

DELAY FROM MASTER-CLOCK DEVICE TO SLAVE-CLOCK DEVICE

- At time Tm1, the master-clock device software reads the current local system time (Tm1, the software timestamp), inserts it into a Sync message, and sends the message out. The message leaves the master-clock device at a later time, Tm1', which is the hardware time-stamp. It arrives at slave-clock hardware at Ts1' (slave-clock device local time), and is received by the slave-clock device software at a later time, Ts1. The software will read the hardware time-stamp to get Ts1'. If there is no communication delay, Ts1' should be equal to (Tm1' + Tms), where Tms is the time difference between master clock and slave clock. The protocol's ultimate goal is to compensate for this difference.
- After the Sync message has been sent, the master-clock device software reads the Sync message's departure time, Tm1', through the time-stamping unit, inserts it into a Follow-up message, and sends that message out at Tm2. This message is received by slave clock device software at Ts2. At this point, the slave-clock device software has the two times, Ts1' (Sync arrival time) and Tm1' (Sync departure time). The master-to-slave path delay, Tmsd, is determined by Equation Tmsd=(Ts1´+Tms)-Tm1´

Figure 21. Delay from Master-Clock Device to Slave-Clock Device

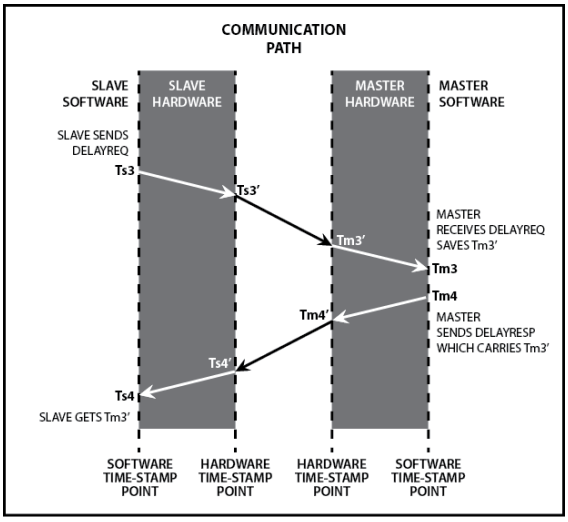


DELAY FROM SLAVE CLOCK DEVICE TO MASTER CLOCK DEVICE

- The DelayReq message is sent by the slave-clock devices, and the DelayResp message is sent by the master-clock device in response. With these messages, the slave-clock devices can calculate the communication path delay from the slave-clock device to the master-clock device.

- At time Ts3 (Figure 3), the slave-clock device software reads the current local system time (Ts3), inserts it into a DelayReq message, and sends the message out. After the message is sent, the slave-clock device software reads the time-stamp to get the departure time of the message, Ts3', and waits for the response from the master-clock device.
- The DelayReq message arrives at the master-clock device at a later time, Tm3', and is processed by the master software at Tm3. The software then reads the time-stamp to get the arrival time, Tm3', puts it into the DelayResp message, and sends to a slave-clock device at Tm4. When the slave-clock device software receives the DelayResp message at Ts4, it can extract the time, Tm3', and calculate the slave-to-master delay, Tsmd, by Equation Tsmd=Tm3´-(Ts3´+Tms).

Figure 22. Delay from Slave-Clock Device to Master-Clock Device



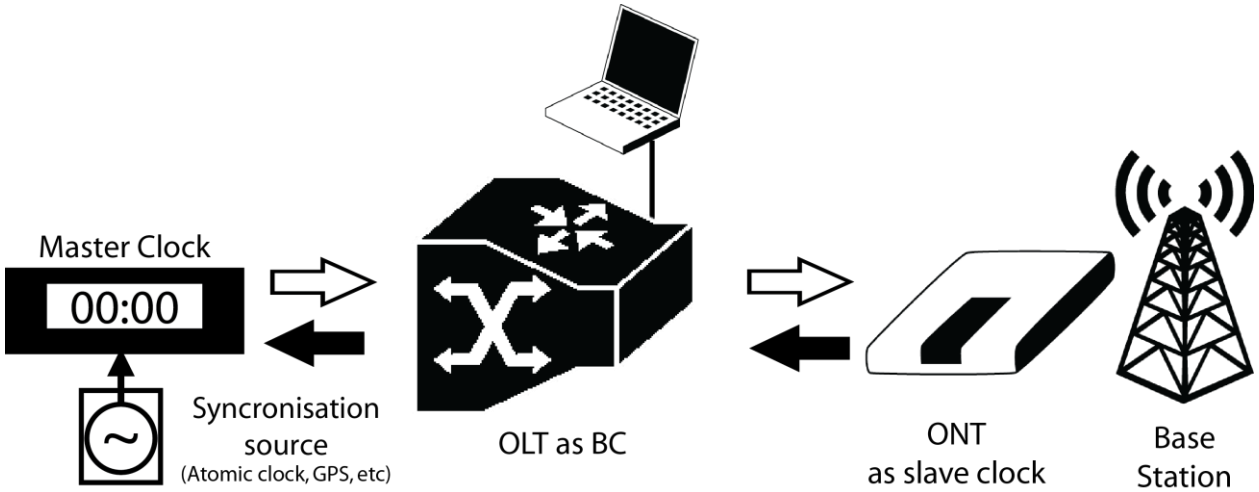
ME4620 OLT EQUIPMENT CONFIGURED AS BOUND BOUNDARYCLOCK (BC)

The ME4620 OLT configured as BC recover the clock and regenerate the PTP packets. Receives timing through the UMX-4x10GE unit.

The ME4620 OLT is effectively a node that recovers timing from the incoming 1588v2 (as a Slave) and then uses this recovered timing to re-time the outgoing signal. It then acts as the 1588v2 Master for the next node. By using this mechanism, the impact of PDV is minimized as the packets will not travel through many routers or switches between Master and Slave (which would have caused PDV).

The ME4620 OLT configured as Boundary clock can be considered as performing both the slave and master function. The 1588v2 message flow is terminated and the frequency and/or time recovered from the ingress messages. This is used to guide its internal reference. The boundary clock then acts as the master to the downstream clock by generating a new 1588v2 message flow using timestamps generated from its internal reference. The downstream flow to the ONT through the GPON LC (AMX-16GPON) unit.

Figure 23. Boundary Clock Synchronization mechanism (Mobile Backhaul Example)



MEASUREMENTS & LIMITS

The measurement limits for Frequency Accuracy (MTIE/TDEV) are specified by the relevant ITU-T standards that specify clock accuracy, for example G.813, G.823, G.824. G.8261, or "Timing and Synchronization Aspects in Packet Networks", specifies the upper limits of allowable network jitter and wander, the minimum requirements that network equipment at the TDM interfaces at the boundary of these packet networks can tolerate, and the minimum requirements for the synchronization function of network equipment. G.8263 "Timing characteristics of packet-based equipment clocks" specifies the outlines requirements for timing devices used in synchronizing network equipment that operates in the interworking function (IWF) and other network elements as defined in Recommendation ITU-T G.8261/Y.1361.

Frequency Accuracy (Wander), based on:

- TIE - time interval error
- MTIE - maximum time interval error
- MRTIE - maximum relative time interval error
- TDEV – time deviation
- Packet Delay Variation (PDV)

SUPPORT MULTIPLE TRAP DESTINATION SERVERS

The ME4620 OLT supports the forwarding of traps to multiple simultaneous servers (up to 3), including:

- Trap v2
- INFORM
- Trap/ACK - SNMPV1 traps with ACK. The acknowledge is made by writing at the alarm table's alarmAkn (.1.3.6.1.4.1.4746.10.6.1.1.1.10)

The Trap/ACK type is specific for use with AGORA Management System. Only one IP may have set the type 'TRAP-ACK' (limited implementation).

Trap v2 and Inform are standard.

The UDP port can be configured to send traps, default 162 (standard).

SUPPORT OF ONU-ID SNMP TRAP

The ME4620 OLT supports an SNMP trap that signalizes the SN associated to an ONU-ID.

SUPPORT SNMP MANAGERS

The ME4620 OLT supports up to 10 simultaneous SNMP managers.

These managers are able to do get-set operations, as well as receive SNMP traps.

EXTERNAL ALARM CONDITIONS

Four external input alarm conditions are supported on the ME4620OLT through each Switch Fabric card.

MANAGERS' CONFIGURATION

It is possible to configure the IPs of managers, and set the reading and configuration permissions for each of them.

It is also possible to configure static IP routes for the management interfaces

CONNECTIVITY FAULT MANAGEMENT (CFM)

Connectivity Fault Management (CFM) complies with Y.1731/IEEE 801.2ag standards.

This functionality is used in the AMX-48GE and UMX-4x10GE boards Ethernet interfaces CFM probing configuration.

REBOOT FEATURES

The following reboot options are supported by the ME4620 OLT system:

- Support the option to perform a system reboot
- Support the option to reboot individual Line Cards and Switch Fabric Cards.

IP FEATURES

- IP Routing supported (Demo features)
- IPv6 ready on all ME4620 OLT product line
- Ping/telnet command supported on CLI

STANDARDS AND PROTOCOLS

Table 4. Standards and Protocols

Type	Standards
PON layer	• ITU-T Recommendation G.984.x (GPON) • ITU-T Recommendation G.988 (OMCI) • BBF.247 – GPON certification program OLT interoperability • BBF TR.156i3 – Using GPON in the context of TR.101 • Advanced Encryption Standard (AES) • Forward Error Correction (FEC) • Up to 128 ONT or ONUs per PON • T-CONTs: 896 per PON • GEM port-IDs: 4096 per PON • Logical range: 60 km • Maximum differential distance: 20 km
L2 layer	• Services: 1:1, N:1, VBES/TLS • VLAN-ID conversion to GEM port-ID • VLAN promotion • VLAN translation • Ethernet Ring Protection Switching (ERPS G.8032) • IEEE 802.1Q VLAN tagging • IEEE 802.1P (VLAN QoS 4096 VLAN) • Per-port QoS and CoS mapping according to IEEE 802.1q and IEEE 802.1p • IEEE 802.1ad Provider Bridges • IEEE 802.1 ad Q-in-Q VLAN stacking • IEEE 802.3x Flow Control • IEEE 802.3ad Link Aggregation – LAG or LACP • IGMP v2 (RFC2236), IGMP V3 (RFC 3376) • RFC1350 TFTP protocol • RFC0959 FTP protocol • RFC1305 NTP protocol

	• SFF-8472 Specification for Diagnostic Monitoring Interface for XCVRs • RFC2131 DHCP • RFC3046 DHCP Relay Agent Info (Option 82) • RFC3315 Dynamic Host Configuration Protocol for IPv6 (DHCPv6) (Option 18 Interface Id) • RFC6221 Lightweight DHCPv6 Relay Agent • RFC4649 Dynamic Host Configuration Protocol for IPv6 (DHCPv6) Relay Agent Remote-ID Option 37 • ITU-T Y.1731 / IEEE 802.1ag
Timing and synchronism	• ITU-T Rec G.8261- Timing and synchronization aspects in packet Networks • Synchronous Ethernet (Sync-E) • ITU-T Rec. G.8262 - Timing characteristics of a synchronous Ethernet equipment slave clock • IEEE1588v2/PTP • ITU-T Rec. G.8263 Timing Characteristics of Packet based Equipment Clocks (PEC) • ITU-T Recommendation G.8265.1 Precision time protocol telecom profile for frequency synchronization
Management	• Local management by CLI and HTTP or HTTPS web browser • Remote management using Telnet or SSH and SNMPv1/v2/v3 • CPE remote management over OMCI and TR-69 • In-band and out-of-band management • Receive power monitoring per ONT • Per-user accounting and logging • Local alarm storage and Syslog • Automated backup, restore, and rollback
Redundancy	• GPON Type B redundancy • Active/standby GPON card and GPON port redundancy • Active-active, active/standby network Interfaces • Active-standby switching fabric redundancy • Hot-swappable modules
Electromagnetic	• FCC Part 15 Class
Emissions compliance	• EN 55022 Class A (CISPR22 Class A)

	• EN 55024 • EN 50082 • EN61000-3-2/3 • EN61000-4-2/3/4/5/6/8/11
Safety	• UL 60950-1 • CAN/CSA 22.2 No.60950-1 • EN 60950-1 • IEC 60950-1 • NOM-019-SCFI
NEBS	• GR-63-CORE, GR-1089-CORE - Level 3, Type 2
ETSI	• EN 300 019 1-1- Storage: Class 1.2 – Not temperature controlled storage locations • EN 300 019 1-2 - Transportation: Class 2.3 – Public transportation • EN 300 019 1-3 - In-Use: Class 3.12 - Partly temp. controlled locations

Chapter 3
SYSTEM SPECIFICATIONS

This Chapter describes the ME4620 OLT system specifications

ME4620 OLT EQUIPMENT CHASSIS FEATURES

Table 5. ME4620 OLT Equipment Chassis Features

Chassis Feature	ME4620 OLT-SYSTEM

ETSI 19'' rack size	14U
Total number of slots	20
Number of usable slots for Switch Fabric cards	2
Number of usable slots for Uplink line cards	18(1)
Number of usable slots for GPON line cards	18(1)
Number of usable slots for Active Ethernet Line cards	18(1)

(1) Shared with the other line cards

ME4620 OLT EQUIPMENT BOARDS FEATURES

Table 6. ME4620 OLT Equipment Board Features

	Board features				
Board Type	**Type of ports**	**Nº of ports**	**Type of pluggable module**	**Capacity towards backplane (Gbit/s)**	**Switching Fabric capacity (Gbit/s)**
Switch Fabric	-	-	-	640	640
Uplink Line Card	10GE	4	XFP	40	-
GPON Line Card	GPON	16	SFP	40	-
Active Ethernet Line Card	GE/FE	48	CSFP	40	-

OPTICAL INTERFACES

10GE INTERFACES

These interfaces are deployed in the form of optical XFP transceivers which use LC/PC connectors and have the following characteristics:

Table 7. Optical 10Gbase interfaces characteristics

Optical 10Gbase	**Type**	10GBASE-LR/LW (10 km)	10GBASE-ER/EW (40 km)	10GBASE-ZR/ZW (80 km)
	Laser type emitter	SLM (DFB)	SLM (EA-DFB)	SLM(EA-DFB)
	Operation Range (nm)	1260 to 1355	1530 to 1565	1530 to 1565
	Wave length typ. (nm)	1310	1550	1550
	Spectral width Max. (nm)	NA	NA	NA
	Min SMSR (dB)	30	30	30
	Tolerated dispersion max. (ps/nm)	NA	NA	1600
	Emission Power Max/min (dBm)	0.5 / -8.2	4.0 / -4.7*	4.0 / -1.0
	Min Extinction Ratio (dB)	3.5	3.0	6.0
	Receiver Type	PIN	PIN	APD
	Attenuation Range (dB)	NA	NA	NA
	Sensibility (dBm) BER < 10^{-10}	-12.6	-14.1	-24
	Receiver Saturation (dBm)	-1	-1	-7
	Max. Penalization per optical course (dB)	1	3	3
	Protection against Cuts	Automatic Laser Shut Down		
	According to Recommendations	(IEEE 802.3, Clause 49, 50 and 52)	(IEEE 802.3, Clause 49, 50 and 52)	-

* Average launch power (min) is informative and not the principal indicator of signal strength. A transmitter with launch power below this value cannot be compliant; however, a value above this does not ensure compliance.

1GE ETHERNET INTERFACES

These interfaces are deployed in the form of optical CSFP transceivers which use LC/PC connectors and have the following characteristics:

Table 8. Optical 1000Base interfaces characteristics

Optical 1000Base	**Type**	1000BASE-BX10-D
	Laser type emitter	Long wave Laser
	Operation Range (nm) TX	1480 to 1500
	Operation Range (nm) RX	1260 to 1360
	Spectral width Max (nm)	0.88 to 2.09
	Minimum Side Mode Suppression Ratio (dB)	-
	Emission Power Max/min (dBm) to SMF	-3/-9
	Min Extinction Ratio (dB)	6
	Receiver Type	
	Attenuation Range (dB)	10.5
	Sensibility (dBm) **BER < 10^{-10}**	-19.5
	Receiver Saturation (dBm)	-3
	Maximum Penalization per optical course (dB)	5.5
	According to Recommendations	IEEE 802.3, clause 59.

GPON Interfaces

ITU-T Recommendations G.984.2 + G.984.2 Amd 1 + G.984.2 Amd 2.

Table 9. GPON Interfaces Specification

	Items	Unit	B+	C+
			ME4620 OLT Tx	ME4620 OLT Tx
G-PON ME4620 OLT Transceiver	Nominal bit rate	Mbit/s	2488.32	2488.32
	Operating wavelength	nm	1480-1500	1480-1500
	Line code	--	Scrambled NRZ	Scrambled NRZ
	Minimum ORL	dB	>32	>32
	Mean launched power MIN	dBm	+1.5	+3
	Mean launched power MAX	dBm	+5	+7
	Extinction ratio	dB	>8.2	>8.2
	Tolerance to the transmitter incident light power	dB	>-15	>-15
	SLM Laser – MAX −20 dB width	nm	1	1
	SLM Laser – MIN SMSR	dB	30	30
			ME4620 OLT Rx	ME4620 OLT Rx
	Nominal bit rate	Mbit/s	1244	1244
	Upstream operating Wavelength	nm	1260-1360	1260-1360
	Maximum reflectance of equipment, measured at Rx wavelength	dB	<-20	<-20
	Bit Error Ratio (BER)	--	$<-10^{-10}$	-10^{-4**}
	Minimum sensitivity	dBm	-28	-32**
	Minimum overload	dBm	-8	-12**
	Downstream optical penalty	dB	0.5	1
	Consecutive identical digit immunity	bit	>72	>72
	Tolerance to reflected optical power	dB	<10	<10

**ME4620 OLT RX= -12 ~-32 dBm (The ME4620 OLT sensitivity assumes the use of the optional RS (255,239) FEC capability of the G-PON TC layer, as well as intrinsic detector technology improvements)

B+ LINK BUDGET

This budget covers all optical components between the extended ME4620 OLT and ONU, including non-integrated WDM filters for the multiplex of video overlays and other enhancement band services, and must include any Raman impairment from the overlay signal.

Table 10. B+ Link Budget

	unit	Single Fiber
Minimum optical loss at 1490 nm	dB	13
Minimum optical loss at 1310 nm	dB	13
Maximum optical loss at 1490 nm	dB	28
Maximum optical loss at 1310 nm	dB	28

C+ LINK BUDGET

This budget covers all optical components between the extended ME4620 OLT and ONU, including non-integrated WDM filters for the multiplex of video overlays and other enhancement band services, and must include any Raman impairment from the overlay signal.

Table 11. C+ Link Budget

	unit	Single Fiber
Minimum optical loss at 1490 nm	dB	17
Minimum optical loss at 1310 nm	dB	17
Maximum optical loss at 1490 nm	dB	32
Maximum optical loss at 1310 nm	dB	32
Maximum fiber length	km	60

POWER SUPPLY

As mentioned above, the ME4620 OLT system uses a -48VDC input voltage for its power supply. It works properly within -40.50VDC to -57VDC voltage range in compliance with the ETSI EN 300 132-2 V2.1.1 (2003-01) recommendation. The earth connections comply with the ETSI ETS 300 253: January 1995 recommendation

POWER CONNECTIONS

Card power connections and card power distribution diagrams are provided bellow for the Switch Fabric Card, Figure 24, and for the Line Cards, Figure 25.

Figure 24: Switch Fabric Card power connection and distribution diagram

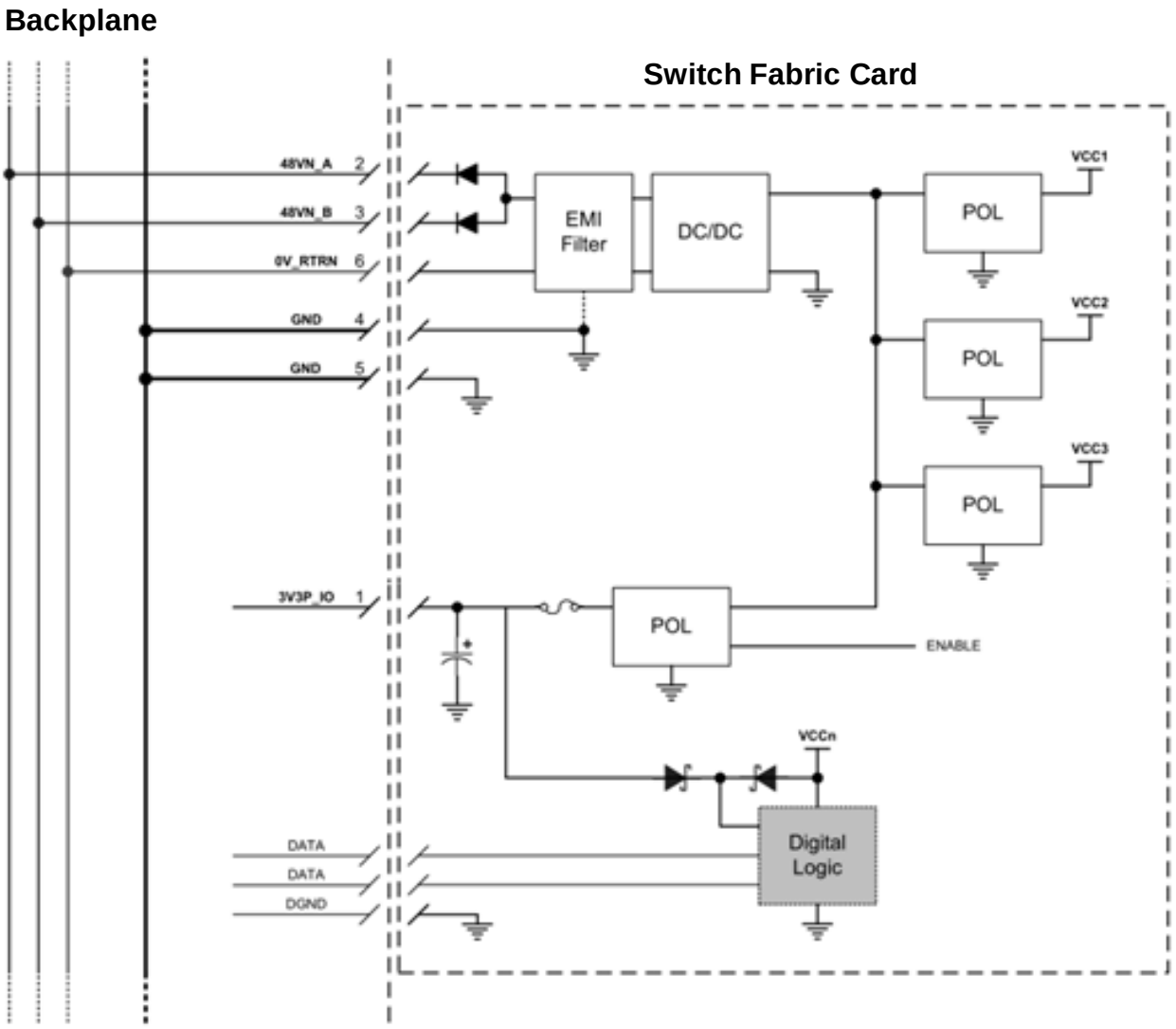
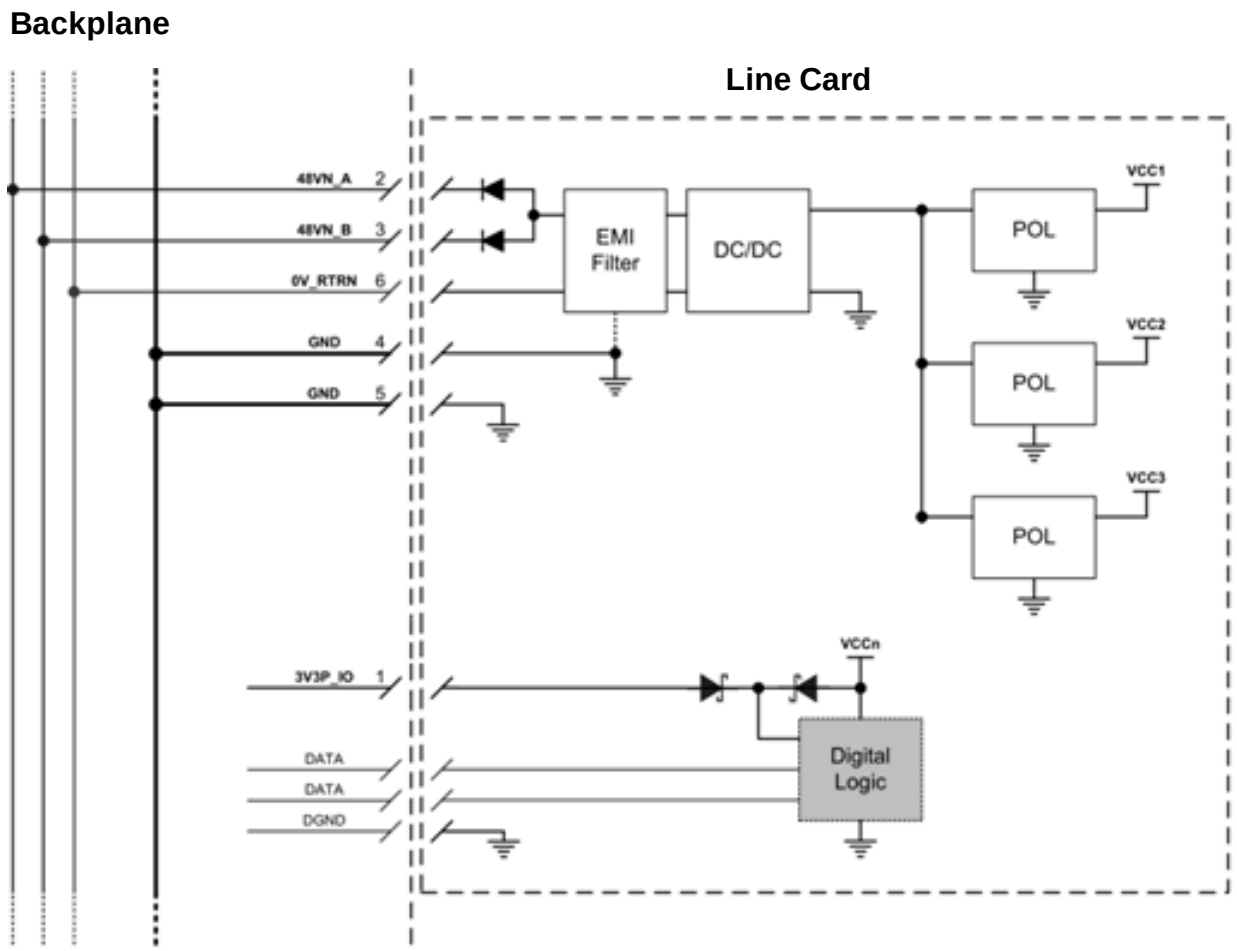


Figure 25: Line Card power connection and distribution diagram



POWER CONSUMPTION

Please see below the unit parts Power consumption.

Table 12. Power Consumption

Type of Unit	Unit name	Power Consumption(W @ -48VDC)
Chassis	ME4620 OLT	< 90 (Fan Module)
Switch Fabric	XCO-640	< 80
Uplink line cards	UMX-4x10GE	< 45
GPON line cards	AMX-16GPON	< 85
Active Ethernet line cards	AMX-48GE	< 75

SYSTEM HEAT RELEASE

ME4620 OLT system maximum heat release for a fully equipped chassis is of 1720W.

ME4620 OLT frame Calculated Rate of Heat Dissipation is of 2907 W / m^2, please refer to Table 13.

ME4620 OLT Calculated Shelf-Level Rate of Heat Dissipation for unit of shelf height is of 4689 W / m^2 / m, please refer to Table 14.

Table 13. Equipment Rate Heat-Dissipation Calculation

Parameter	Description	ME46 20 OLT System International (SI) Units
d_{equip}	Depth of equipment(shelf or frame) including cable management and cable bends, m (ft)	0.300 m
$d_{main\text{-}aisle}$	Depth of maintenance aisle, m (ft) $d_{main\text{-}aisle}$ = 0.762 m (2.5 ft) (typical)	0.762 m
$d_{wire\text{-}aisle}$	Depth of the wiring aisle, m (ft) $d_{wire\text{-}aisle}$ = 0.610 m (2.0 ft) (typical)	0.610 m
w_{frame}	Width of the frame under consideration or frame where the shelf will be installed, m (ft) 19" frames: w_{frame} = 0.559 m (1.830 ft) (typical) 23" frames: w_{frame} = 0.660 m (2.17 ft) (typical) Cabinet frames: w_{frame} = user-specified dimension	0.600 m
p_{in}	Power into the equipment, W	1720 w
p_{out}	Power out of the equipment, W	0 w
$area_{equip}$	Associated floor area of equipment, m^2, (ft^2) $area_{equip} = (d_{equip} + d_{main\text{-}aisle} / 2 + d_{wire\text{-}aisle} / 2) \times w_{frame}$	(0.300 m + 0.762 m / 2 + 0.610 m / 2) = 0.592 m^2
HR_{equip}	Rate of Heat Released from the equipment, W $HR_{equip} = p_{in} - p_{out}$	1720 W – 0 W = 1720 W
HR_{frame}	Rate of Heat Dissipation of the equipment frame, W/ m^2 (W/ft^2) $HR_{frame} = HR_{equip} / area_{equip}$	1720 W / 0.592 m^2 = 2907 W / m^2

Table 14. Additional calculations for shelf-level equipment only

Parameter	Description	ME46 20 OLT System International (SI) Units
h_{shelf}	Height of shelf, m (ft)	0.620 m
$HD_{per\ shelf}$	Shelf-Level Rate of Heat Dissipation for one shelf in a frame, W/ m^2 (W/ft^2) $HD_{per\ shelf} = HR_{equip} / area_{equip}$	1720 W / 0.592 m^2 = 2907 W / m^2
$HD_{per\ h}$	Shelf-Level Rate of Heat Dissipation for unit of shelf height, W/ m^2 /m (W/ft^2 /ft) $HD_{per\ h} = HD_{per\ shelf} / h_{shelf}$	2907 W / m^2 / 0.620 m = 4689 W / m^2 / m

WEIGHT & PHYSICAL DIMENSIONS

The physical dimensions of the ME4620 OLT system are the following:

Figure 26. ME4620 OLT 3 D chassis schematic and dimensions (mm)

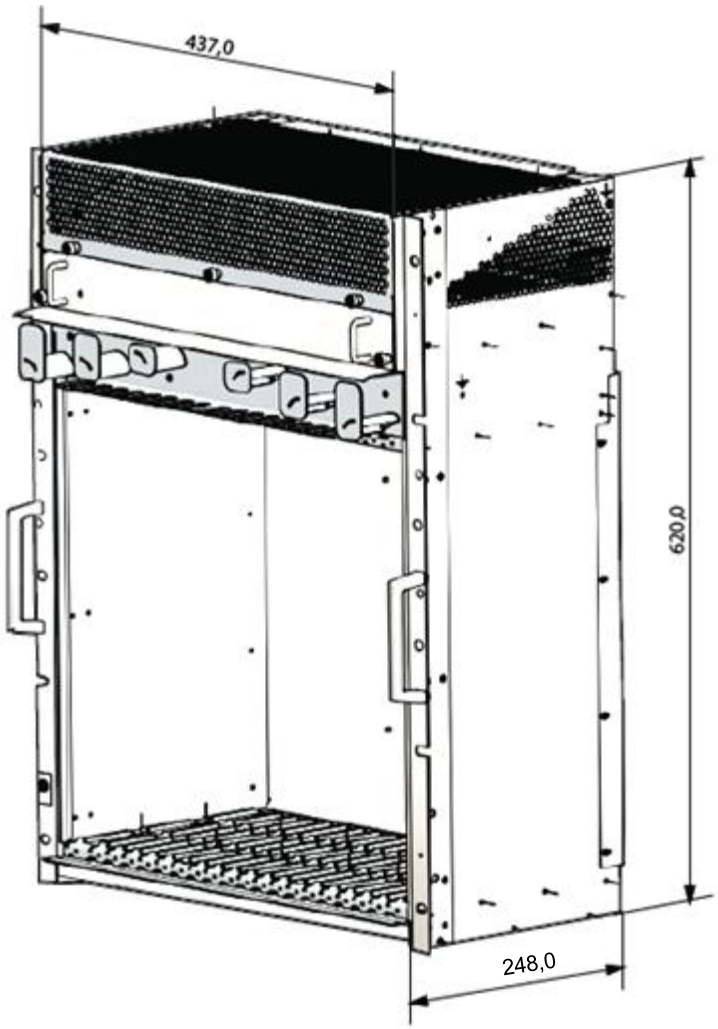


Table 15. Weight & Size

	Height (mm / RU)	Width (mm / “)	Depth (mm / “)	Weight (max Kg / lb)
ME4620 OLT	620/14	483 / 19	248 / 9,8	47./ 104 (with cards)

The ME4620 OLT floor loading, according to objective GR63-O2-12[18], is of 46,8Kg/m^2 (9,58lb/ft2).

The ME4620 OLT chassis can be mounted on an ETSI ETS 300 119-2 type rack, with a depth of 300mm / 11,8”.

Figure 27.ME4620 OLT chassis front and side view

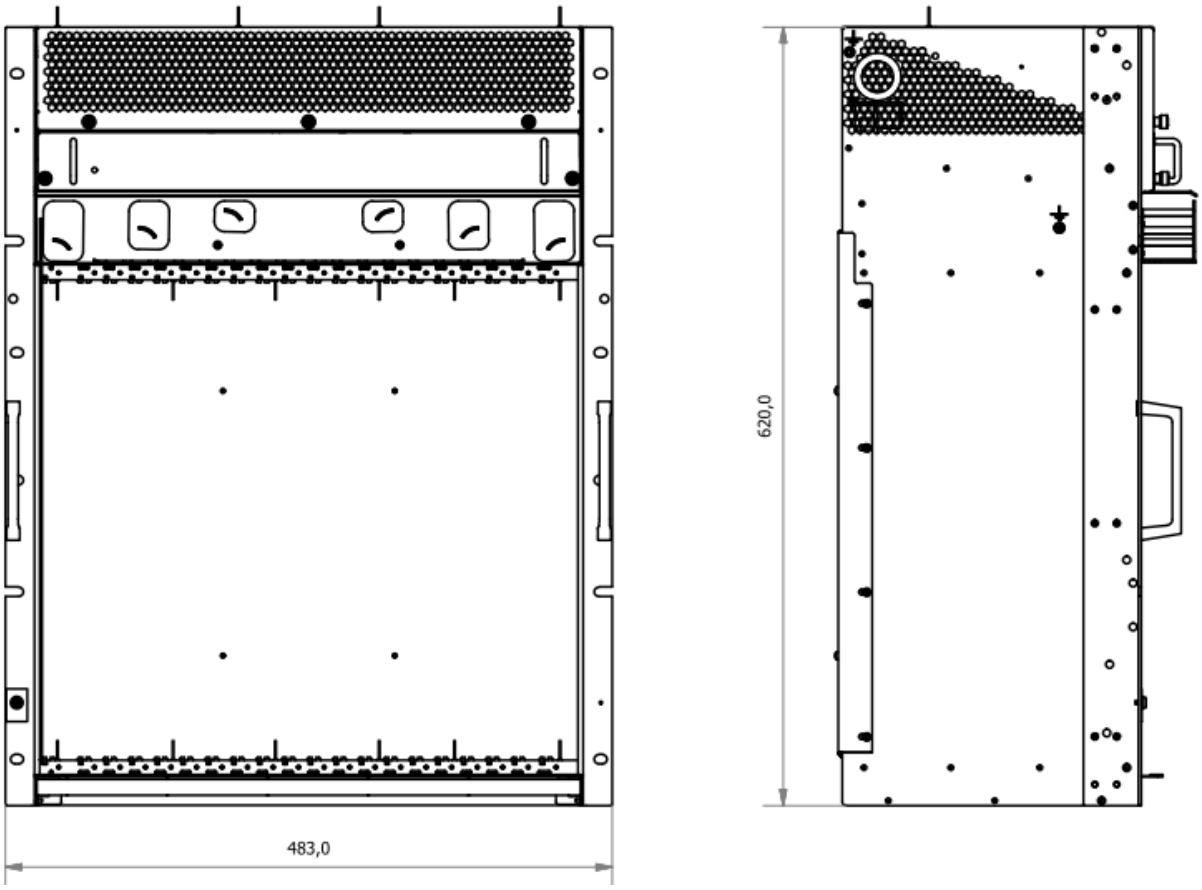
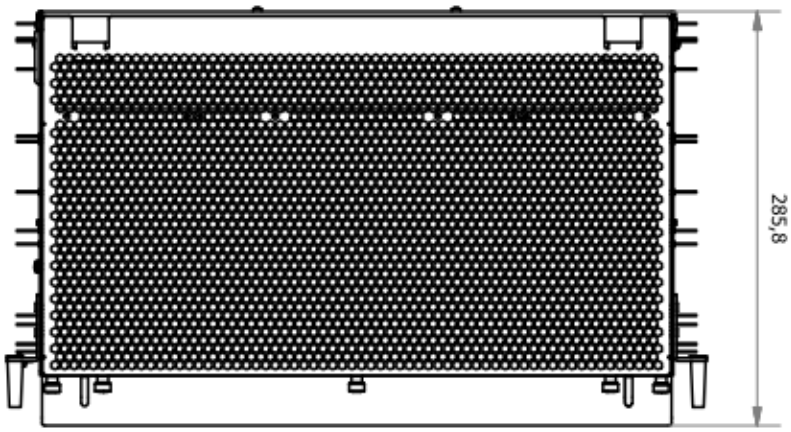


Figure 28. ME4620 OLT top view



MTBF

Please see below the unit parts MTBF (Mean Time Before Failure).

Table 16. Mean Time Between Failures

Type of Unit	Unit name	MTBF (hours)	Temperature (ºC)
Chassis	ME4620 OLT	300937	40
Switch Fabric	XCO-640	186491	40
Uplink line cards	UMX-4x10GE	486874	40
GPON line cards	AMX-16GPON	188133	40
Active Ethernet line cards	AMX-48GE	275233	40

ENVIRONMENTAL CONDITIONS

This system is carrier class designed and complies with ETSI ETS 300 019-1-3 Class 3.2: Partly temperature-controlled locations recommendation.

This system will properly work within temperature ranges from -5ºC to +45ºC, and with a relative humidity between 5% and 95%.

ELECTROMAGNETIC COMPATIBILITY

This system is carrier class designed and suitable to work over extreme EM conditions. As such, it complies with the relevant recommendations for this type of installation, as listed in the ETSI EN 300 386 recommendation.

SYSTEM PARTS

The organization of the ME4620 OLT system can be seen in the figure below, Figure 29 and Table 17, with the indication of the type of board and placement for one possible system setup.

Figure 29.ME4620 OLT system Front View (14U chassis)

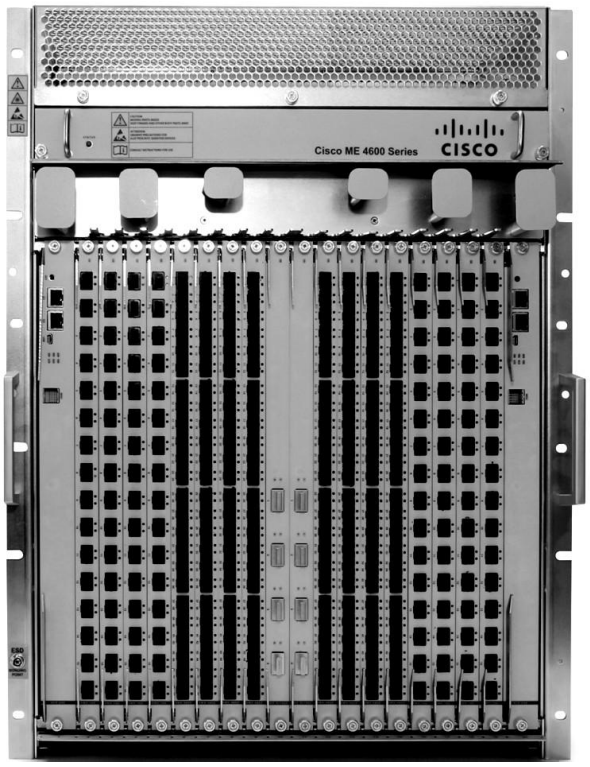


Table 17. ME4620 OLT Equipment Module Features

Module	Name	Status
Chassis (including fan modules and power)	ME4620 OLT	Ready
Switch Fabric	XCO-640	Ready
Uplink Line Card	UMX-4x10GE	Ready
GPON Line Card	AMX-16GPON	Ready
Active Ethernet Line Card	AMX-48GE	Ready

UPLINK LINE BOARD :: UMX-4x10GE

The UMX-4x10GE board is a module that interfaces with the Service Provider Network by means of four 10GE (XFP modules). This board provides LACP protection.

This module can support P2P topology per port.

Figure 30. UMX-4x10GE Front panel

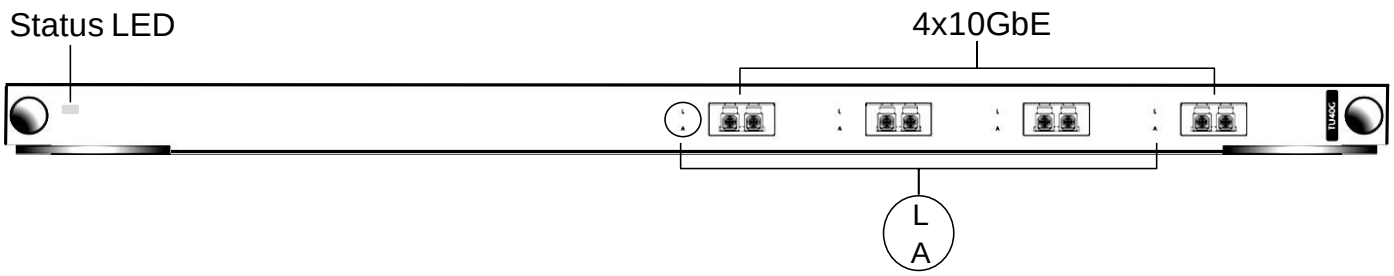


Table 18. UMX-4x10GE Slot position in ME4620 OLT shelf

Board	ME4600 OLT system	Slot
UMX-4x10GE	ME4620 OLT	4 to 17

INTERFACES

- 4 x 10GbE uplink interfaces
    - XFP modules

LED INDICATORS

The board provides:

- one status LED at the top/left-side of the board front panel with the following behavior:
    - RED: Board is starting or in failure.
    - GREEN(blinking): Board is fully operational and running.
- two red/green LED for each of the 10G ports, numbered from 1-4, that must indicate:
    - LED LINK (left hand side)::
        - OFF: 10Gbe port disabled
        - GREEN: Link up in the 10GbE port;
        - RED: Link down in the 10GbE port and NO LOS;

- BLINKING RED: Link down in the 10GbE port and LOS;

- LED ACTIVITY (right hand side):
  - BLINKING GREEN: Activity in the Link in the 10GbE port;
  - OFF: No traffic.

INTERFACE INTERCONNECTION CABLES

The connection to 10GE interfaces is done by XFP transceivers that are accessible through fiber optic patch cords with LC/PC connectors.

GPON LINE BOARD :: AMX-16GPON

The AMX-16GPON board provides sixteen Class B+ or C+ GPON interfaces. Each of the interfaces can have up to 64 clients in a maximum of 1024 clients per board.

Figure 31. GPON AMX-16GPON line board front view

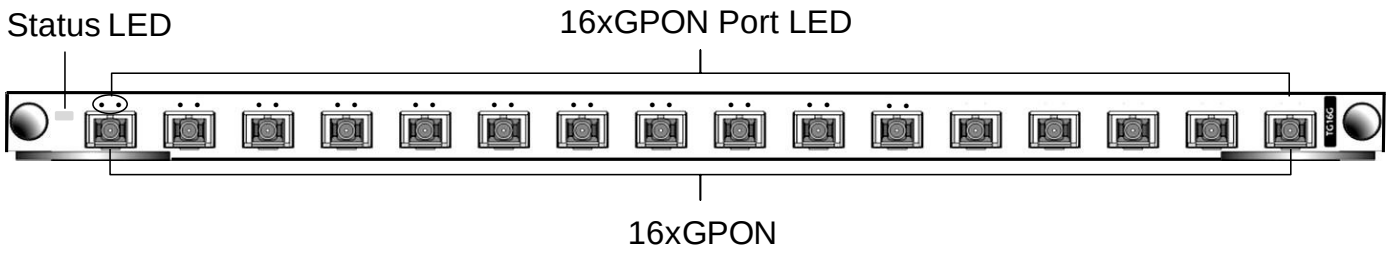


Table 19. GPON AMX-16GPON line board Slot position in ME4620 OLT shelf

Board	ME4600 OLT system	Slot
AMX-16GPON	ME4620 OLT	2 to 19

INTERFACES

- GPON interfaces;
  - SFP Modules

LED INDICATORS

The board provides:

- one status LED at the top/left-side of the board front panel with the following behavior:
  - RED: Board is starting or in failure.
  - GREEN(blinking): Board is fully operational and running.

- two LED for each of the 16 GPON ports, numbered from 1-16, that must indicate the GPON interfaces states:
    - LED LINK (left hand side of the SFP):
        - OFF: GPON Port disabled
        - GREEN: GPON Port enabled and SFP plugged
        - RED: GPON Port enabled and SFP unplugged
    - LED ACTIVITY (right hand side of the SFP):
        - GREEN: When the interface is active and in case it has registered ONT's, at least one of them is active;
        - RED (LOS): When all registered ONU/T are absent.

In Type-B protection mode, LED LINK and ACTIVITY will blink alternately ORANGE.

INTERFACE INTERCONNECTION CABLES

The connection to the GPON interfaces is done by SFP transceivers that are accessible through fiber optic patch cords with SC/PC connectors.

ACTIVE ETHERNET (EFM) LINE BOARD :: AMX-48GE

The Active Ethernet Line board AMX-48GE provides 48 bidirectional Active Ethernet ports..

The board supports:

- SYNC-E and IEEE 1588v2/PTP
- Y.1731 OAM.

Figure 32. Active Ethernet AMX-48GE line board front view

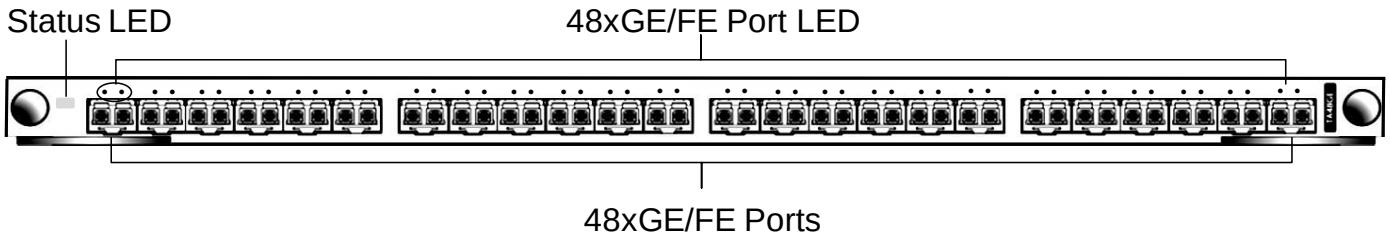


Table 20. Active Ethernet AMX-48GE line board Slot position in ME4620 OLT shelf

Board	ME4600 OLT system	Slot
AMX-48GE	ME4620 OLT	2 to 19

INTERFACES

- 48x GE/FE, Active Ethernet,(EFM);
    - Bidirectional CSFPs modules (1000BASE-BX)

LED INDICATORS

The board provides:

- one status LED at the top/left-side of the board front panel with the following behavior:
    - RED: Board is starting or in failure.
    - GREEN(blinking): Board is fully operational and running.
- 48 LEDs, one for each of the 48 ports, numbered from 1-48, that must indicate that the GE/FE interface is:
    - RED: when the interface is active but has no active link;
    - GREEN: when the interface is active and has an active link;
    - BLINKING GREEN: when the interface is active, has link and has data traffic

INTERFACE INTERCONNECTION CABLES

The connection to the 48x GE/FE interfaces is done by CSFP transceivers that are accessible through fiber optic patch cords with LC/PC connectors.

SWITCH FABRIC BOARDS :: XCO-640

The Switch Fabric boards provide the Operation and Maintenance function of the system, and it also switches the client traffic between the client and uplink boards. The ME4620 OLT system must be equipped with two Switch Fabric boards in order to guarantee 1+1 redundancy for switching and management.

XCO-640 is a Switch Fabric board for ME4620 OLT systems. XCO-640 has a 640 Gbps switching capacity.

This board has four 10GbE internal connections and one O&M for each of the uplink and client boards in the system.

Figure 33. XCO-640 Front panel

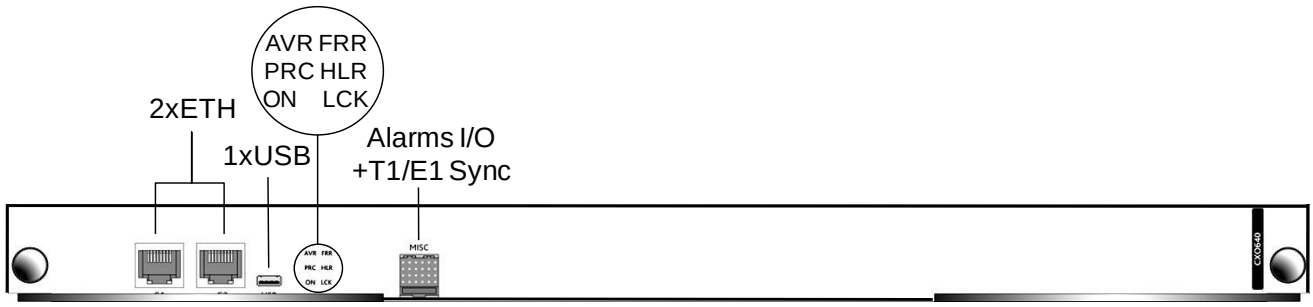


Table 21. XCO-640 Slot position in ME4620 OLT shelf

Board	ME4600 OLT system	Slot
XCO-640	ME4620 OLT	1 and 20

INTERFACES

- 2x ETH management interfaces G1 and G2 (RJ45);
- 1xUSB debug port, exclusively for factory configuration.
- MISC (Alarms/conditions and ACK indicators) contacts

LED INDICATORS

The board provides 6 LEDs, named AVR, PRC, ON, FRR, HLR and LCK, that must indicate

- AVR: stands for the Portuguese word «AVaRia» that means «Malfunction»
    - Steady GREEN - Board is operational;
    - Blinking GREEN 3 times per second - Board is in protection mode;
    - Steady RED - Internal hardware malfunction, please replace board;
    - Blinking RED 3 times per second - Invalid local database;
    - Blinking RED 5 times per second - Invalid hardware license invalid;
- PRC: stands for the word «Processing» and defines the overall state of the board:
    - If Led is either OFF or steady GREEN the board has an internal hardware malfunction that does not allow the board to boot
    - If Led blinks GREEN 1 time per second the board is active;
    - If Led blinks GREEN 3 times per second the board is inactive;
- ON: reflects the state of the -48VDC power supplies (A and B):
    - Steady green if rail A and B are OK;
    - Blinking GREEN/RED if rail A is NOT OK and rail B is OK;
    - Double GREEN/RED blinking if rail A is OK and rail B is NOT OK;
- FRR: System clock is in a free run state. FRR stands for «Free Run»:
    - Steady Green if the PLL is not in Hold Over Mode, but sync is locked;
    - Steady Red if the PLL is in Hold Over Mode;

  (If FRR is green HLR must be Off and vice-versa)
- HLR: System clock is in Hold Over state. HLD stands for «Hold Over»:
    - Steady Green if the PLL is in Hold Over Mode;
    - Off otherwise

(If HLR is green, FRR must be Off and vice-versa)

- LCK: System clock lock state with a given reference clock. LCK stands for «LOCK»:
    - Steady GREEN if the PLL Locked;
    - Steady RED if the PLL is not Locked;

Note: If AVR is blinking GREEN 3 times per second (meaning Board is in protection mode) or blinking RED 3 times per second (meaning invalid local database) LEDs FRR, HLR and LCK will display the same behavior as AVR led.

INTERFACE INTERCONNECTION CABLES

XCO boards have two Ethernet (G1 and G2) for management purposes only. For the G1 and G2 interfaces, STP network cable category 5e or higher with RJ45 shielded connectors should be used as interconnection cable. The expected range with this interconnection cable is 100m maximum.

For the MISC interface a Metral 2mm (FCI TM) plug is used.

The USB debug port is exclusively for factory configuration.

Chapter 4
SETUP

This chapter describes the ME4620 OLT system installation procedures

MECHANICAL PACKAGING

Important!

When installing or servicing these GPON systems it is necessary to take into account the following aspects:

- In a servicing system it is imperative that the access to any board or fan module, can be done without affecting the service supported by other units;
- The grids that exist in the steel structures which are used for entry and exit of air, should not be clogged up with the penalty of affecting the correct functioning of the cooling system;
- Once the connections and access to equipment interfaces are made, a distance of approximately 12cm in front of the structure must be reserved, to accommodate the wiring.
- It is imperative to follow all ESD precautions described in ESD , when accessing to the ME4620 OLT system or handling any system board or module.
- It is imperative to disconnect all power sources on the Disconnect Device before servicing the unit.

ESD PRECAUTIONS

Important!

When performing ME4620 OLT system service actions, observe the following electrostatic discharge (ESD) precautions:

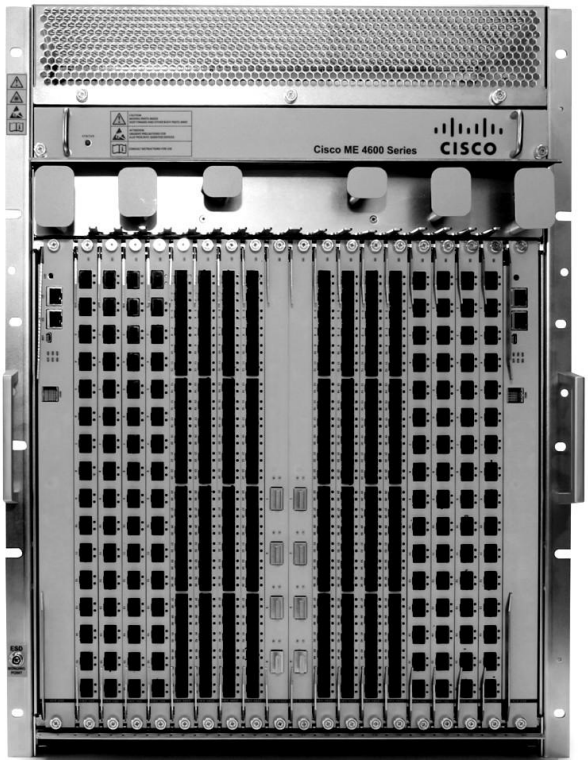
- Wear an antistatic wrist strip at all times when handling any system part, board or module.
- Before handling any system part, board or module, discharge any static electricity by touching a grounded surface.
- Remove all plastic, vinyl, and foam material from the work area.
- Do not remove a system board or module from its antistatic protective bag until you are ready to install it.
- After removing a board or module from the system chassis, immediately place it in an antistatic bag or antistatic packaging.
- Handle any system board only by its edges and avoid touching the components or circuitry.
- Do not slide a system board or module over any surface.
- Limit body movement (which builds up static electricity) during the removal and replacement of a system board or module.

ME4620 OLT SYSTEM

The ME4620 OLT system occupies the height of a 14U/19" infrastructure, Figure 26. The chassis has a routing tray immediately above the tributary cards, in order to better accommodate and fix the cable and fibers that will connect to the system.

In a central office environment up to 2 ME4620 OLT systems can be accommodated per ETSI rack (2200x600x300mm // 86,6x23,6x11,8”) (HxWxD).

Figure 34. ME4620 OLT Front View



RESTRITED ACCESS LOCATION

The ME4620 OLT unit is to be installed in Restricted Access Location.

The intended installation location of the product will be, Network Telecommunication Facilities, namely Central Offices (COs).

ME4620 OLT ETSI RACK SETUP EXAMPLE

ETSI RACK OCCUPANCY

For an ETSI rack with the following dimensions (2200x600x600mm // 86,6x23,6x11,8") (HxDxW), the recommended maximum occupation is of 2 ME4620OLT systems.

The ETSI rack should have a power box installed with a double bus bar of -48Vdc, a third bus bar of 0Vdc and circuit breakers, Figure 35.

A power strip of schuko plugs should also exist in the bottom of the cabinet, Figure 35

The recommended setup in this case is to have a breach between the power box and the top of the higher installed ME4620OLT, and a breach between this higher installed ME4620 OLT chassis and the lower installed ME4620OLT chassis, Figure 35. The breaches will be used to facilitate cable connection and routing.

Two air deflector must be installed in this setup, each one immediately bellow each of the ME4620 OLT chassis.

Important!

- In the case of sequentially installation of ME4620 OLT chassis, without any breach between them, only the lower ME4620 OLT chassis requires an air deflector installation bellow it to allow the air income from the front; for the upper ME4620 OLT chassis the air deflector is the air deflector of the ME4629 OLT lower installed chassis.

Figure 35 - Recommended setup for 2 ME4620 OLT in an ETSI rack

ME4620 OLT SETUP EXAMPLE

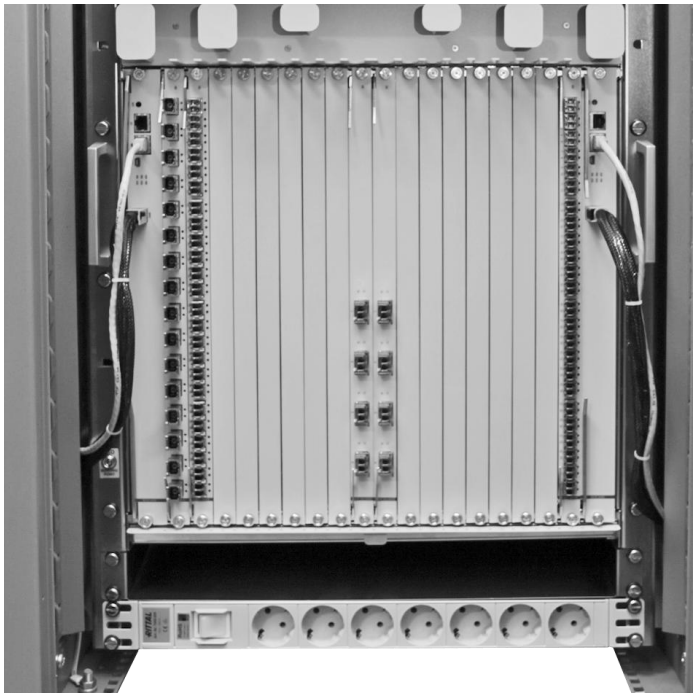
This section describes the procedures to install an ME4620 OLT in an ETSI rack.

The used installation scenario, consists of:

- an ME4620OLT chassis,
- 2x ME4600-XCO-640 switch fabric cards,
- 2x ME4600-UMX-4x10GE uplink line cards,
- 2x ME4600-AMX-48GE active ethernet access line cards,
- 1x ME4600-AMX-16GPON GPON access line cards.

The example given will describe the installation of 2 ME4620 OLT chassis sequentially starting at the bottom of an ETSI rack, as well as card installation and cabling.

Figure 36. ME4620 OLT assembly example -Front View



List of the installation required tools:

- Screwdriver,
- Philips screwdriver
- Ratchet with extender and hexagonal key size 10.

The ETSI rack should have a power box installed with a double bus bar of -48Vdc, a third bus bar of 0Vdc and circuit breakers, Figure 35.

A power strip of schuko plugs should also exist in the bottom of the cabinet, Figure 36.

Figure 37. ESTI RACK

INSTALLATION PROCEDURES

ME4620 OLT CHASSIS INSTALLATION

The first ME4620 OLT chassis to install should be the lower one, in this example located at the bottom of the ETSI rack. An air deflector installation bellow the ME4620 OLT chassis is required in order to route the air flow for heat extraction.

Step 1. Install the air deflector above the just above the power strip, Figure 38; please see the AIR DEFLECTOR INSTALLATION section step by step procedures.

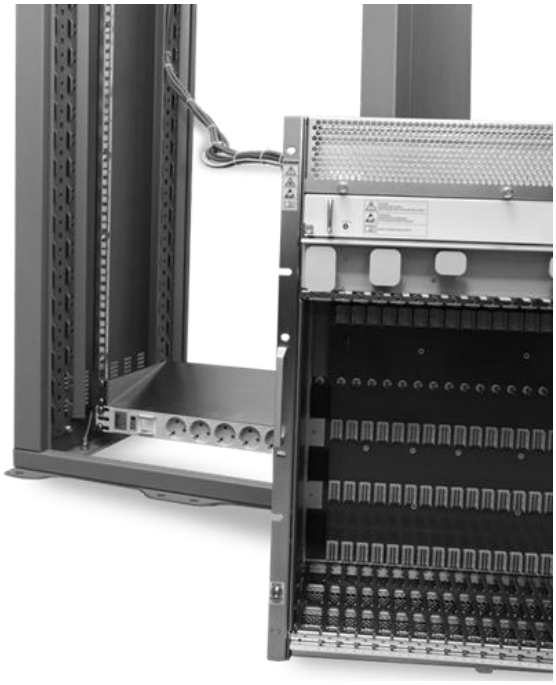
Figure 38. ESTI RACK – air deflector installed

Before mounting the ME4620 OLT chassis in the ESTI rack, rack power supply connections to the power box and power supply cabling routing must be executed.

Step 2. Execute rack power supply connections, Figure 38; please see the AIR DEFLECTOR INSTALLATION section step by step procedures.

Cables from the bus bar in the top of the ETSI rack should be guided through the left side of the cabinet and should enter in the hole on the top left of the system. Cables should have enough length in order to temporally remove the system in the future without disconnect the energy cables, Figure 39.

Figure 39. ESTI RACK – power supply connection cables



Step 3. Fasten the ME4620 OLT on the rack. Bolts should be used on left and right sides of the chassis to fasten it to the ETSI rack, Figure 40.

Figure 40. Fastening the ME4620 OLT chassis to the ETSI rack

The ME4620 OLT chassis is now installed at the ETSI rack and connected to power supply, Figure 41.

ME4620 OLT cards installation can now be executed.

Figure 41. Final appearance of the assembly

ME4620 OLT BOARD INSTALLATION

Switch Fabric boards must only be installed in the first and in the 20th slots of the shelf.

Line card boards can be installed in any other slot of the shelf.

Note

- Rules definition for board installation with the predefinition of slots by board type is highly recommended, since a known expected configuration helps on the maintenance and support operations.
- The following configuration is recommended:

- Uplink line cards installed on the center chassis slots.
- Access line cards installed symmetrically from the most outside slots (2 and 19) towards the centre of the chassis.

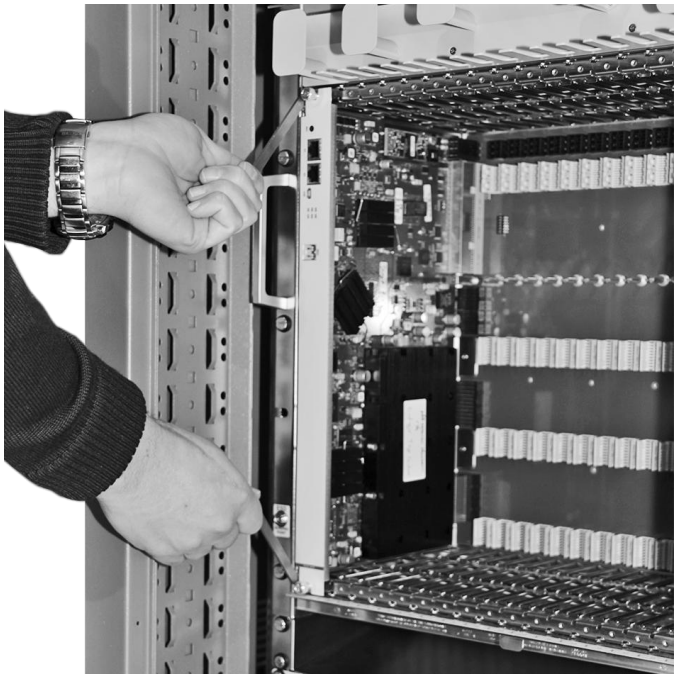
Boards should slide trough guides in the ME4620 OLT chassis up to their position in the shelf.

Levers in the top and in the bottom of the front panel should be used to help the final positioning of the board in the shelf, Figure 42.

For extraction of the boards these levers must be used in the inverse movement of the insertion.

For more detail on how to insert boards, please see section CARD INSERTION AND REMOVAL step by step procedures.

Figure 42. Inserting a board in the ME4620 OLT chassis

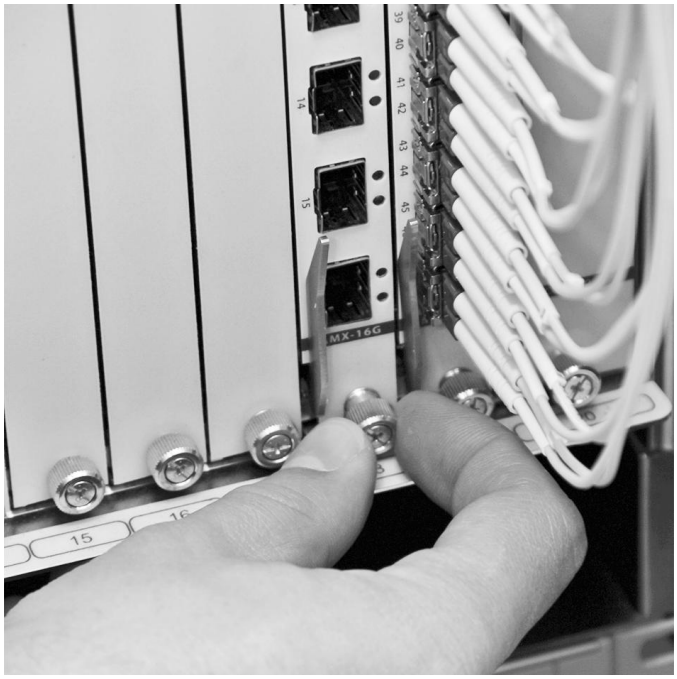


If the assembly has empty slots they must be covered by blank panels in order to maintain a correct air flux inside the chassis, Figure 43.

Figure 43. Inserting a blank panel in an empty slot

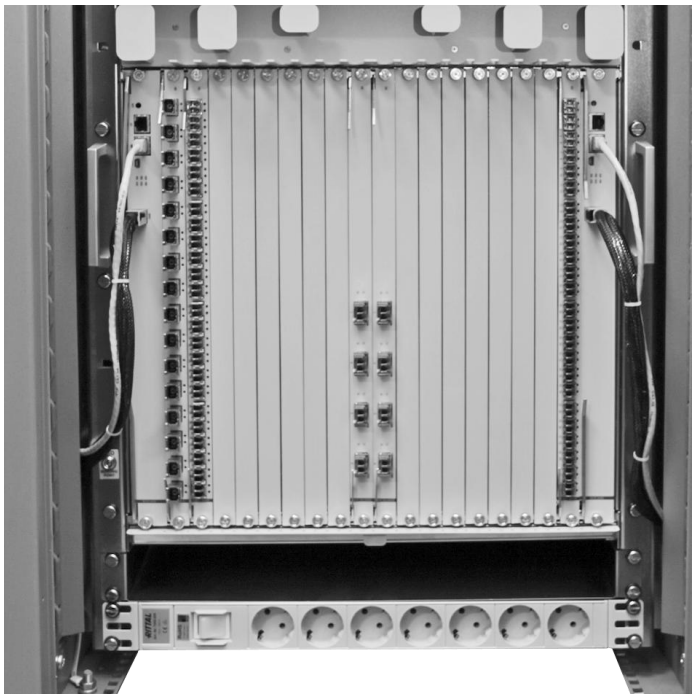
All boards and blank panels should be tightened to the chassis with the respective screws at the top and bottom of the panel as depicted in Figure 44.

Figure 44. Tightening a board to the chassis



In Figure 45 an assembly of an ME4620 OLT with 2 Switch Fabric boards and 5 Line Boards is depicted. Network cables for remote management and for connections of synchronization and local alarms are already connected.

Figure 45. Example of an ME4620 OLT assembly

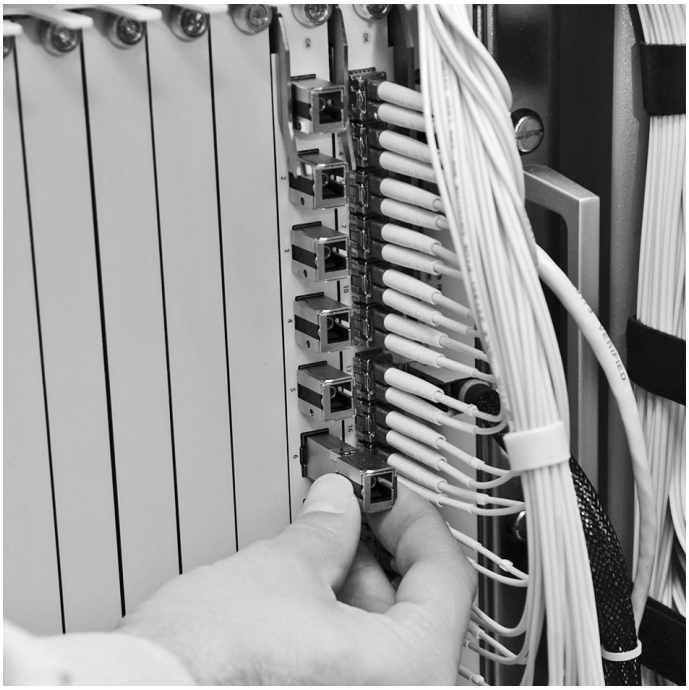


SFP/XFPs MODULE INSTALLATION

Depending on the installation scenario, SFP, SFP+ or XFP modules should be installed on the boards as depicted in Figure 46.

For more details please refer step by step procedures on section XFP/SFP INSERTION AND REMOVAL, subsection XFP/SFP MODULE INSERTION HANDLING PROCEDURES.

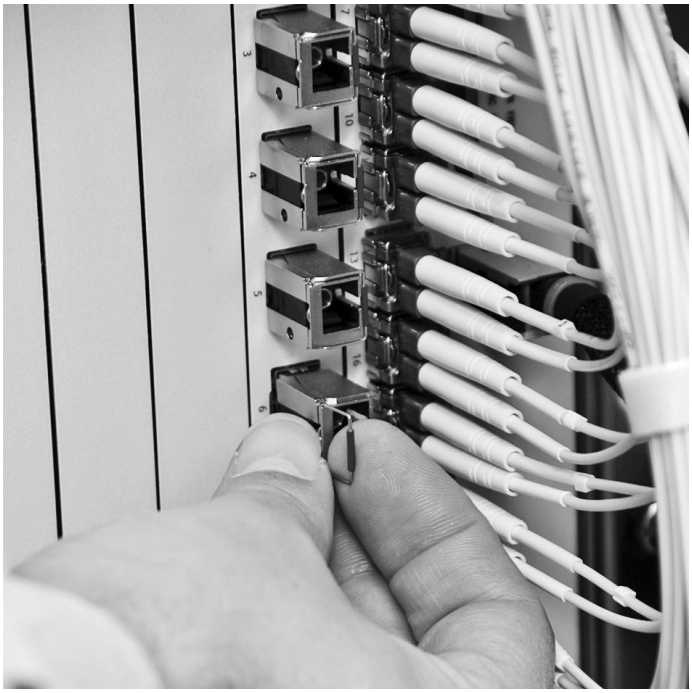
Figure 46. Inserting SFP modules



To remove an SFP module from a board a blockade lever must be operated in order to free the module for extraction, as can be seen in Figure 47.

For more details please refer step by step procedures on section XFP/SFP INSERTION AND REMOVAL, subsection XFP/SFP MODULE REMOVAL HANDLING PROCEDURES

Figure 47. Disassembly of a SFP module



OPTICAL CONNECTION AND CABLING ROUTING

In Figure 48 connection and routing of optical patch cords can be observed.

Special care should be taken to preserve the radius of curvature longer than 1,5 cm for fibers of G.657 type. For fibers of G.652 type, radius of curvature should be, at least, 3 cm.

Important!

Always keep the protective dust caps on the unplugged fiber-optic patch cord connectors and the SFP/XFP modules optical bores until you are ready to make a connection.

Always inspect and clean the optical patch cord connector end faces just before making any connections, observing the appropriate inspecting and cleaning optical connector procedures

To plug or unplug an optical patch cord connector, grasp always the optical connector body and not the patch-cord.

Save the module and the optical patch connector dust caps for future use.

Observe the minimum optical patch cord bending radius for the type of used optical fiber.

Figure 48: Connection and routing of optical patch cords

Patch cords should be aggregated with small strips of velcro or similar material in order to organize the cabling in front of the boards, Figure 49.

Figure 49: Optical patch cords aggregation

Used connection patch cords may be of different lengths or all with the same length.

In the case of different patch cord lengths, patch cords are tailored for the installation and its organization is depicted in the figure bellow, Figure 50.

Figure 50: Organization and routing of cabling with different patch cords lengths

In the case, the length of patch cords is the same for all the connections established. Excessive length shall be accommodated in the sides of the ETSI rack as depicted in the figure bellow, Figure 51.

Figure 51: Organization and routing of cabling for used patch cords with same length.

ELECTRICAL POWER SUPPLY

The electrical connection for the ME4620 OLT equipment is of redundant -48VDC and is available on top of the backplane.

In order to access the power supply chassis inputs you must dismount the chassis frontal top grid and the afterward the air deflector; the ventilation module can also be dismounted if necessary to facilitate the access to the chassis power supply input connectors.

DISCONNECT DEVICE

A Disconnect Device must be installed close to unit chassis in order to allow disconnection of all power supply before servicing the unit.

In the case of installation in an ETSI rack, rack installed Power Box, provides disconnect device functionality

Disconnect device circuit breaker should be rated 40 A max.

INSTALLATION IN EITHER A CBN OR AN IBN

The ME4620 product is intended to be installed as part of either a Common Bonding Network (CBN) or an Isolated Bonding Network (IBN).

DC RETURN CONDUCTOR TREATMENT

The ME4620-OLT is to be powered using an isolated DC return (DC-I configuration). The DC return conductor is not to be connected to the equipment frame or chassis ground.

Bonding and grounding conductors shall be made of copper (tinned or untinned). Aluminum conductors shall not be used. Conductors made of wire, bus bar, or braided strap are acceptable. Conductors can be either insulated or uninsulated. Multiple connectors shall not be secured by the same bolt assemblies. Only listed two-hole compression-type connectors shall be used in making connections to flat surfaces (such as bus bars, frames, racks, or cabinets).

MULTIPLE POWER SOURCE

Power supply to the unit is provided by two 48 VN(egative) power supply source connection, source A and source B.

Important!

All unit power supply must be disconnected at the disconnect device before servicing the unit.

POWER SUPPLY CONNECTION PROCEDURES

Important!

When performing ME4620 OLT system service actions, observe electrostatic discharge (ESD) precautions, ESD

All unit power supply must be disconnected at the disconnect device before servicing the unit.

CHASSIS FRONTAL TOP GRID REMOVAL (see Figure 52)

Step 1 Loosen the three captive screws that hold the grid in place

Step 2 Pull the grid towards you and slide it out of the chassis

Figure 52. Frontal top grid removal

After removing the grid the air deflector should be removed.

AIR DEFLECTOR REMOVAL (see Figure 53)

Step 1 Loosen the two left and right side bolts that hold the air deflector in place

Step 2 Pull the air deflector towards you and slide it out of the chassis

Figure 53. Air deflector removal

POWER SUPPLY CABLES CONNECTION

In the top of the ME4620 OLT backplane there are six double input connectors for power supply connections, (see Figure 54):

One double connector labeled CHASSIS (Figure 54-1) on the top left side, one double connector labeled GND , Figure 54-2, on the most left side, followed on the right by one double connector labeled 48VN B, Figure 54- 3, (one of the power supplies, B; N stands for "Negative"), one double connector labeled 0V RTN B, Figure 54- 4, one double connector labeled 0V RTN A, Figure 54- 5, and at most right side one double connector labeled 48VN A, Figure 54- 6, (the other power supply, A; N stands for "Negative")

Step 1 Remove the Fan Module in order to facilitate the access to the chassis power supply input connectors. To remove the Fan module please refer to FAN MODULE REMOVAL.

Step 2 Use the FVV conducting electrical cables with eyelet terminals provided in the ME4620 OLT mounting kit to connect the two redundant power supplies as indicated in the following figure, Figure 54.

Step 3 Secure the cables with the screw-nuts, Figure 55.

Step 4 Guide the electrical cables to the outside of the chassis on the right through the appropriate chassis opening on the left side, Figure 54.

Figure 54. ME4620 OLT chassis power supply input connectors

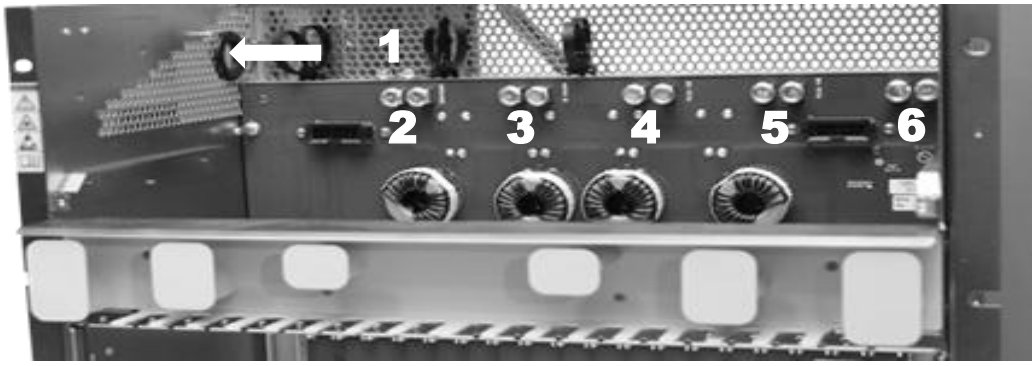
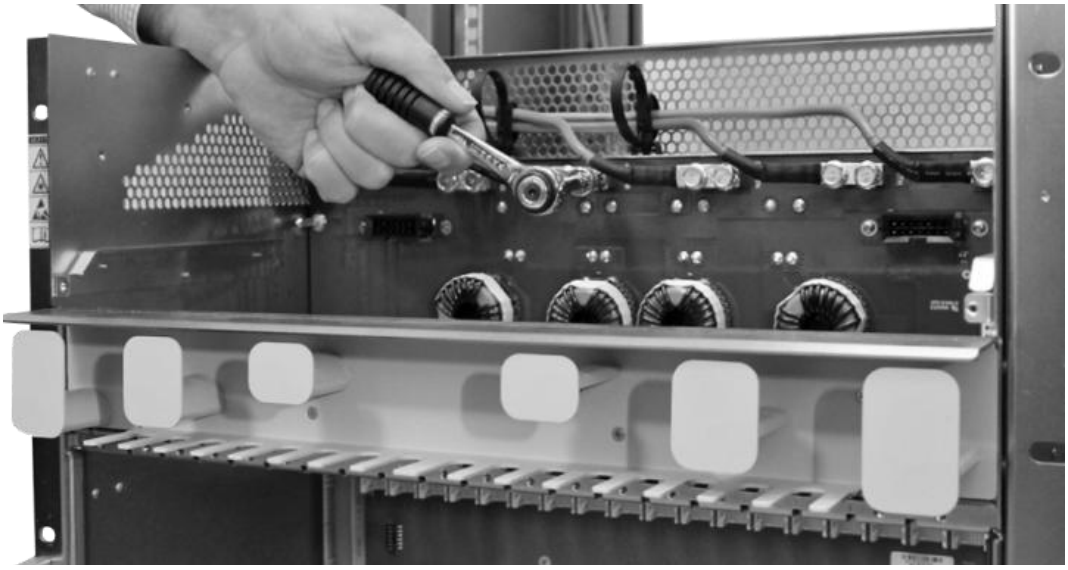


Figure 55. ME4620 OLT chassis power supply input connectors



MOUNT THE AIR DEFLECTOR AND THE CHASSIS FRONTAL TOP GRID

Step 1 Align the air deflector with the open slot and push into seat.

Step 2 Align the air deflector right and left side holes with the chassis screw holding holes.(refer to Figure 53)

Step 3 Tighten the captive screws to secure the air deflector to the chassis.

Step 4 Align the front top grid with the open slot and push into seat.

Step 5 Align the front top grid holes with the chassis screw holding holes.(refer to Figure 52)

Step 6 Tighten the captive screws to secure the front top grid to the chassis.

CARD INSERTION AND REMOVAL

The ME4620 OLT cards are equipped with card handles in top and bottom of the card front panel to facilitate the insertion and removal of the cards in the chassis.

Important!

When performing ME4620 OLT system service actions, observe electrostatic discharge (ESD) precautions, ESD

All cards are hot swappable.

Switch Fabric cards have predefined slots 1 and 20, (please see Table 21)

Line cards and uplink cards may use slots 2 to 19 (please see Table 18, Table 19 and Table 20)

The following line card configuration setup is recommended:

- Uplink line cards installed on the center chassis slots from the chassis centre outwards.
- Access line cards installed symmetrically from the most outside slots (2 and 19) towards the centre of the chassis.

CARD INSERTION HANDLING PROCEDURES

Step 1 Identify the slot where the card must be inserted

Step 2 Loosen the two captive screws in the front of the slot covering blank panel.

Step 3 Remove the blank panel.

Step 4 Unpack the card.

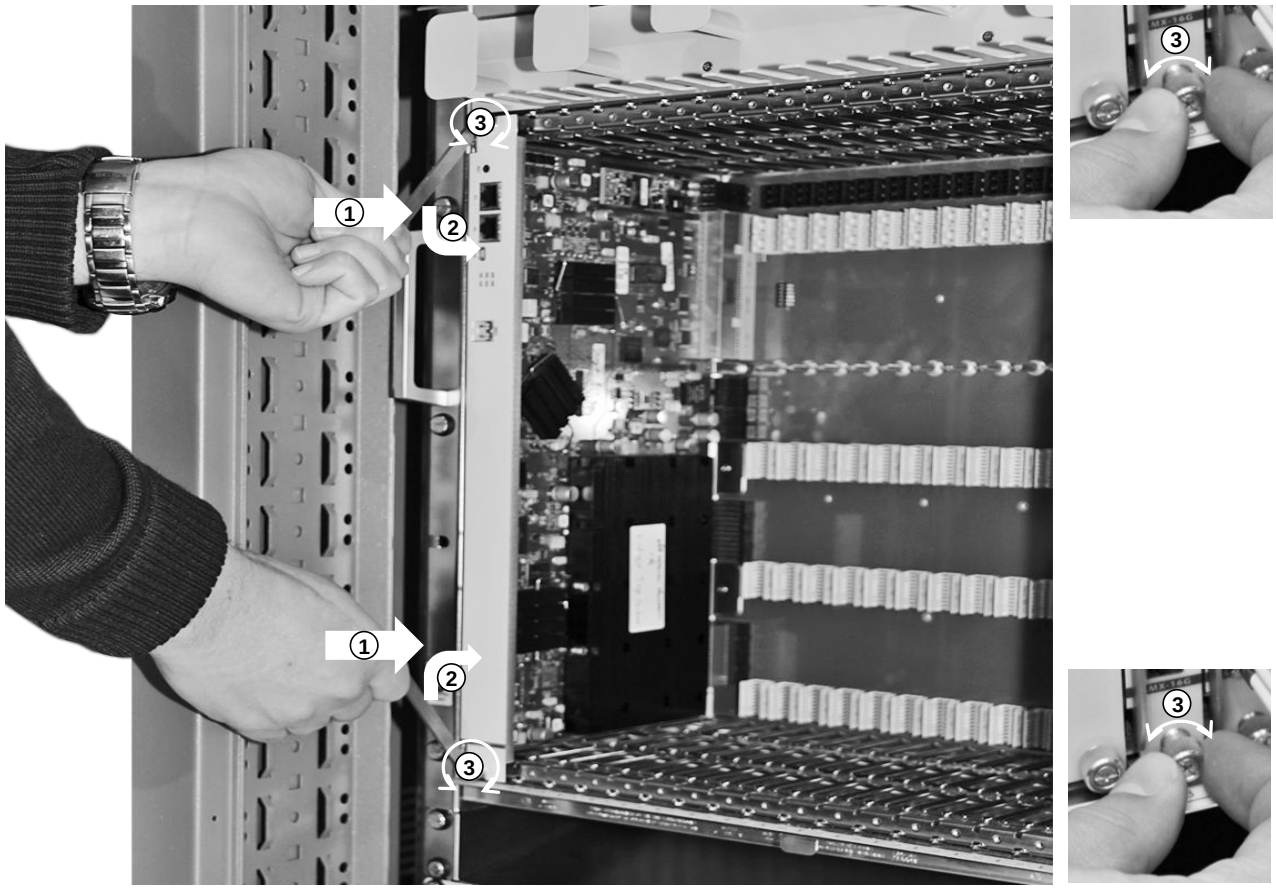
Step 5 Align the card with the open slot guides.

Step 6 Using the card handles in the top and bottom of the card front panel push the card to slide it into position, Figure 56 - 1.

Step 7 Push the card handles towards the card front panel, into place, Figure 56 - 2, and the card will be fixed at the chassis

Step 8 Tighten the captive screws to secure card to the chassis, Figure 56 - 3

Figure 56: Card insertion handling procedures



CARD REMOVAL HANDLING PROCEDURES

Step 1 Identify the card to be removed

Step 2 Disconnect all cables from the card to remove

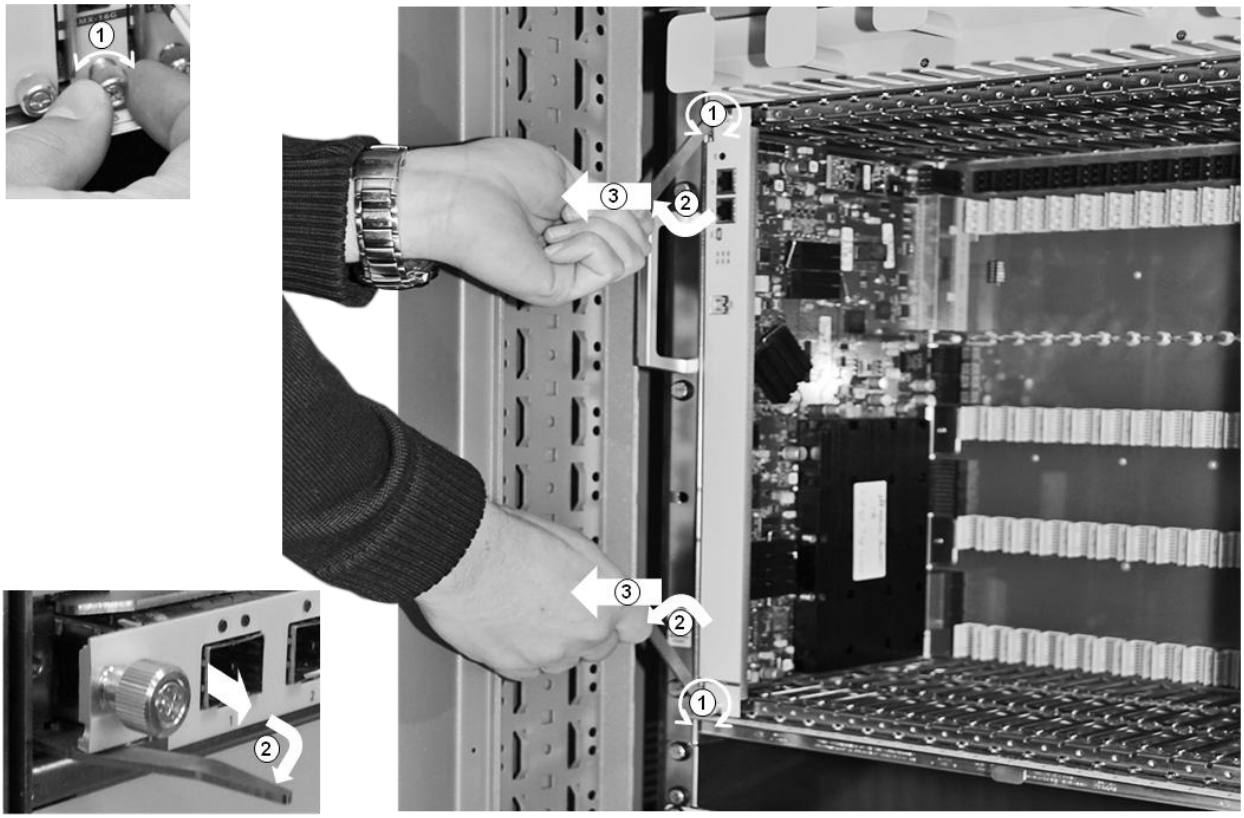
Step 3 Loosen the two captive screws in the front panel of the card Figure 57- 1

Step 4 Pull the card handles in the top and bottom card front panel and the card will be released from the chassis slightly moving out, Figure 57-2

Step 5 Using card handles pull the card to slide out of the slot, Figure 57-3.

Step 6 Place the card in a static shielding bag.

Figure 57: Card removal handling procedures



XFP/SFP INSERTION AND REMOVAL

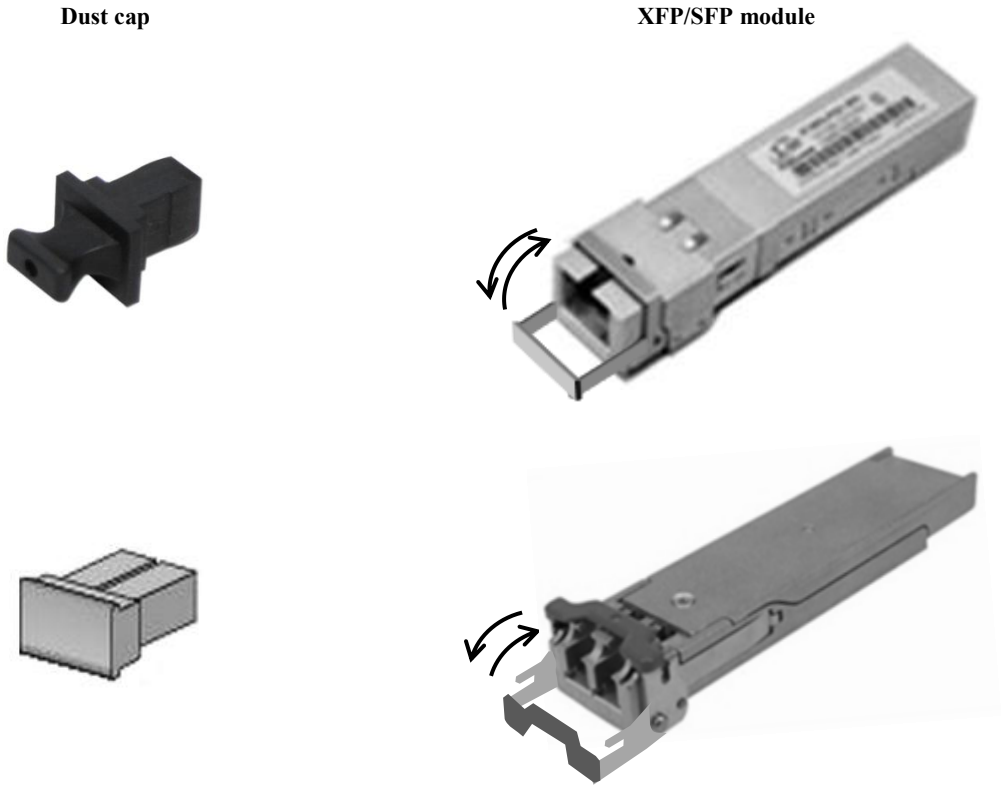
The XFP/SFP modules are equipped with a module handle in the front of the module to facilitate the insertion and removal of the module in the card module interfaces. This handle actuates a module retaining mechanism.

Important!

When performing ME4620 OLT system service actions, observe electrostatic discharge (ESD) precautions, ESD

All XFP/SFP modules are hot swappable.

Figure 58. XFP/SFP module handle



XFP/SFP MODULE INSERTION HANDLING PROCEDURES

Step 1 Identify the card and the module interface where the module must be inserted;

Step 2 Remove the XFP/SFP module interface cover (please see Figure 61)

Step 3 Remove the module dust cap, to be able to access and turn the module handle to the horizontal position , (please see Figure 58)

Step 4 Pivot the module handle so that it is parallel to the module body

Step 5 Hold the module by the module handle;

Step 6 Position the module into the card module interface and push it into place.

Step 7 Release the module handle, pivoting it to a perpendicular position to the module body.; the module will now be latched to the card module interface

Step 8 Cover the module with the module dust cap or plug in the adequate parch cord optical connector

XFP/SFP MODULE REMOVAL HANDLING PROCEDURES

Step 1 Identify the card and the module to remove;

Step 2 Remove the module dust cap, or disconnect the optical patch cord, to be able to access and turn the module handle to the horizontal position

Step 3 Hold the module by the module handle;

Step 4 Pull the module out of the card module interface;

Step 5 Release the module handle;

Step 6 Cover the module optical interface with the module dust cap;

Step 7 Cover the card module interface with the XFP/SFP module interface cover (please see Figure 61) or insert a new XFP/SFP module (please see module insertion procedures above)

Important!

Always keep the protective dust caps on the unplugged fiber-optic patch cord connectors and the SFP/XFP modules optical bores until you are ready to make a connection.

Always inspect and clean the optical patch cord connector end faces just before making any connections, observing the appropriate inspecting and cleaning optical connector's procedures

To plug or unplug an optical patch cord connector, grasp always the optical connector body and not the patch-cord.

Save the module and the optical patch connector dust caps for future use.

Observe the minimum optical patch cord bending radius for the type of used optical fiber.

MAINTENANCE

COOLING SYSTEM

The ME4620 OLT cooling system functioning is illustrated bellow, Figure 59.

The air enters the system in the front bellow being filtered by the air filter in the bottom of the chassis. The cooling module pulls the hot air up and out to the back of the chassis, through the exiting duct (“chimney”) above it at the top of the chassis.

The frontal top grid provides an air entry for the chassis mounted above.

Important!

For the correct cooling system function the air must only enter the system at the bottom of the chassis passing through the air filter. All undesired air entries must be sealed, both to ensure proper system ventilation and prevent dust entry.

It is mandatory to use the blank panels provided with the chassis to cover the empty slots, Figure 60;

It is mandatory to cover the empty XFP/SFPs card interfaces with the corresponding XFP/SFPs interface covers, Figure 61;

It is mandatory to cover the unused optical card interfaces with the corresponding optical covers.

When installing ME4620 OLT chassis on an ETSI rack, an air deflector must be installed immediately bellow the lower installed chassis on the rack, in order to conduct the air flow from the front of the rack through the bottom the first chassis air filter into the system, Figure 62.

If the case of 2 installed ME4620 OLT chassis on an ETSI rack if the setup is sequentially, with no space between the two installed chassis, only lower ME4620 OLT requires air deflector installation.

In the case the setup for 2 ME4620 OLT chassis in an ETSI rack allows for some space between the installed chassis, an air deflector is required below each chassis. Please see section ETSI RACK OCCUPANCY, Figure 35.

In order to install the air deflector, please see section AIR DEFLECTOR INSTALLATION .

Figure 59. Chassis cooling system - Air flow

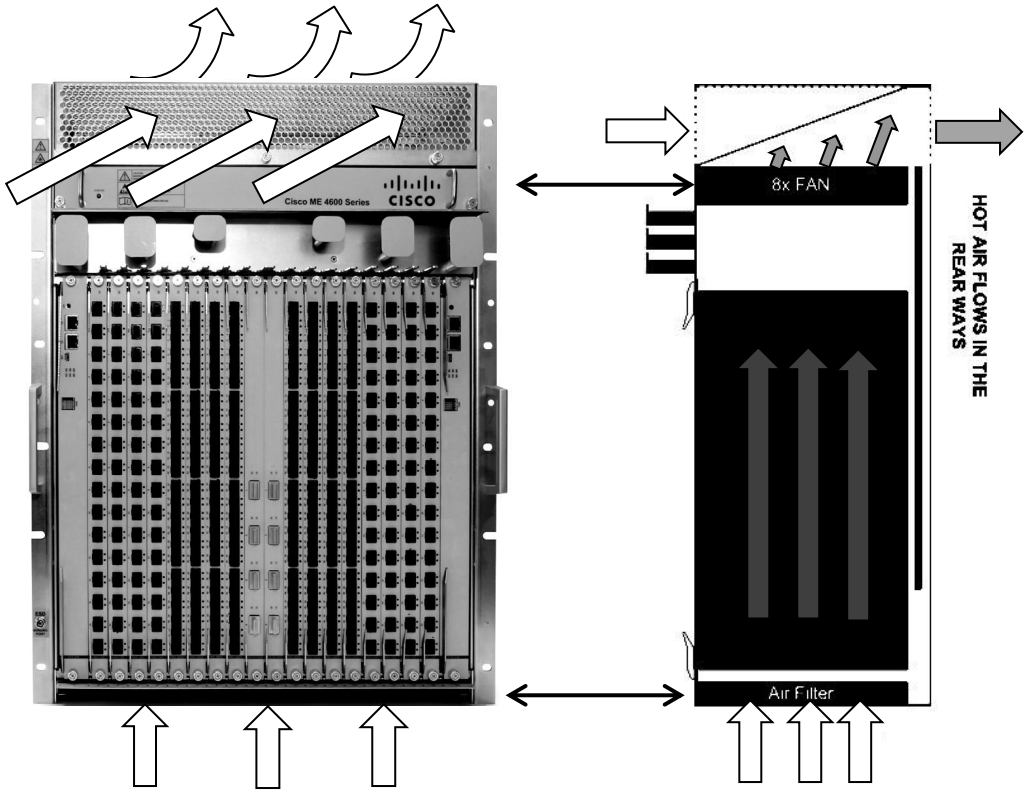


Figure 60. ME4620 OLT blank panels

Line card blank panel (9Ux4HP)

Switch fabric blank panel (9Ux6HP)

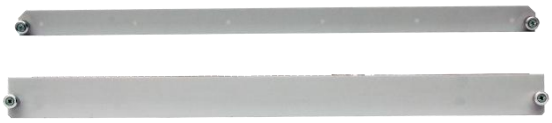


Figure 61. XFP/SFP interface covers

XFP interface cover

SFP interface cover

Figure 62: Installed air deflector in the bottom of an ETSI rack with ME4620 OLT systems

FAN MODULE

The ME4620 OLT system has a single cooling module with eight redundant FANS. In case of failure of one of the FANs, the air supplied by the adjacent units is enough for the proper functioning of the equipment.

Figure 63. ME4620 OLT cooling module with eight redundant FANS

The cooling system is subject to preventive maintenance to ensure proper operation. Depending on surrounding conditions (locations subject to higher room temperature or exposed to high concentrations of dust, such as outdoors) that period may be decreased.

The procedure for the cooling system maintenance must be complied with the verification; inspection; and cleaning of the cooling module. It is recommended that this intervention is made by replacing the cooling module by another, to minimize the time that the system is working without air circulation. The removed cooling module can be reused in another system after properly cleaned and inspected.

The FAN module can be replaced and is hot swappable. In order to replace the module, please refer to section FAN

LED INDICATOR

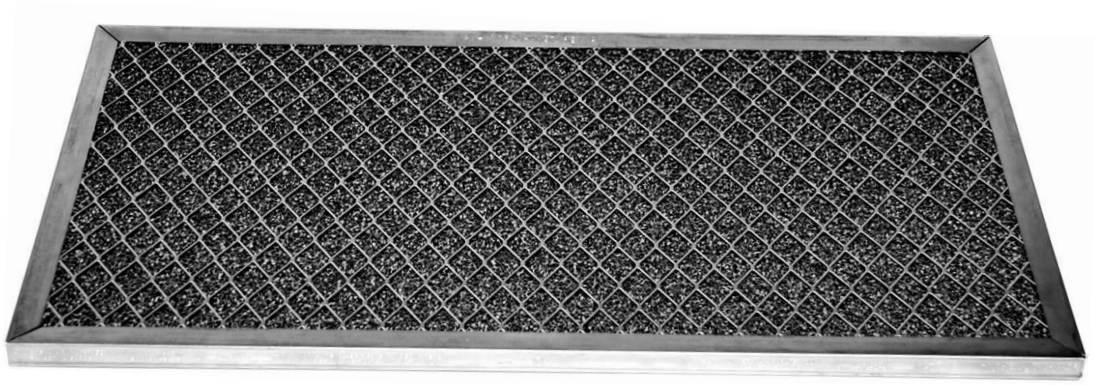
Each fan module has an LED, STATUS that must indicate the following states of the system:

- Without ME4600-XCO-640 (switch fabric) on the chassis, the fan module blinks RED.
- The led remain to blink RED until the ME4600-XCO-640 start (takes appx. 3 minutes).
- If no problem occur, the LED must blinks GREEN (normal state), unless the environmental temperature exceeds +45C.

AIR FILTER

The ME4620 OLT system has a single air filter, Figure 64 located at the bottom of the chassis.

Figure 64. ME4620 OLT air filter



Filter maintenance is dependent on the environmental air quality in which the system is installed.

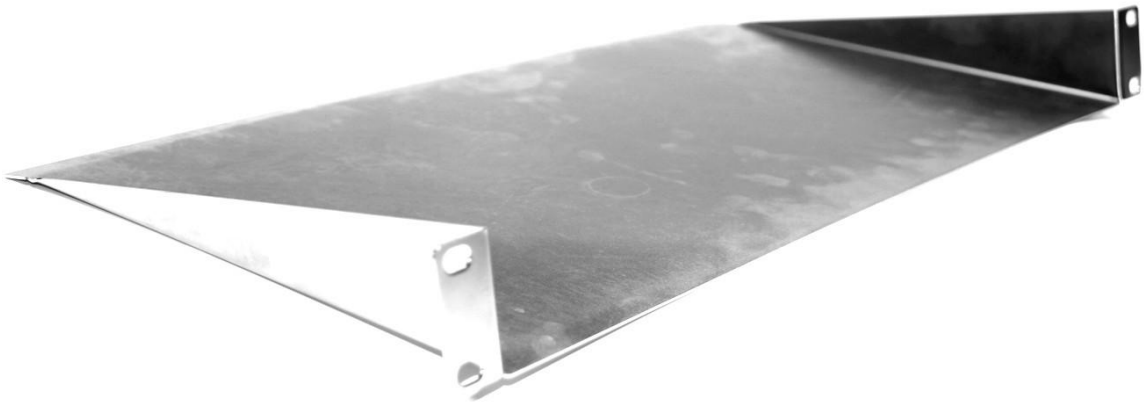
The filter should be checked, at a minimum, annually (8760 hours) and replaced if there is evidence of airflow blockage.

In environments with high particulate matter, the filter should be checked, or replaced more often.

AIR DEFLECTOR

When installing three ME4620 OLT chassis on a rack an air deflector, Figure 65, must be installed at the bottom of the rack immediately bellow the lower installed chassis on the rack. In order to install the air deflector, please refer to section AIR DEFLECTOR INSTALLATION .

Figure 65. ME4620 OLT air deflector



FAN MODULE REPLACEMENT PROCEDURES

Important!

When performing ME4620 OLT system service actions, observe electrostatic discharge (ESD) precautions ESD

Fan module is hot replaceable.

Be sure to have a replacement FAN module in order to minimize the time that the system is working without air circulation

A trained technician should execute the task in a couple of minutes.

FAN MODULE REMOVAL

Step 1 Loosen the two captive screws in the front that hold the fan module in place, Figure 66.

Step 2 Using the two left and right side handles pull the FAN module towards you and slide it out of the chassis, Figure 67

Figure 66. FAN module removal –step 1

Figure 67. FAN module removal –step 2

FAN MODULE REPLACEMENT (see Figure 66 and Figure 67)

Step 1 Unpack the new FAN module.

Step 2 Align the new FAN module with the open slot and push into seat.

Step 3 Tighten the captive screws to secure FAN module to the chassis

Step 4 Verify the Fan module is working by checking the FAN status LED is blinking green

AIR FILTER REPLACEMENT PROCEDURES

Important!

When performing ME4620 OLT system service actions, observe electrostatic discharge (ESD) precautions, ESD

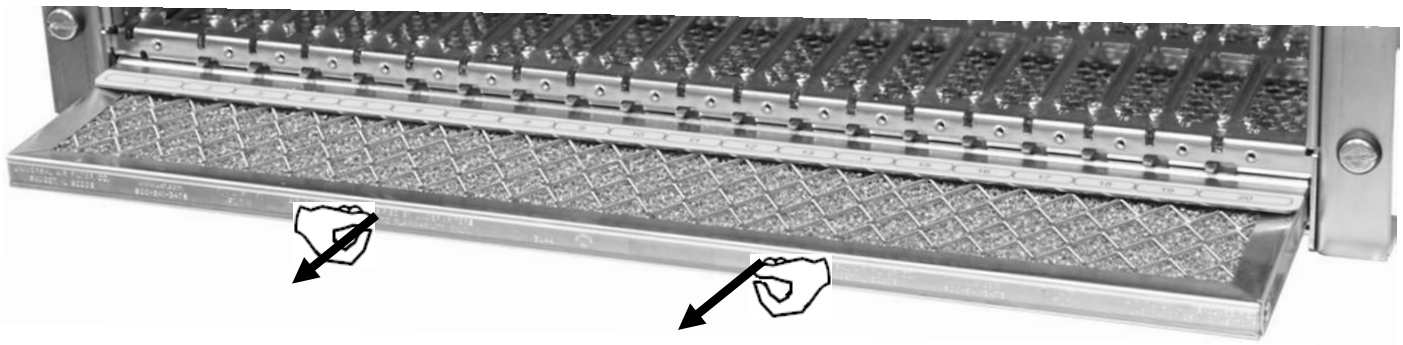
Be sure to have a spare Air Filter in order to minimize the time that the system is working without air filtering.
A trained technician should execute the task in a few seconds.

AIR FILTER REMOVAL (see Figure 68)

Step 1 Locate the Air filter at the bottom of the chassis

Step 2 Hold the Air filter with both hands, pull it towards you and slide it out of the chassis

Figure 68. Air Filter removal



AIR FILTER REPLACEMENT (see Figure 68)

Step 1 Align the spare clean Air Filter module with the open slot and push into seat.

Step 2 Take the removed Air Filter to out of the room to be cleaned. After cleaning the filter can be reused.

AIR DEFLECTOR INSTALLATION PROCEDURES

Important!

When performing ME4620 OLT system service actions, observe electrostatic discharge (ESD) precautions ESD

.

AIR DEFLECTOR INSTALLATION (see Figure 69)

Step 1 Unpack the air deflector to install

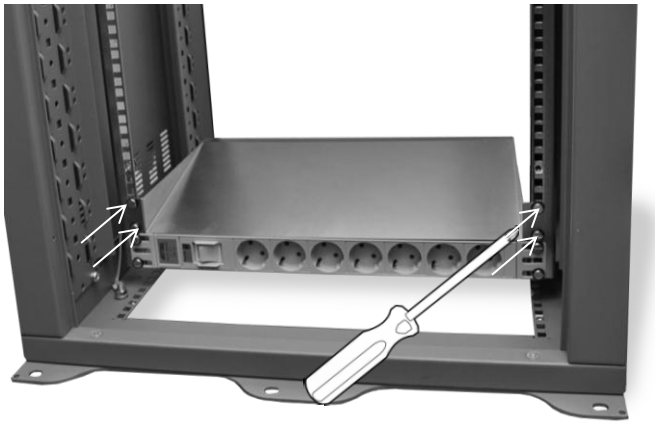
Step 2 Be sure you have four screw nut pieces to install on to the ETSI rack side holes and four matching screws.

Step 3 Install the four screw nut pieces on to the ETSI rack side holes (two at each side of the rack), immediately bellow the lower ME4620 OLT chassis filter. In the shown installation example, Figure 69, the lower ME4620 OLT will be placed at the bottom of the ETSI rack.

Step 4 Align the air deflector side holes with the ETSI rack side holes where you previously installed the screw nut pieces and hold it in place

Step 5 Tighten the captive screws to secure air deflector to the ETSI rack, Figure 69.

Figure 69. Air deflector installation place on an ETSI rack



Air deflector installation

Air deflector installation place

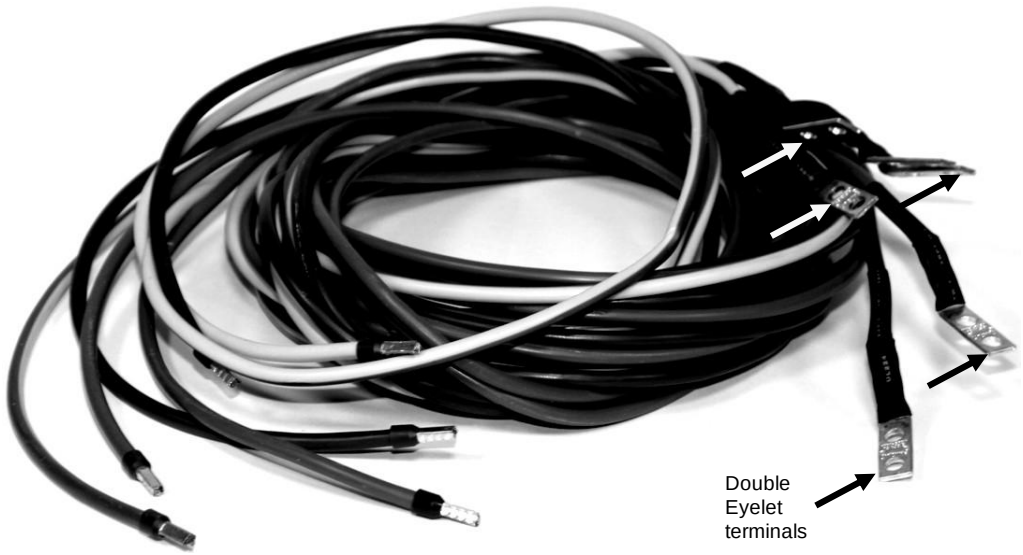
CABLES

ELECTRICAL POWER SUPPLY

The ME4620 OLT electrical power supply inputs connection use H03VV-F cables which are provided with double eyelet terminals as indicated in Figure 54. These cables consist of 10mm2 section and a length of 3m (GND – Green with Yellow stripes, -48VN-A/B DC Blue and 0V-RTRN DC Red), Figure 70.

This GPON system operates from a supply voltage with -48VDC nominal value. It can work up from -40.5VDC to -57VDC in accordance with the recommendation ETSI EN 300 132-2 V2.1.1 (2003-01). The ground terminals links comply with the provisions of the recommendation ETSI ETS 300 253: January 1995.

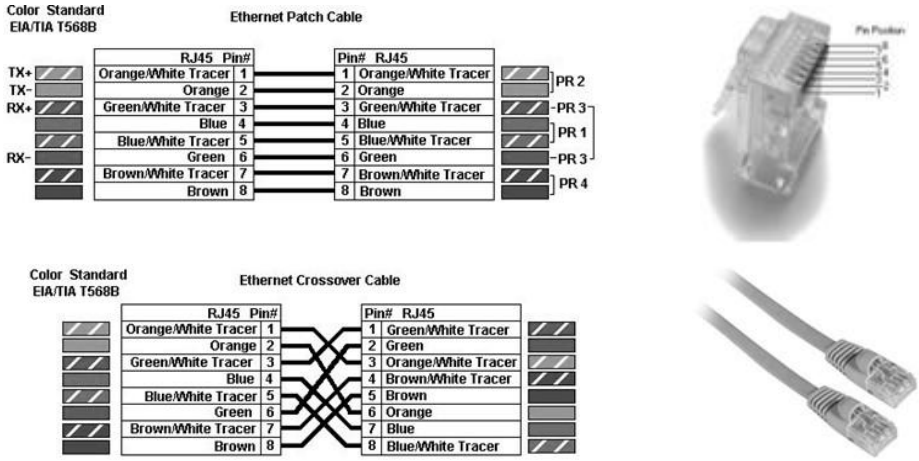
Figure 70: Electrical power supply H03VV-F cables connection kit with eyelet terminals



ETH 10/100/1000 BASE-T

For the ETH 10/100/1000 BASE-T interfaces are used RJ45 connectors as indicated in the figure below. The expected range is 100m using STP network cable category 5e or higher as described in the IEEE 802.3 recommendations.

Figure 71. Ethernet Cable



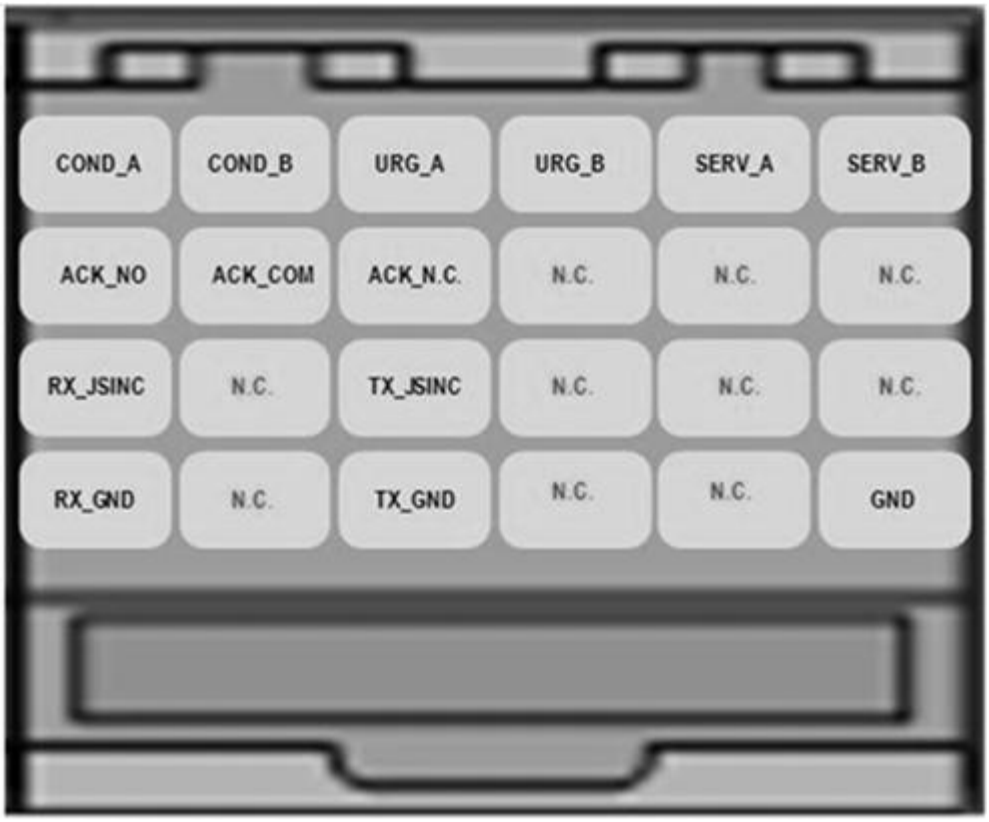
The ETH interface with an RJ45 connector is used for the management port (10/100 BASE-T) of the Switch Fabric card.

ALARMS & SYNCHRONISM

Through a Metral 2mm (FCI TM) plug, available on the front panel of the Switch Fabric card, are provided one junction for synchronism (Rx and Tx) at 120 or 75 Ohm, alarms, conditions and system ACK.

- Synchronism junction:
    - 75 Ohm/120Ohm
        - RX_JSINC/RX_GND;
        - TX_JSINC/TX_GND.
- 2x alarm port pairs:
    - URGENT pair:
        - URG_A/URG_B;
    - SERVICE pair:
        - SRV_A/SRV_B;
- 2x input conditions:
    - COND_A
    - COND_B

Figure 72. Switch Fabric card alarm/conditions and ACK Plug and PIN out



SYNCHRONISM JUNCTION CONFIGURATION

he synchronism junction available at the MISC plug at the frontal panel of the Switch Fabric card XCO-640 must be configured to 75 Ohm or 120Ohm, by setting Switch 3 on the PCB located near the MISC plug, Figure 33 according to Table 22.

Figure 73. XCO640 Switch Fabric Board - I3 switch location at the PCB

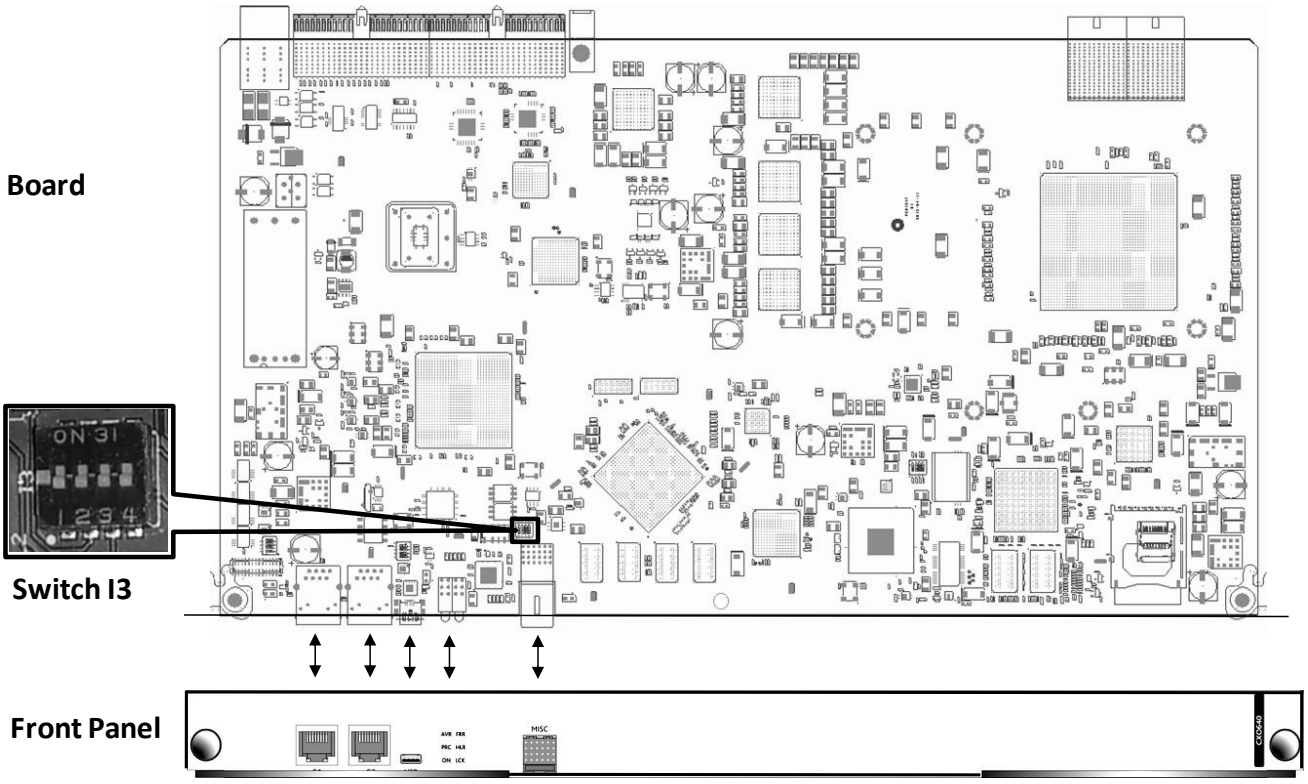


Table 22. XCO640 Dip switch I3 settings

Position	OFF (default setting)	ON	Notes
1	-	-	Without allocated function
2	TRING ≠ GND (120 ohm Mode)	TRING = GND (75 ohm Mode)	Note 1
3	RRING ≠ GND (120 ohm Mode)	RRING = GND (75 ohm Mode)	Note 1
4	-	-	Without allocated function
Note 1: Dip Switch I3, positions 2 e 3 are associated to the characteristic impedance of Frontal synchronism junction and should reflect the selected and configured functioning mode.			

OPTICAL

The optical interfaces used in ME4620 OLT system are Multi Source Agreement (MSA) type in GPON variants (with SC-PC connectors), and in 10GbE XFP variants (with LC-PC connectors). The optical cables are patch cords terminated with the optical connectors to match the optical interfaces.

Figure 74. SC-PC connector

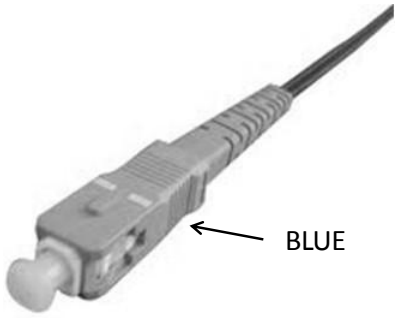
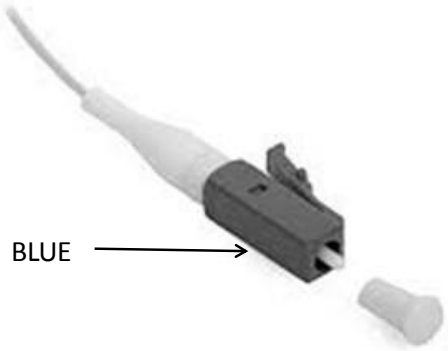


Figure 75. Connector LC-PC



OPTICAL INTERFACES

TRANSCEIVERS

The optical interfaces are supported on MSA standard modules with SFF, SFP and/or XFP type (10G Small Form-Factor Pluggable). SFP and/or XFP transceivers are pluggable thus allowing flexible.

SFP AND XFP OPTICAL TRANSCEIVERS

The XFP optical transceivers are the next generation SFP 10Gbps transceivers for single mode and multimode fiber supporting multiple network protocols such as SONET/SDH, 10 Gigabit Ethernet (10GbE), CWDM communications, up to 80km.

Figure 76.Ethernet uplink XFP optical transceivers

GPON network interfaces of the OLT AMX-16G line card are in the form of SFP (small form factor pluggable) optical transceivers with SC/PC optical connector.

Figure 77. GPON optical pluggable transceiver

ELECTRICAL INTERFACES

ELECTRICAL FAST ETHERNET

RJ-45 connectors are used for Ethernet 10/100 BASE-T interfaces. The expected range is 100 meters using STP network cable category 5e or higher as described in the IEEE 802.3 recommendations.

Figure 78. RJ45 connector

Chapter 5
OPERATION

This chapter addresses the operation of the equipment via local management.

SYSTEM MANAGEMENT

The ME4620 OLT equipment can either be managed through NMS or locally by using a web browser; via Web Ti application or using a Linux based Command Line Interface, CLI. The operation with the WebTi is described in the next sections of this manual. Option with CLI is described in section Chapter 6 CLI. Both WebTi and CLI provide the system with Local Craft Terminal (LCT) functionalities.

There are two different ways to manage the equipment:

- Connect to the management port (ETH), Figure 79
- Inband Management (using a management VLAN), Figure 80

To manage the ME4620 OLT equipments, the ME4620 OLT Ethernet management port must be connected to the Service Provider DCN, or connected directly to the PC Ethernet port.

There are two management ports, G1 and G2 at the front panel of each of the Switch Fabric cards.

G1 is the interface that should be used for the DCN connection, since it has a configurable IP address.

G2 is the interface that should be used for local access (WebTi/CLI) to the equipment since it has a fixed IP address: 192.168.200.254 / 25.

Notes

- The ME4620 OLT configuration done through WebTi will be flushed once the ME4620 OLT is added to NMS server;
- The ME4620 OLT configuration done in WebTi will not be reflected in NMS and vice versa.

Figure 79. Managing ME4620 OLT locally

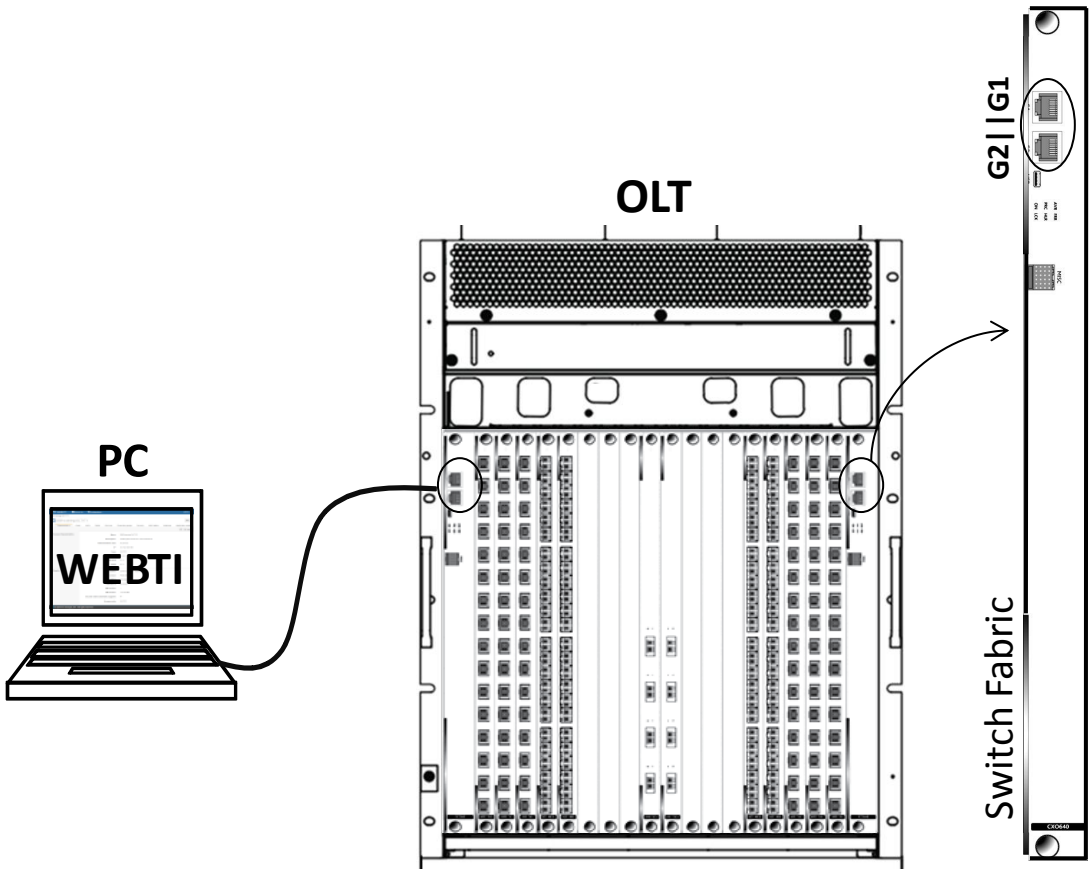
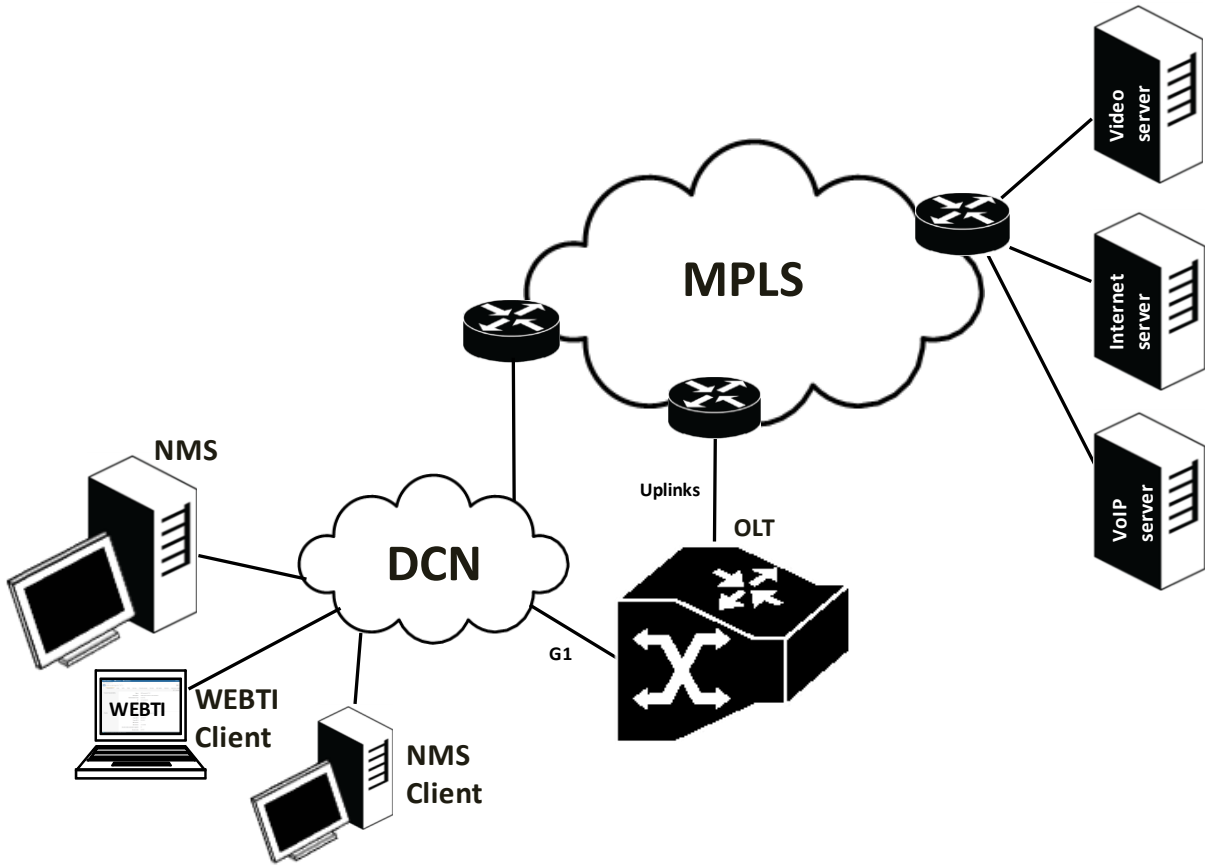


Figure 80. Managing ME4620 OLT by the Management Network



To manage the ME4620 OLT equipments by the Inband interface, there must be a management VLAN configured which interconnects MPLS network to the DCN.

EQUIPMENT IP DEFAULT

Equipment IP Default, available at G2 interface on the Switch fabric Board is **192.168.200.254 / 25**.

RESET DEFAULTS

In order to Reset Defaults the user must be logged in at the equipment with administrator permissions. Command to Reset Defaults is available at:

- **WebTi**
    - >_reset defaults is available at the top right corner of the WebTi window, button .
- **CLI**
    - /backup-manager/del-serv-conf will delete service configurations.

The command will delete all equipment configurations with the exception of the Inband (activated ports included) and outband management interfaces.

Notes

Resetting defaults DOES NOT REMOVE:

- Created users,
- Equipment configured IP address.

UPGRADING TO A NEW ME4600 OLT OS SOFTWARE RELEASE

DETERMINING THE SOFTWARE VERSION

ME4600 OLT OS software version can be verified by checking:

- at the equipment WEBTI interface Characteristics main window, SW version field;
- with CLI and the command /equipment/system/show;

UPGRADING TO A NEW SOFTWARE RELEASE

Upgrade to a new software release for the ME4600 Series OLT OS can be done either using NMS system or using a LCT and CLI.

ME4600 OLT OS INSTALLATION PROCEDURE

Note:

In order to install ME4600 OLT-OS, it is necessary to have free space available at the ME4620 OLT switch fabric flash memory storage**.**

If any problem occurs during the installation process the support team should be contacted.

Step 1. The Software Version installed at the ME4620 OLT must be determined

ME4600 OLT OS software version can be verified by checking:

- at the equipment WEBTI interface Characteristics main window, SW version field;
- with CLI and the command /equipment/system/show- Firmware version;

Step 2. The desired ME4600 Series OLT OS version to perform upgrade of the ME4600 OLT OS software must be downloaded from Cisco.com to a TFTP server.

Step 3. Login in the ME4600 OLT must be done using CLI admin account credentials.

Step 4. The new ME4600 OLT-OS setup file can be imported using a TFTP client to the Local Craft Terminal, using the following command :

/applications/olt-upgrade/import

The IP address of the TFTP server and the setup filename to import must be provided as mandatory parameters of the command. The path of the olt setup file to import from the TFTP server can also be specified at the command line.

Step 5. Updating the ME4600 OLT OS with the imported setup file can be done with the following command:

/applications/olt-upgrade/apply-file

Last imported setup file will be the one to be used by the engine to run the OS. After command execution system will reboot and restart using the new OS version.

WEBTI INTERFACE

SYSTEM REQUIREMENTS

To configure and check the state of the system with Web TI is necessary to use a Web browser.

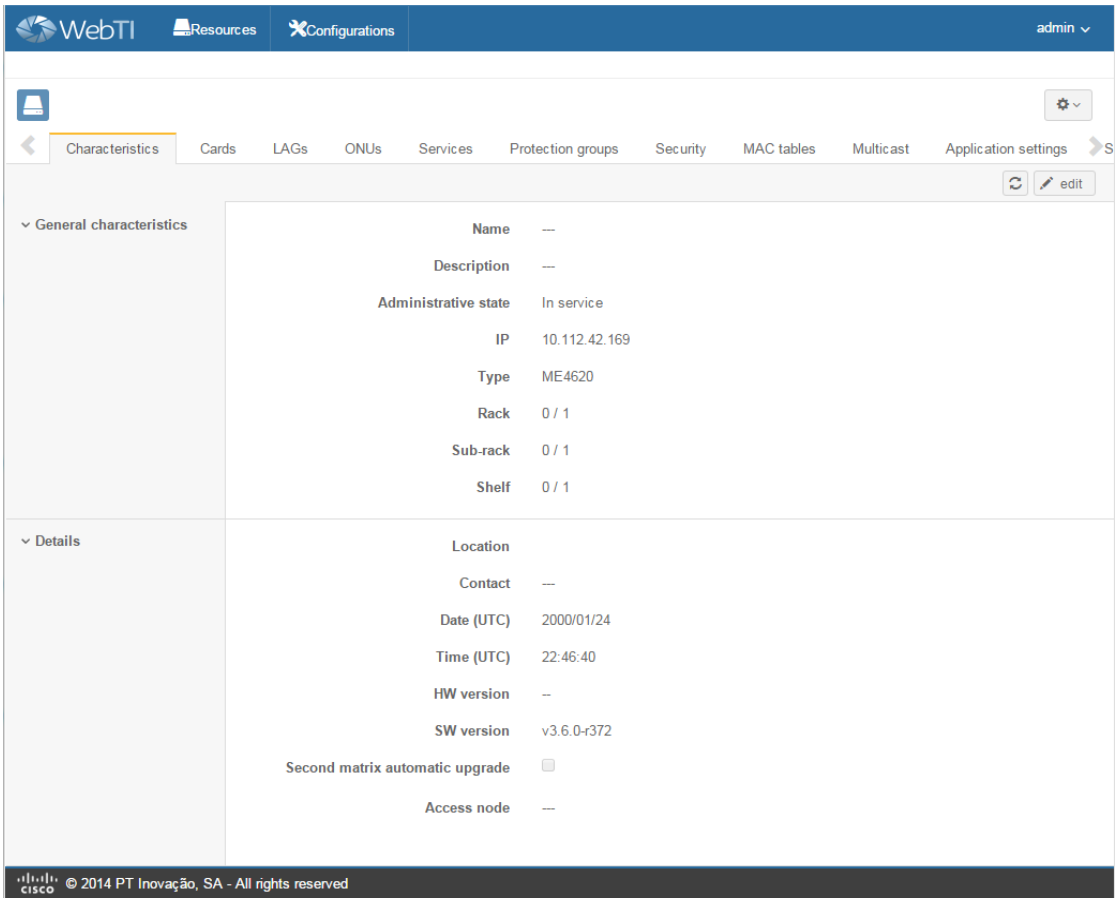
The following Web Browsers are supported:

- IE,
- Mozilla,
- Chrome.

ACCESS TO THE EQUIPMENT

At the web browser window insert the equipment IP address to access, and equipment WebTi access control dialog box will be presented, Figure 82. After inserting login credentials, the equipment WEBTI interface main window will be displayed, Figure 81.

Figure 81. Web Ti equipment main window for access



ACCESS CONTROL

To Access the menu it is necessary the user to be logged in, for that the user must type the login and password.

The system provides three default users, with different privileges for the operations that can be performed in the system. Can also to change each system users' password.

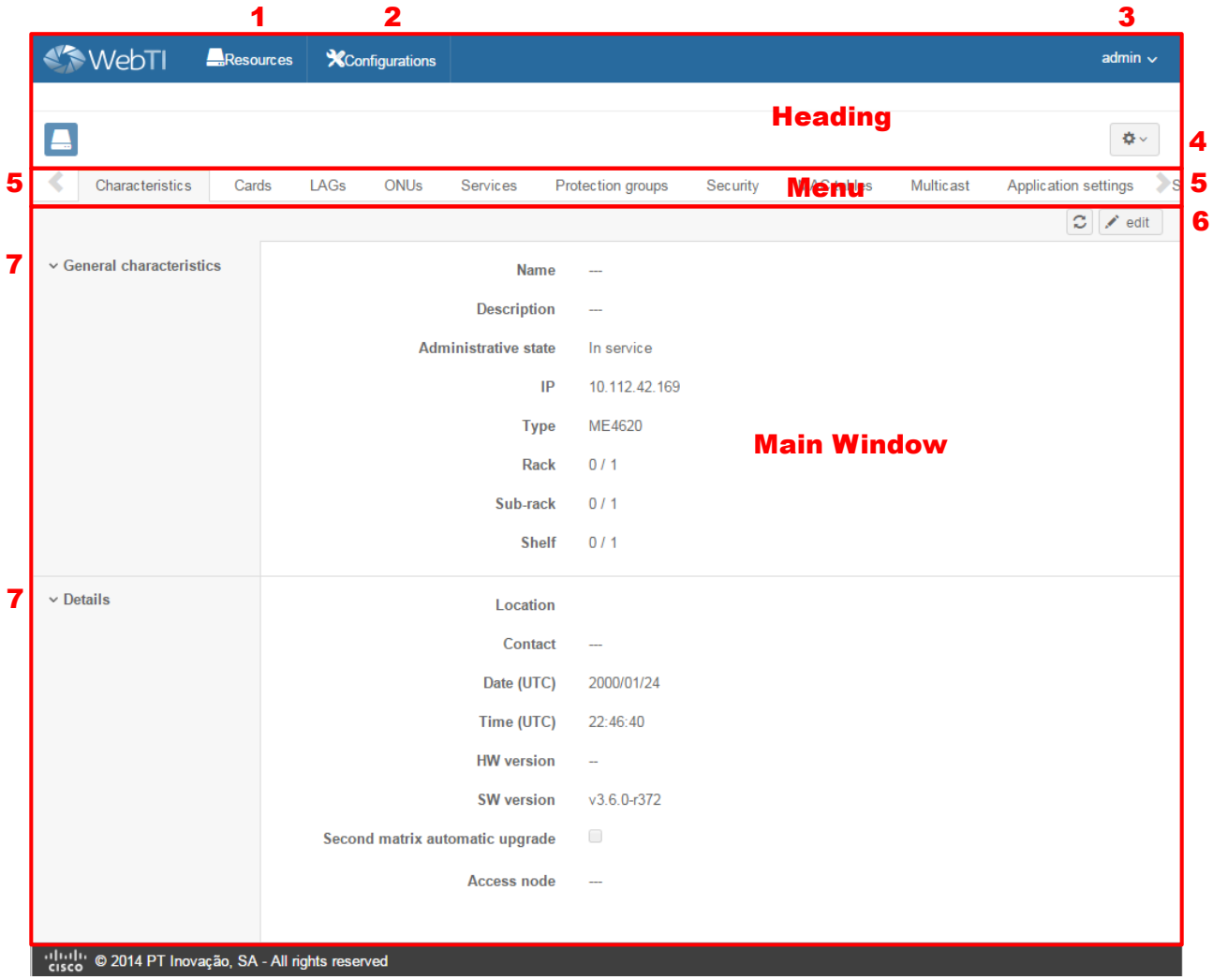
- Admin
    - Full access, configuration of the equipment and of the accesses to the system: users'' list and permissions
- Power
    - ME4620 OLT configuration permission; cannot view or manage the system users' list
- Guest
    - Viewer permissions only: status and logs information access

Figure 82. Access Control

WEBTI GENERAL DESCRIPTION

The WebTi is divided in three different areas: Heading, Menu and Main Page. These three areas are marked in Figure 83.

Figure 83. WebTi Areas



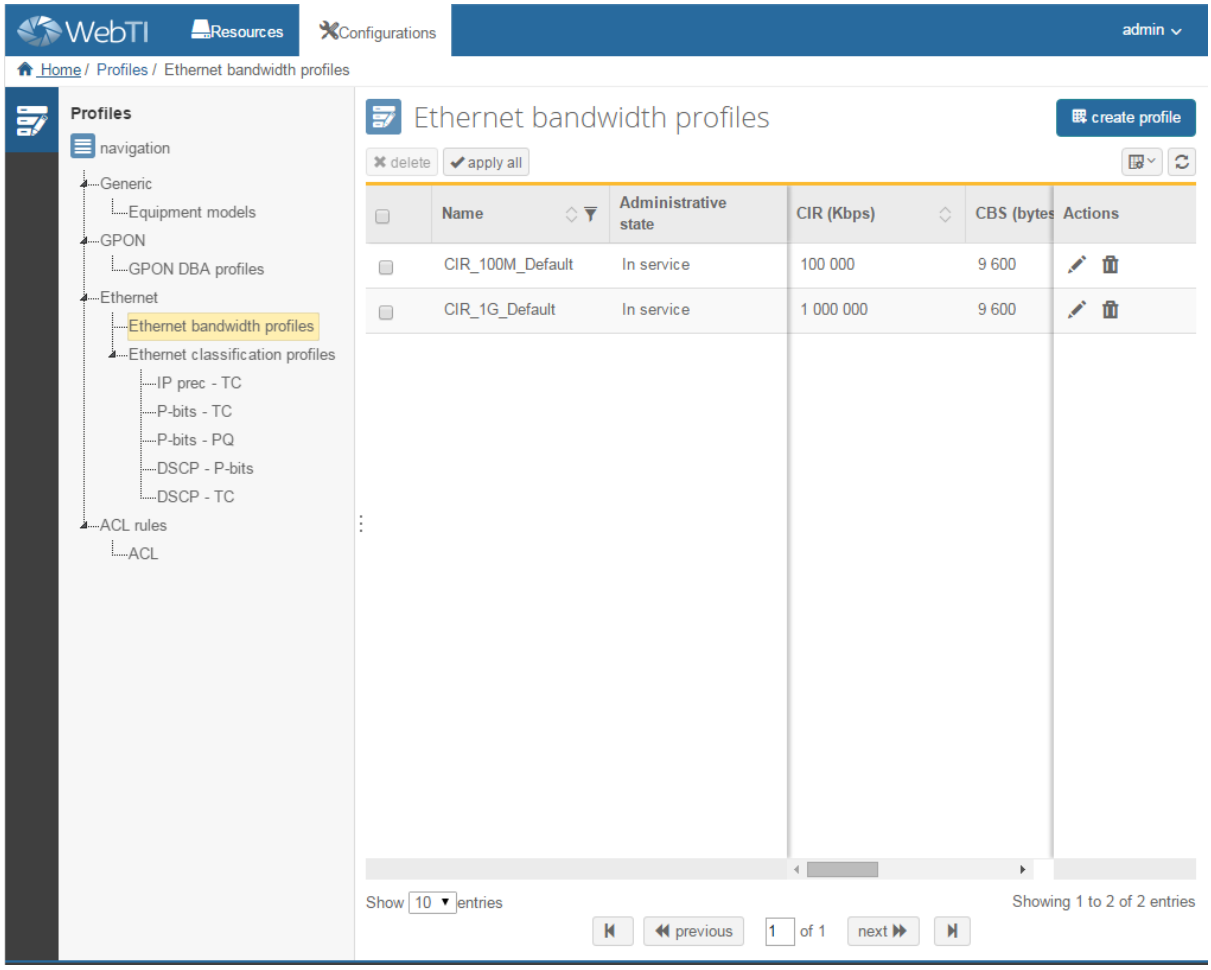
HEADING

The top bar of the heading has on the left side, two equipment main menu accessing buttons, Figure 81:

1- **Resources:** this menu accessing button when selected allows access to the equipment resources (cards, interfaces, etc) configuration menu, and will display in the Menu bar all the resources configuration sub-menus, Figure 85.

2- **Configurations:** this menu accessing button when selected allows access to the equipment defined profiles (bandwidth profiles QoS mapping profiles, etc) configuration menu, and will display on the left side of the main window, vertically, the profiles configuration menu and sub-menus. Some pre-defined profiles are already available as part of the ME4600 OLT OS, Figure 84.

Figure 84. Configurations main window



SYSTEM LOGOUT

At the right side of the top bar by clicking the admin arrow on the left, 3, system logout (Exit) is available, Figure 83.

ADMINISTRATION ACTIONS

At the right side, 4, the button , displays more available options:

- >_commands (System Reboot command is available here)
- >_reset defaults (This option will delete all system configurations except for equipment IP address, inband management configuration if set, and users)

WEBTI ICONS

Web Ti most commonly used icons are listed in the following table.

Table 23: WebTi window Navigation and Status most commonly used icons

Icon	Description
	Logout
	Administration: Actions / Settings
	Edit
	Delete
	Delete
	Add
	View details
	Managing columns
	Refresh
	Filter results
	Expand displayed information
	Collapse displayed Information
	Move left
	Move right
	Expand all

Icon	Description
	Collapse all
	Upload / Load
	Search
	Home
	Equipments
	Profiles catalog
	Configurations/Settings
	State - Completed (successfully) / Validation / Operational For this operational state there are no alarms or there are minor or warning severity alarms.
	State- Degraded For this operational state there is at least one major alarm.
	State Inoperable / Inactive For this operational state there is at least one critical alarm.

INVALID CHARACTERS

The following special characters are not supported WebTi: ’#£”§»«|.

MENU

At the menu bar, Figure 5 8, 5, all the resources items are displayed; when the items can not all be displayed in the menu bar two arrows one on the left side, the other on the right side of the menu bar, allow displaying the remaining menu items.

When selected a menu item, the available configuration sub-items will be displayed in a second menu bar immediately bellow the main menu bar, and the main window will display the selected menu item/submenu-item configuration parameters (current configuration). This information will also be displayed immediately bellow the top bar, at the left, and can be used to move back in the first submenu item window of the current menu, by clicking in menu item. As an example, when displayed LAG/ DAI, the submenu item and respective displayed main window is the configuration of DAI for LAG interfaces. By clicking on LAG, one can move to the LAG configuration first displayed sub item and correspondingly main window, which is Interfaces submenu item.

Resources menu is composed of the following items/sub-menus:

- Characteristics
    - General characteristics
    - Details
- Cards (Slot/Card)
    - XCO-640 (Switch Fabric card)
    - AMX-48GE (Active Ethernet card)
        - Ethernet Interfaces
        - Client Services
        - DAI
        - QoS interfaces
        - QoS TC to PQ
        - QoS tail drop/WRED
        - Storm control
    - UMX-4x10GE (Uplink card)
        - Ethernet Interfaces
        - CFM
            - Probes
            - Past records of unexpected CCM packets
        - DAI
        - QoS interfaces
        - QoS TC to PQ
        - QoS tail drop/WRED
        - Storm control
    - AMX-16GPON (GPON card)
        - PON Interfaces
        - ONUs
        - DAI
        - QoS interfaces
        - QoS TC to PQ
        - QoS tail drop/WRED
        - Storm control
- LAGs
    - Interfaces
    - QoS interfaces

    - QoS TC to PQ
    - QoS tail drop/WRED
    - DAI
- ONUs
- Services
    - Network services
    - Client services
    - DAI
- Protection groups
    - Type B
    - Ethernet uplink
    - Ethernet ring
- Security
    - DHCP relay
    - DHCP binding table
    - IP source guard
    - ACL services
    - ACL interfaces
    - DAI
    - DAI ACLs
- MAC tables
    - Global parameters
    - MAC table
    - MAC-GPON table
- Multicast
    - Global Parameters
    - Channels
    - Active channels
    - Probes
    - Packages
- Application settings
    - Time settings
    - Backup
    - SNMP agent
    - HTTP agent

  - RADIUS
  - TACACS+
  - AAA
- Synchronism
  - Global
  - Source
- Firmware manager
  - ONU firmware
  - ONU software management
- Alarms
- Network configuration
  - Networking
  - IP Interfaces
  - InBand Interfaces
  - IP routing

In CLI application the tree command shows all the sub nodes with origin in the current node and commands available per node/sub node, see section CLI TREE. The tree command executed in the root node, will display the complete CLI tree.

RESOURCES MAIN WINDOW

The main window displays the current configuration corresponding to the selected menu item/sub-men-item, Figure 85.

The selected menu item available configuration sub-items(if any) will be displayed in a second menu bar immediately bellow the main menu bar, in the case displayed the LAG sub-menu configuration items are displayed in this second menu bar:

- Interfaces
- QoS Interfaces,
- QoS TC to PQ
- QoS tail drop/WRED
- DAI

In the case of CARDS menu displayed main window, the sub-menu navigation bar has a graphical different appearance –system slots with the cards inserted are represented, Figure 86. It is possible to go to a specific card configuration main window by clicking on the card position at the system representation. The card configuration main window is then displayed card menu configuration items displayed at the top of the window.

To go back to the previous view of the whole system, at CARDS/current card displayed at the top left corner, CARDS link must be clicked on.

At the top right side corner of the main window, button when clicked will refresh the contents of the window.

Button allows defining the type and number of visible columns in the configuration window.

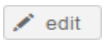
At the example given, Figure 85, for the LAG, Interfaces menu item, the following main window columns can be selected /deselected for visualization at the window:

- Name
- Administrative state
- Operational state
- Description
- Load balance
- Mode
- VLAN
    - Default VLAN ID
    - Default Priority
    - Acceptable frame types
- MAC limit parameters
    - MAC limit
    - Maximum
    - Action
    - Trap
    - MACs learned
    - Status
- Number of interfaces

A create new entity button, when available, when selected opens a dialog box allowing the configuration a new entity by defining the values for the configuration parameters;

After successful configuration of the new entity this will be visualized on the main window.

In the given example, the button available is “create new LAG”

Button 

, when available, at the top right side corner of the main window allows editing current configuration parameters.

Figure 85. Resources Main Window

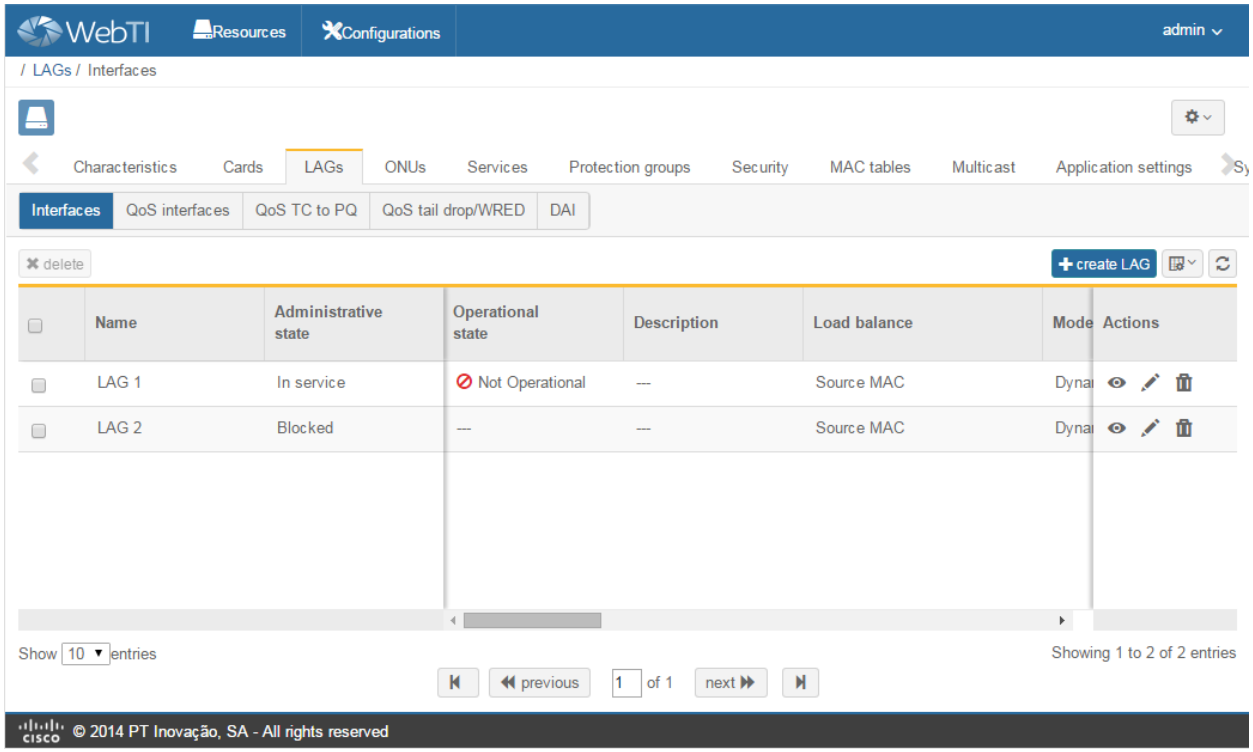
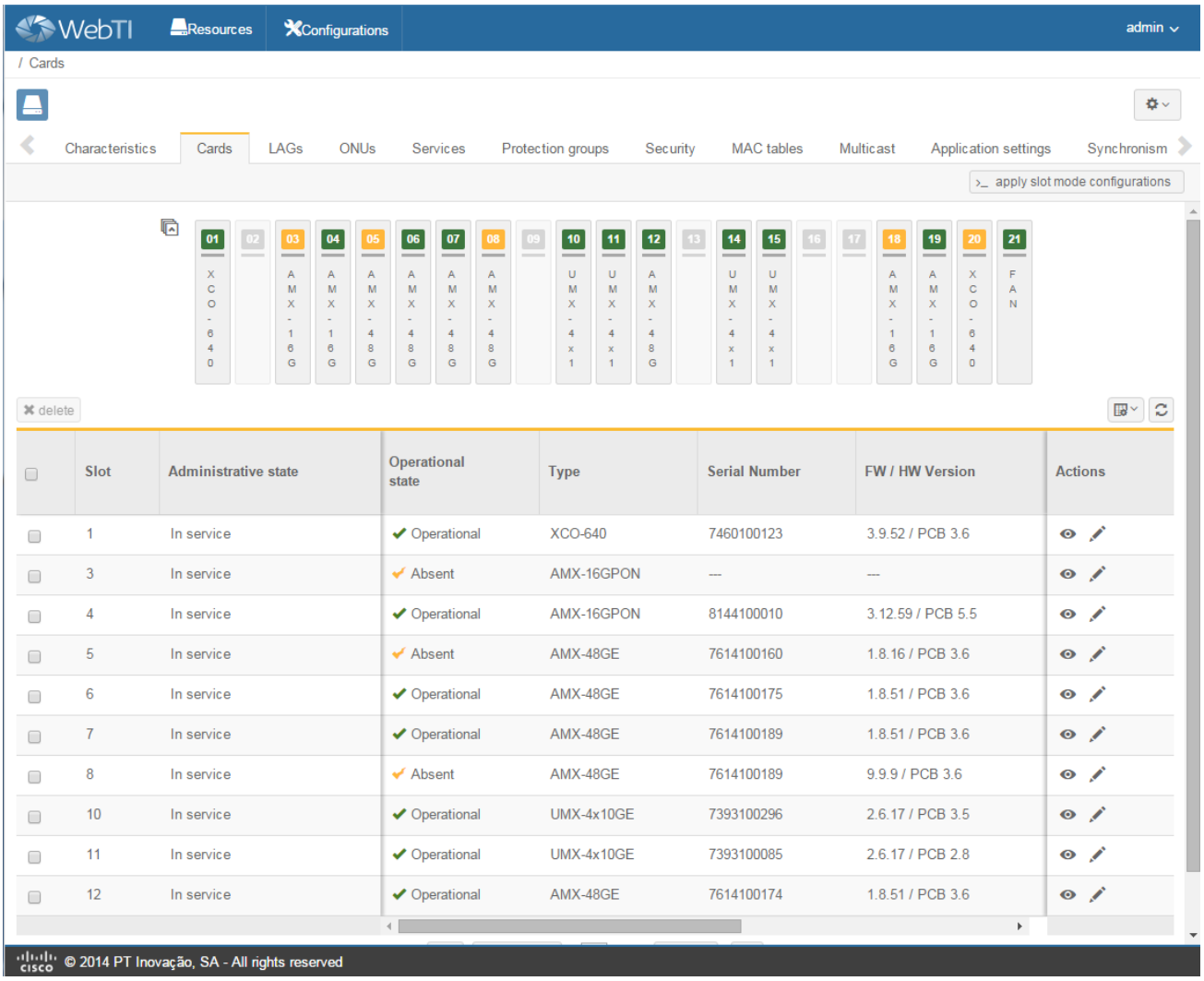


Figure 86. Cards Main Window



Chapter 6
CLI

SYSTEM MANAGEMENT

The ME4620 OLT equipment can be managed locally either using a web browser; via Web Ti application, described in Chapter 5 subsection SYSTEM MANAGEMENT of this Users' Guide, or using a Linux based Command Line Interface, CLI, described in this Chapter. Both WebTi and CLI provide the system with Local Craft Terminal (LCT) functionalities.

There are two different ways to manage the equipment, (for more details on how to connect the ME4620 OLT system for management please refer to section SYSTEM MANAGEMENT, in this User's Guide):

- Connect to the management port ETH, (G1 or G2), either locally by connecting directly to the PC Ethernet port, or remotely, via service provider DCN;
- Inband Management using a configured management VLAN which interconnects MPLS network to DCN.

ACCESS TO THE EQUIPMENT

Any ME4620 OLT equipment comes with an integrated Command Line Interface (CLI) for system management and configuration.

In order use the CLI ME4620 OLT interface, the ME4620 OLT equipment must accessed via Telnet or SSH protocols, using the console port (RS232).

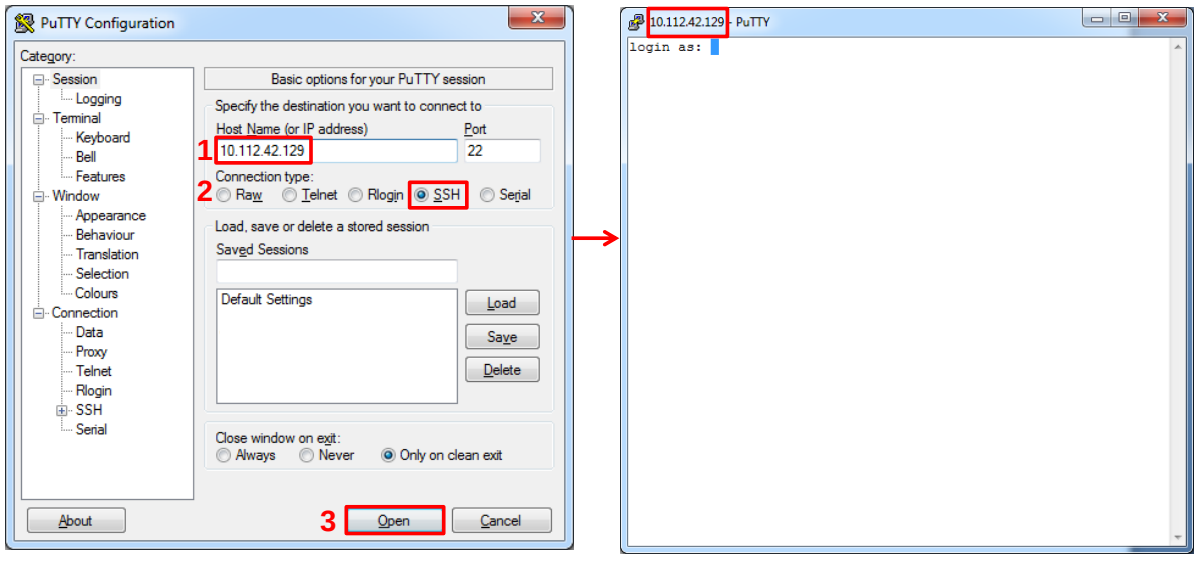
An SSH/telnet client application, as for example PuTTY, which is an open source software SSH and telnet client, developed originally for the Windows platform, can be used for accessing the ME4620 OLT system.

At the client application configuration window, Figure 87, open a session at the ME4620 OLT equipment you want to access:

- Typing the ME4620 OLT IP address to access, 1;
- Selecting connection type (Telnet or SSH), 2;
- Pressing Open, 3

A session will be opened and a login prompt at the ME4620 OLT equipment presented to the user, Figure 87.

Figure 87. Accessing to the ME4620 OLT equipment via SSH



SYSTEM ACCESS CONTROL

To Access the CLI application the user must be logged in the system.

The system provides three default users, with different privileges for the operations that can be performed in the system.

- Admin

  Full access: configuration of the equipment and of the accesses to the system: users' list and permissions.

- Standard

  ME4620 OLT configuration permission; cannot view or manage the system users' list

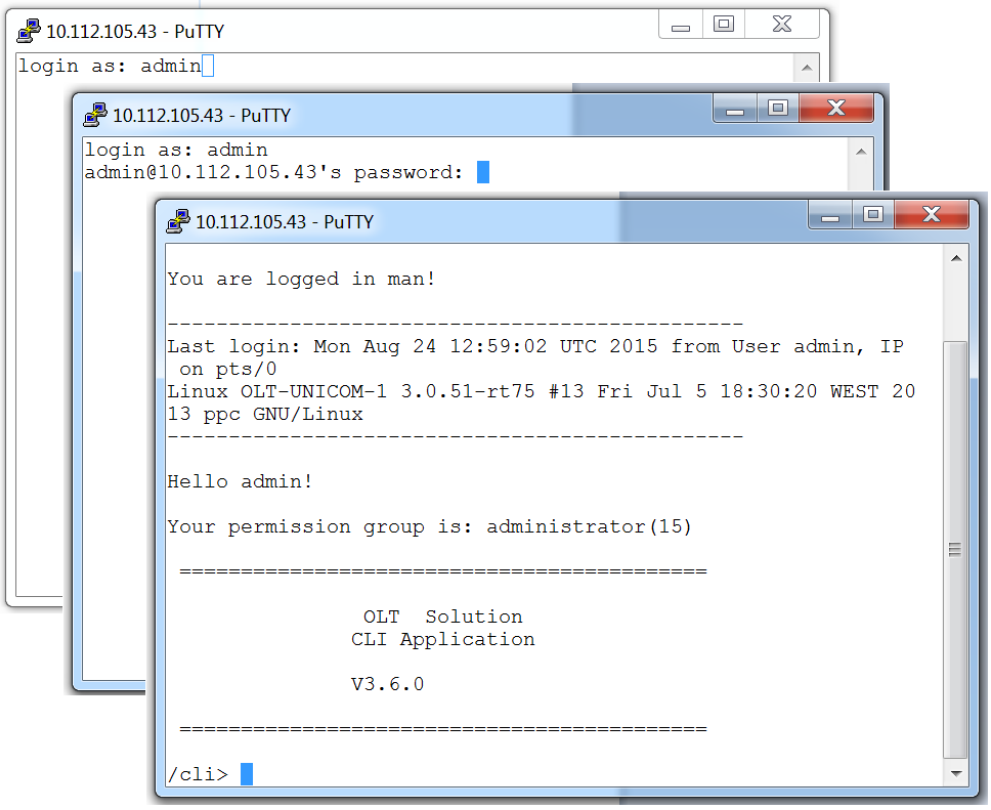
- Guestuser

  Permission to view

The default password is the same as the user login. Only the user with admin privileges can change users' passwords.

Typing the login and password at the session opened in the ME4620 OLT System the user is presented with the CLI application initial window, Figure 88.

Figure 88. ME4620 OLT access and CLI Initial window



CLI OVERVIEW

FEATURES:

- Hierarchical tree structure:
    - The CLI has a structured interface.
    - Navigation through the hierarchy structure (tree) is ensured through the “cd” and “cd ..” commands.
- Consistency:
    - commands providing the same functionality have the same name,
    - consistency of the semantics used is also ensured
- Auto Complete:
    - CLI automatically completes the commands or options using the tab key.

COMMANDS

All CLI commands must belong to a node. The main node is called the root node. A node can have

A command can be executed either directly in the node it belongs to using the command name, or from another node in which case the command full path must be used.

History of last used commands is available by pressing the arrows keys (up, down).

The **cd** command operates as in UNIX: **'cd /'** returns to the root node, **'cd ..'** navigates up, and so on.

GENERAL USAGE COMMANDS

Set of commands to improve CLI usability by providing generic navigation and help information:

- **Help,** Figure 89**:**

  Provides basic and generic command usage description

- **?** typed following a command, Figure 90:

  Provides a brief description of the command, the command syntax and of all the usable arguments.

- **dir,** Figure 91**:**

  Lists the commands and sub-nodes dependent on the current location node;

  Listed sub-nodes are followed by /, (example interfaces/).

- **Tree,** Figure 92**:**

  Graphical display of the entire tree of sub-nodes and commands considering the current position as a starting point;

- **clear:**

  Cleans the screen.

- **quit:**

  Exit the CLI interface.

Figure 89. Use of help

```
/cli> help

      CLI - Command Line Interface
            Basic Usage

Type 'dir' to show a list of available commands.
Navigate through nodes using 'cd', 'cd ..', 'cd /'...
Execute a command by typing its name.
Press 'TAB' for auto-complete features.
Press 'Ctr+u' to clear all inserted characters in the current line.

You can run commands by writing the full path.
Type '?' after a command to see specific help:
      import-export/show ?

Some commands can be run recursively, automatic calling themselves in each
child node:
      showconfig +recursive

Type 'help' to see this text again.
```

Figure 90. Use of ?

```
/cli> equipment/system/config ?

Usage CONFIG:
 CONFIG                  Configure Global system parameters.

  [OPTIONAL]
  --access-node          Access Node ID (STRING 63)
  --alarm-rep-mode       Define the alarm reporting mode. (none|snmp|xml)
  --auto-update          Automatically upgrade the second matrix. (enable|disable)
  --contact              Set the OLT contact information as appropriate (STRING 31)
  --date                 Set the system date as YYYY/MM/DD (UTC)
```

```
  --description          Set the global OLT system description (STRING 63)
  --location             Set the OLT location information as appropriate (STRING 31)
  --name                 Set the global OLT system name (STRING 64)
  --numerical-rack           system rack (numerical value)
  --numerical-shelf          system shelf (numerical value)
  --numerical-sub-rack         system subrack (numerical value)
  --rack                 system rack (STRING 31)
  --shelf                system shelf (STRING 31)
  --sub-rack               system subrack (STRING 31)
  --time                 Set the system time as hh:mm:ss (UTC)
```

Figure 91. dir command

```
/cli/ip> dir
  apply
  save
  interfaces/
  networking/
  route/
```

Figure 92. IP tree, sub-nodes and commands

```
/cli/ip> tree
+ ip[@apply, @save]
  + interfaces[]
    + inband[@config, @show, @showconfig]
    + ip[@config, @show, @showconfig]
  + networking[@config, @show, @showconfig]
  + route[@create, @remove, @show, @showconfig]
```

COMMOM USAGE COMMANDS

Set of commands usable in different node and sub-node, conserving the name and syntax for consistency, but whose arguments vary depending on the context, in number, type (optional/mandatory) and range of values.

Table 24. Common Usage Commands

Name	Purpose
show	Displays relevant information in a table format.
config	Modifies the configuration of various parameters
showconfig	Generates a list of commands that replicates the current configuration of the node where the command is executed. When executed with the option +recursive generates the same list to all descendent nodes.
create	Creates a new entity on the node where the command was executed
remove	Removes an entity on the node where the command was executed

COMMAND STRUCTURE

A command has a name and may have arguments (parameters) of type mandatory or optional.

For the execution of the command, command name must be used and if existing, mandatory arguments, with the correct command syntax.

Table 25. CLI command structure

Use		Description
Command		Command name
	Parameter(s)	Parameters can be mandatory or optional
	--param=value	Syntax for the argument and the respective value
	<value>	Value for each argument
	<value1 | value2 >	Possible values are separated with |
	<value1 : value2 >	Range of possible values: all values from value1 to value2
	<[value1] | value2 >	Default values are given with brackets ([ ])

Table 26. CLI command examples

Examples	Description
/services/show	Will run the command **show** in the node **services**. The command does not need any arguments
/equipment/boards/config --slot=3 --admin=true	Will run the command **config** in the node boards. The command takes two arguments, slot with value 3 and admin with value true. This command will activate the board on slot 3

CLI NAVIGATION

After login in an ME4620 OLT system, CLI initial window is presented with the prompt /CLI, Figure 93. After login the user is at the root node, Figure 93.

Figure 93. CLI initial window and prompt

```
Warning: your password will expire in 0 days
You are logged in man!

------------------------------------------------
Last login: Wed Sep 23 17:09:46 UTC 2015 from User root, IP
192.168.120.12 on pts/0
Linux OLT-UNICOM-1 3.0.51-rt75 #13 Fri Jul 5 18:30:20 WEST 2013
ppc GNU/Linux
------------------------------------------------

Hello admin!

Your permission group is: administrator(15)

 ==========================================

                OLT  Solution
               CLI Application

               V3.6.0

 ==========================================

/cli>
```

The **help** command will display generic navigation help information, Figure 89.

dir command list the node available commands and sub nodes, Figure 94.

Figure 94. dir command output at root node

```
/cli> dir
   cd
   clear
   dir
   help
   mem
   quit
   show
```

```
    showconfig
    tree
    acl/
    applications/
    arp-inspection/
    backup-manager/
    cfm-probe/
    class-map/
    dhcp/
    equipment/
    erp-ring/
    eth-protection/
    gpon-protection/
    interfaces/
    ip/
    ip-source-guard/
    logs/
    mac-table/
    multicast/
    profiles/
    radius/
    remote-eq/
    rf-overlay/
    routing/
    services/
    synchronism/
    tacacs+/
    users/
    utils/
 /cli>
```

Pressing Tab key will display another view of node available commands and sub nodes, Figure 95.

Figure 95. Tab key displays commands and sub-nodes in that node

```
/cli>
../                 dhcp/              logs/              services/
./                  dir                mac-table/         show
acl/                equipment/         mem                showconfig
applications/       erp-ring/          multicast/         synchronism/
arp-inspection/     eth-protection/    profiles/          tacacs+/
backup-manager/     gpon-protection/   quit               tree
cd                  help               radius/            users/
cfm-probe/          interfaces/        remote-eq/         utils/
class-map/          ip-source-guard/   rf-overlay/
clear               ip/                routing/
/cli>
```

Typing **cd** followed by **tab** will start to auto-complete with node names, Figure 95

Pressing the **Enter** key will execute the command navigates to the specified node.

The CLI prompt displays the current location node, Figure 97

Figure 96. Auto-complete with tab key

```
/cli> cd app
```

```
/cli>cd applications
```

Figure 97. CLI prompt displays current location node

```
/cli>cd applications
/cli/applications>
```

tree command executed at a given node displays the full list of sub-nodes and available commands per node/sub-node, Figure 98.

Figure 98. tree command output: current node, applications, sub-nodes list

```
/cli/applications> tree
+ applications[]
  + aaa[@config, @show, @showconfig]
  + cli[]
    + aaa[@config, @show, @showconfig]
  + firmware-upgrade[]
    + files[@check, @config, @export, @import, @remove, @show, @status]
    + onu-upgrade[@apply-file, @availableValues, @execute]
  + http[@config, @show, @showconfig]
  + https[@config, @show, @showconfig]
    + certificate[@import, @reset]
  + manager[@config, @show, @showconfig]
  + olt-upgrade[@apply-file, @import]
  + time[]
    + ntp[@config, @create, @disable, @enable, @remove, @show, @showconfig]
    + time-zone[@availableValues, @config, @show, @showconfig]
  + webti[]
    + aaa[@config, @show, @showconfig]
/cli/applications>
```

In the picture above we have an example of the command tree. This command will display all the child nodes and commands for the node where it is executed on. If it's executed on the CLI root, it shows the complete CLI tree.

In the example above, Figure 180, all the applications sub-nodes and respective commands are shown.

- Child nodes are preceded with a '+' and indented;
- Each node has a list of commands within [ ] 's;
- Nodes that do not have commands have an empty list;
- Commands are preceded with a "@" character.

HELP ON COMMANDS AND ARGUMENTS USAGE: ?

Typing **?** in front of a command name (note that there is no help for nodes. only for commands) will display usage information for that command:

- brief description of the command purpose
- Usable arguments and type: optional/mandatory.
- Syntax for arguments

Possible values for the arguments may also be displayed in some cases, for non-dynamic arguments: for example, the slot argument does not have possible values shown because it depends on the context and on which slots are available in the equipment at the current time.

Figure 99. show ?: information on the usage of the show command in the interfaces/gpon node context

```
/cli/interfaces/gpon> show  ?

Usage:
  SHOW          Shows PON information for a specific HW slot.

   [OPTIONAL]
   --slot                    Identifies a slot. (not used for LAG)
```

To know the available options for the argument slot, in this case, the "**show**" can be executed without arguments.

According to the provided, when this command is executed in this node context, information is then displayed showing which slots have information available, in a table format in this case, Figure 100. Slots with YES in the Details column have information available.

Figure 100. Output of show command without arguments

```
/cli> interfaces/gpon/show
+-------------------------------------+
|General Information                  |
+----+---------------+----------------+
|Slot|Card Name      |Details         |
+----+---------------+----------------+
|1   |XCO-640        |                |
|3   |AMX-16GPON     |YES             |
|4   |AMX-16GPON     |YES             |
|5   |AMX-48GE       |                |
|6   |AMX-48GE       |                |
|7   |AMX-48GE       |                |
|8   |AMX-48GE       |                |
|10  |UMX-4x10GE     |                |
|11  |UMX-4x10GE     |                |
|12  |AMX-48GE       |                |
|14  |UMX-4x10GR     |                |
|15  |UMX-4x10GR     |                |
|18  |AMX-16GPON     |YES             |
|19  |AMX-16GPON     |YES             |
|20  |XCO-640        |                |
|21  |FAN            |                |
+----+---------------+----------------+
```

Executing the command again but with argument – slot=3 will show the information for GPON interfaces on slot 3, line card AMX-16GPON, Figure 101.

Figure 101. Output of show command in gpon sub-node for slot 3

```
/cli> interfaces/gpon/show --slot=3
+-----------------------------------------------------------------------------------------------------------------------------------------------------+
|Slot 3 AMX-16GPON - GPON Configuration                                                                                                               |
+---+--------+--------+-----------+-------------+-------------+------+-------------+------------------+-----+---------+-----------+-------------+
|ID |Name    |Admin   |Mac Aging(s)|Max Dist.(Km)|Min Dist.(Km)|BER(s)|Downstream FEC|ONU Auto Discovery|MTU  |ESMC     |IP Src Guard|Mapping Mode|
+---+--------+--------+-----------+-------------+-------------+------+-------------+------------------+-----+---------+-----------+-------------+
|0  |PON 1   |enable  |240        |20           |0            |20    |disable      |enable            |2048 |disable  |disable    |VLAN         |
|1  |PON 2   |disable |240        |20           |0            |20    |disable      |enable            |2048 |disable  |disable    |VLAN         |
|2  |PON 3   |disable |240        |20           |0            |20    |disable      |enable            |2048 |disable  |disable    |VLAN         |
|3  |PON 4   |disable |240        |20           |0            |20    |disable      |enable            |2048 |disable  |disable    |VLAN         |
|4  |PON 5   |disable |240        |20           |0            |20    |disable      |enable            |2048 |disable  |disable    |VLAN         |
|5  |PON 6   |disable |240        |20           |0            |20    |disable      |enable            |2048 |disable  |disable    |VLAN         |
|6  |PON 7   |disable |240        |20           |0            |20    |disable      |enable            |2048 |disable  |disable    |VLAN         |
|7  |PON 8   |disable |240        |20           |0            |20    |disable      |enable            |2048 |disable  |disable    |VLAN         |
|8  |PON 9   |disable |240        |20           |0            |20    |disable      |enable            |2048 |disable  |disable    |VLAN         |
|9  |PON 10  |disable |240        |20           |0            |20    |disable      |enable            |2048 |disable  |disable    |VLAN         |
|10 |PON 11  |disable |240        |20           |0            |20    |disable      |enable            |2048 |disable  |disable    |VLAN         |
|11 |PON 12  |disable |240        |20           |0            |20    |disable      |enable            |2048 |disable  |disable    |VLAN         |
|12 |PON 13  |disable |240        |20           |0            |20    |disable      |enable            |2048 |disable  |disable    |VLAN         |
|13 |PON 14  |disable |240        |20           |0            |20    |disable      |enable            |2048 |disable  |disable    |VLAN         |
|14 |PON 15  |disable |240        |20           |0            |20    |disable      |enable            |2048 |disable  |disable    |VLAN         |
|15 |PON 16  |disable |240        |20           |0            |20    |disable      |enable            |2048 |disable  |disable    |VLAN         |
+---+--------+--------+-----------+-------------+-------------+------+-------------+------------------+-----+---------+-----------+-------------+
```

In some situations there is a specific command only to show the possible values for each argument. For example on the node **"services"**, the command "**availableValues"** displays to which slot-ports services can be added.

COMMON NODE NAMES

Common node names, as for example Status and Statistics, correspond to nodes that appear as sub-nodes in diverse contexts (nodes) and aggregate a class of commands,

There are three main classes to aggregate commands:

- configuration
- statistics information
- status information

"Config" command that within a certain node configures some aspect of the equipment is present in the node tree single, i.e., without being aggregated under any special tree node name within the tree. This is valid for the **"show"** command in most of the cases as well.

All commands that are used to see statistics are aggregated in a sub-node "**statistics"** within the node tree.

All commands that report the status of the equipment (temperature, alarms, etc) are aggregated in a sub-node **"status**".

For example in the **"gpon"** node tree, Figure 102, there is a **"config"** command within node gpon, and a **"config"** command within sub node **"cos"**. Gpon sub-node **"statistics"** groups **"errors", "ethernet" and "gpon"** statistics, as for SFPs **"rx-power"** status information, they are grouped in gpon sub-node **"status"**.

Figure 102. interfaces/gpon tree

```
/cli/interfaces/gpon> tree
+ gpon[@config, @show, @showconfig]
  + arp-inspection[@config, @show, @showconfig]
  + blocking-traffic[@config, @show, @showconfig]
  + cos[@config, @show, @showconfig]
    + policy-map[@config, @show, @showconfig]
  + cos-queue[@config, @show, @showconfig]
  + dhcp[@config, @show, @showconfig]
  + mac-limit[@config, @show, @showconfig, @status]
  + multicast[@config, @show, @showconfig]
  + statistics[]
    + errors[@show]
    + ethernet[@show]
    + gpon[@show]
  + status[@show]
    + SFPs[@show]
    + rx-power[@read, @read-all, @show]
  + storm-control[@config, @show, @showconfig]
  + traffic-shape[@config, @show, @showconfig]
/cli/interfaces/gpon>
```

Therefore according to the above picture to manage **gpon** interfaces we have the following commands:

- gpon/config
- gpon/show
- gpon/showconfig

To see **gpon** status we have:

- gpon/status/show
- gpon/status/SFPs/show
- gpon/status /rx-power/read
- gpon/status/rx-power/read-all
- gpon/status/rx-power/show

To see **gpon** packet statistics and link status we have:

- gpon/statistics/gpon/show
- gpon/statistics/ethernet/show
- gpon/statistics/errors/show

Note that in this last case, the interfaces /gpon sub-node statistics itself does not allow any command

There are also interfaces/gpon sub-nodes arp-inspection, blocking-traffic, cos, cos-queue, dhcp, mac-limit, multicast, storm-control and traffic-shape that allow to manage respectively DAI, Traffic Blocking, CoS and CoS Queues, DHCP Limit MACs, Multicast Storm Control and Traffic Shaping configurations for the GPON interfaces

We can see the logic behind this structure. It's almost like building sentences**: gpon/status/SFPs/show** is telling you that it will show the status of SFPs entities in GPON interfaces.

Furthermore, we know that we should run **gpon/status/rx-power/read-all** to "read all information" and only after execute **gpon/status/rx-power/show**. We may not know what "read-all" stands for but we know the probable way of executing these commands (also seeing the command help, may help). The point here is that the organization of the commands and nodes and their names is intended to have a meaning that the user can take advantage of.

ABOUT THE "showconfig" COMMAND

The showconfig command exists on every node that makes configurations (nodes that have create, remove, config commands).

Since the showconfig command always performs the same action, it will be referred only once to avoid replicating the same information for every node. The showconfig command help text can be seen in Figure 103.

Figure 103. CLI on line help on " showconfig" usage in this node context

```
/cli> services/showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

Table 27. "showconfig" Command syntax and description

Syntax	**/path to node/showconfig**
Description	Prints the commands needed to reach the current configuration.
Screen output	Full command(s) path and used arguments and values to reach the current configuration, e.g., Figure 104; showconfig command

	used in the context of time-zone sub node for a particular system shows the command line that should be used to configure in the system the current configuration.

The **showconfig** command has no arguments.

Figure 104. showconfig command screen output example

```
/cli/applications/time/time-zone/showconfig>
/applications/time/time-zone/config  --central-manager-time-zone="Europe/Lisbon"  --local-time-zone="Atlantic/Azores"
```

ERROR CODES

When executing a command, if no information is shown then the command runs successfully. An invalid operation will result in an error code information message displayed in the screen.

In an error case, any configurations made are cancelled and the user can be sure that nothing has been configured.

There are two types of errors:

- **Syntax errors,** Figure 105;
- **Operational errors**, Figure 106.

SYNTAX ERRORS

Syntax errors are shown to the user in red color and are easy to fix, Figure 105.

These errors occur when the command is not correctly written:

- Names are wrong;
- Arguments have values out of bounds;
- There are missing arguments.

Figure 105. Syntax error

```
/cli/interfaces/gpon/status/SFPs> show --port=16 --slot=19
        Error: Invalid value on argument 'port'!

Usage SHOW:
  SHOW                          Show details for an SFP entry from table gpon/status/show

    <MANDATORY>
    --port                        Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
    --slot                        Identifies a slot.
```

OPERATIONAL ERRORS

Operational error codes are the result of an invalid operation; the hexadecimal error code as well as the error description are displayed in the screen, Figure 106.

An invalid operation is ordered, for example, the user tries to disable a GPON interface that has remote equipments connected: These errors are more difficult to overcome since they often require the user to be aware of what he is doing and to have knowledge of the underlying protocols and mechanisms of operation.

For the complete list of the equipment operation error codes please refer to section EQUIPMENT ERROR CODES

Figure 106. Operational error

```
/cli/acl> interface/add --acl-id=1 --port=eth.1 --slot=1 --admin=enable
Could not associate the given interface to ACL 1:
        Error: ACL | Invalid ACL Interface Association: interface ID | (0x65030120) |
```

WRITING CLI SCRIPTS

CLI allows the usage of configuration scripts.

Configuration scripts are ordered sequences of commands with a certain operational objective. Configuration scripts can be written and be 'pasted' in the CLI prompt as Plain text

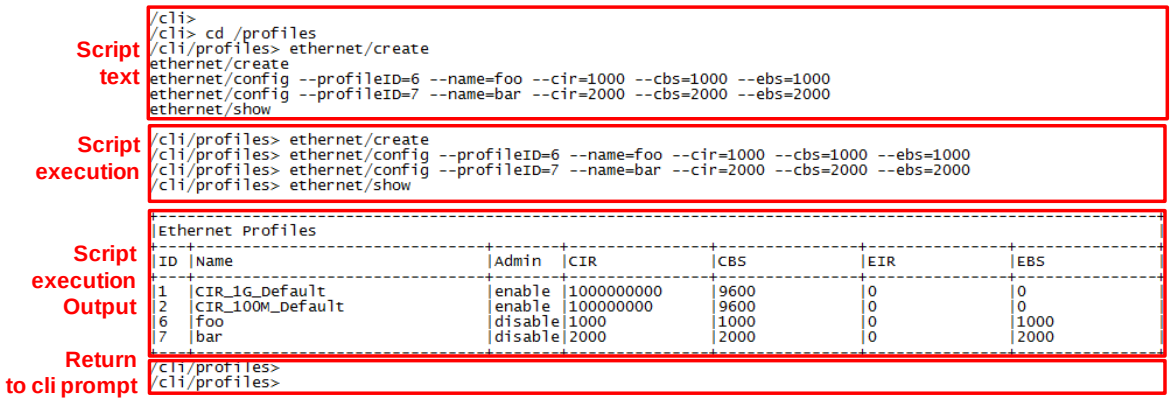
Copy and paste at the CLI prompt is possible either for a single command or for a sequence of commands (Script) thus allowing the usage of scripts. Pressing enter after copying a command or script the CLI prompt will execute the given commands one by one.

Scripts can have comments; comment lines start with the character '#'. Lines beginning with that character are ignored by CLI.

Configuration Script usage is exemplified below, Figure 107:

- In the red box is what the CLI Script the user pasted to the CLI prompt;
- In the yellow box is the Script Execution by CLI
- In the green box the output result of the script execution
- In the blue Box the user returns to the prompt.

Figure 107. CLI script usage example



PARTICULAR ARGUMENT CASES

ARGUMENTS slot and port

The arguments slot and port appear in almost every command, being in the majority of cases mandatory.

- **slot** is an integer that identifies a card slot in the ME4620 OLT.

  To see the available slots and respective information the user can execute **/equipment/boards/show.**

- **port** argument identifies an interface inside a specific slot.

  Port argument syntax is port type name. port number, for example: eth.2 or pon.5 or voip.1

  - Port type name: eth/pon/voip/lag
  - Port number: integer

ARGUMENTS ID AND admin

- **ID:**

  The argument ID is a very common argument. Whenever this argument is present, there is also a show command available whose table will have an ID column.

  This argument is used to specify a single table entry for further configuration or information.

- **admin:**

  The admin argument is used to configure the administrative state of entities: interfaces, services, or others.

  The argument can take the value 'up' or 'down'.

Remote equipment – connect

The node **remote-eq** allows configuring and managing all the remote equipments.

In order to perform an operation on remote equipment, the following input parameters are used to identify the equipment:

- **slot** – an ME4620 OLT card
- **port** – an interface in the given slot
- **ontID** – an unique ID for a remote equipment in the interface specified

Multiple configuration and management operations using the same set of values for this group may be required in the same remote equipment.

The **connect** command defines the three arguments (slot/port/ontID) and values in a single operation. A command in this node-sub-tree (remote equipment) uses this information as needed.

Configuration on a connected ONT with other different argument (Slot, Port, ontID) values than those defined in the initial connect command arguments, takes precedence over the information stored in the connect command.

CLI TREE

This section of the manual describes all the existing commands and respective arguments. It briefly explains the purpose of each command and, when appropriate, explains how to use the command.

This section numbering matches the CLI nodes tree for an easy navigation in the document.

The complete CLI structure is depicted in the text box below. The nodes are in bold and the commands within the nodes are preceded by the "@" symbol. The gray nodes and commands represent features that are not applicable to this equipment configuration. On the right side of the box there are links to the CLI description sub-section where the node or sub-node and commands detailed description can be found.

Figure 108. Complete CLI tree

```
/cli> tree
+ cli[@cd, @clear, @dir, @help, @mem, @quit, @show, @showconfig, @tree]
  + acl[@config, @create, @remove, @show, @showconfig]
    + interface[@add, @config, @remove]
    + network-service[@add, @config, @remove]
    + rule[@config, @remove]
    + rule-ipv4-ext[@config, @create, @show]
    + rule-ipv4-std[@config, @create, @show]
    + rule-ipv6-ext[@config, @create, @show]
    + rule-mac[@config, @create, @show]
  + applications[]
    + aaa[@config, @show, @showconfig]
    + cli[]
      + aaa[@config, @show, @showconfig]
    + firmware-upgrade[]
      + files[@check, @config, @export, @import, @remove, @show, @status]
      + onu-upgrade[@apply-file, @availableValues, @execute]
    + http[@config, @show, @showconfig]
    + https[@config, @show, @showconfig]
      + certificate[@import, @reset]
    + manager[@config, @show, @showconfig]
    + olt-upgrade[@apply-file, @import]
    + time[]
      + ntp[@config, @create, @disable, @enable, @remove, @show, @showconfig]
      + time-zone[@availableValues, @config, @show, @showconfig]
    + webti[]
      + aaa[@config, @show, @showconfig]
  + arp-inspection[]
    + acl[@config, @create, @remove, @show, @showconfig]
      + rule[@config, @create, @remove, @show]
    + global[@config, @show, @showconfig]
    + services[@config, @show, @show-all, @showconfig]
  + backup-manager[@create, @del-serv-conf, @export, @import, @remove, @restore, @show]
  + cfm-probe[@config, @create, @remove, @show, @showconfig, @status]
    + unx-ccm[@remove, @show]
  + class-map[]
```

```
    + ip-dscp-to-tc[@config, @create, @remove, @show, @showconfig]
    + ip-prec-to-tc[@config, @create, @remove, @show, @showconfig]
    + pbits-to-tc[@config, @create, @remove, @show, @showconfig]
  + dhcp[]
    + dhcp-services[@config, @show, @showconfig]
    + global[@config, @show, @showconfig]
    + leases[@remove, @show]
  + equipment[@status]
    + boards[@config, @reboot, @show, @showconfig]
    + slot[@apply, @config, @show, @showconfig]
    + switch-fabric[@show, @switch, @update, @upgrade-sw]
    + system[@config, @reboot, @show, @showconfig, @status]
  + erp-ring[@config, @create, @remove, @show, @showconfig]
    + status[@command, @show]
      + aps-channel[@show]
  + eth-protection[@command, @config, @create, @remove, @show, @showconfig, @status]
  + gpon-protection[@command, @config, @create, @remove, @show, @showconfig, @status]
  + interfaces[@config, @show, @showconfig]
    + analog-rf[@config, @show, @showconfig]
      + status[@show]
    + ethernet[@config, @show, @showconfig]
      + arp-inspection[@config, @show, @showconfig]
      + blocking-traffic[@config, @show, @showconfig]
      + cos[@config, @show, @showconfig]
        + policy-map[@config, @show, @showconfig]
      + cos-queue[@config, @show, @showconfig]
      + dhcp[@config, @show, @showconfig]
      + mac-limit[@config, @show, @showconfig, @status]
      + multicast[@config, @show, @showconfig]
      + services[@add, @availableValues, @config, @remove, @show, @showconfig]
        + mcast-package[@create, @remove, @show, @showconfig]
        + statistics[]
          + counters[@availableValues, @show, @show-active, @start, @stop]
          + dhcp[@show]
          + igmp[@show]
      + statistics[@show]
      + status[@show]
        + SFPs[@show]
        + active-channels[@show]
      + storm-control[@config, @show, @showconfig]
      + traffic-shape[@config, @show, @showconfig]
      + vlan[@config, @show, @showconfig]
    + gpon[@config, @show, @showconfig]
      + arp-inspection[@config, @show, @showconfig]
      + blocking-traffic[@config, @show, @showconfig]
      + cos[@config, @show, @showconfig]
        + policy-map[@config, @show, @showconfig]
      + cos-queue[@config, @show, @showconfig]
      + dhcp[@config, @show, @showconfig]
      + mac-limit[@config, @show, @showconfig, @status]
      + multicast[@config, @show, @showconfig]
      + statistics[]
```

```
        + errors[@show]
        + ethernet[@show]
        + gpon[@show]
      + status[@show]
        + SFPs[@show]
        + rx-power[@read, @read-all, @show]
      + storm-control[@config, @show, @showconfig]
      + traffic-shape[@config, @show, @showconfig]
    + lag[@config, @create, @remove, @show, @showconfig]
      + arp-inspection[@config, @show, @showconfig]
      + cos[@config, @show, @showconfig]
        + policy-map[@config, @show, @showconfig]
      + cos-queue[@config, @show, @showconfig]
      + mac-limit[@config, @show, @showconfig, @status]
      + mapping[@attach, @availableValues, @detach]
      + statistics[@show]
      + status[@show]
      + traffic-shape[@config, @show, @showconfig]
      + vlan[@config, @show, @showconfig]
  + ip[@apply, @save]
    + interfaces[]
      + inband[@config, @show, @showconfig]
      + ip[@config, @show, @showconfig]
    + networking[@config, @show, @showconfig]
    + route[@create, @remove, @show, @showconfig]
  + ip-source-guard[@config, @create, @remove, @show, @showconfig]
  + logs[]
    + alarms[@clear, @show]
  + mac-table[@config, @show, @showconfig]
    + status[]
      + gpon[@remove, @show]
      + switch[@remove, @show]
  + multicast[]
    + active-groups[@status]
    + group-list[@config, @create, @remove, @show, @showconfig]
    + igmp[]
      + global[@config, @show, @showconfig]
      + proxy[@config, @show, @showconfig]
      + querier[@config, @show, @showconfig]
    + packages[@config, @create, @remove, @show, @showconfig]
      + association[@attach, @detach, @show, @showconfig]
    + probes[@config, @create, @remove, @show, @showconfig]
      + statistics[@show]
  + profiles[]
    + dscp-to-pbits[@config, @create, @remove, @show, @showconfig]
    + ethernet[@config, @create, @remove, @show, @showconfig]
    + onu[@config, @create, @remove, @show, @showconfig]
    + pbits-to-pq[@config, @create, @remove, @show, @showconfig]
    + upstream-dba[@config, @create, @remove, @show, @showconfig]
    + voip[]
      + server[@availableValues, @config, @create, @remove, @show, @showconfig]
      + specific[@config, @create, @remove, @show, @showconfig]
```

```
  + radius[@config, @show, @showconfig]
    + server[@config, @create, @remove, @show, @showconfig]
    + server-group[@config, @show, @showconfig]
  + remote-eq[@config-onu-id, @connect, @disconnect, @showconnected]
    + discovery[@change-reg-type, @command, @config, @create, @insert, @insert-all, @reboot,
@reboot-all, @remove, @remove-all, @show, @showconfig]
    + onu[@show, @showconfig]
      + analog-rf[@config, @show, @showconfig]
      + e1[@config-e1, @config-lsp, @config-pw, @show, @showconfig, @status]
      + esmc[@config, @show, @showconfig]
      + ethernet[@config, @show, @showconfig]
      + ext-vlan-tag-op[@config, @show, @showconfig]
        + operation-table[@config, @create, @remove, @show, @showconfig]
      + ptp[@config, @show, @showconfig]
      + services[@add, @availableValues, @config, @remove, @show, @showconfig]
        + mcast-package[@create, @remove, @show, @showconfig]
        + t-cont-mapping[@config, @show, @showconfig]
      + system[@config, @show, @showconfig]
      + t-cont[@config, @create, @remove, @show, @showconfig]
      + voip[@config, @show, @showconfig]
    + statistics[]
      + fec[@show]
    + status[@show]
      + ethernet[]
        + statistics[@show]
      + firmware[@activate, @commit, @stop-transfer]
      + gem-port[]
        + statistics[@show]
      + services[@show]
        + active-channels[@show]
        + statistics[]
          + counters[@availableValues, @show, @show-active, @start, @stop]
          + dhcp[@show]
          + igmp[@show]
      + t-cont[@show]
  + rf-overlay[@config, @show, @showconfig]
    + alarm-threshold[@config, @show, @showconfig]
    + status[@show]
  + routing[]
    + arp-table[@remove, @status]
    + ipv4-interface[@config, @create, @remove, @show, @showconfig]
    + ping[@create, @remove, @show, @showconfig, @status]
    + route-table[@config, @create, @remove, @show, @showconfig, @status]
    + traceroute[@create, @remove, @show, @showconfig, @status]
  + services[@availableValues, @config, @create, @remove, @show, @showconfig]
    + statistics[]
      + arp-inspection[@show]
      + counters[@availableValues, @show, @show-active, @start, @stop]
      + dhcp[@availableValues, @show]
      + igmp[@availableValues, @show]
  + synchronism[]
    + global[@config, @show, @showconfig]
```

```
        + sources[@availableValues, @config, @show, @showconfig]
      + ptp[@config, @show, @showconfig]
        + port[@availableValues, @config, @create, @remove, @show, @showconfig]
          + ip-access-list[@config, @create, @remove, @show]
      + status[]
        + global[@command, @show]
          + sources[@command, @show]
        + ptp[@show]
    + tacacs+[@config, @show, @showconfig]
      + server[@config, @create, @remove, @show, @showconfig]
      + server-group[@config, @show, @showconfig]
    + users[@config, @create, @remove, @show, @status]
    + utils[@ping, @tcpdump, @telnet, @traceroute]
  /cli>
```

NODES, SUB-NODES AND COMMANDS

“acl” node

Figure 109. “acl” node tree

```
/cli/acl> tree
+ acl[@config, @create, @remove, @show, @showconfig]
   + interface[@add, @config, @remove]
   + network-service[@add, @config, @remove]
   + rule[@config, @remove]
   + rule-ipv4-ext[@config, @create, @show]
   + rule-ipv4-std[@config, @create, @show]
   + rule-ipv6-ext[@config, @create, @show]
   + rule-mac[@config, @create, @show]
```

“config” command

Table 28. "config" command information

Name	config
Description	Configures parameters for an existing ACL.
Full path	/acl/config
Mandatory Parameters	--ID
Screen Output	No

Figure 110. CLI on line help on “config” command usage in this node context

```
/cli/acl> config ?

Usage:
  CONFIG                  Configure parameters for an existing ACL.

   <MANDATORY>
   --ID                  Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --admin                Administrative State. Enable/disable, in this context. (enable|disable)
   --name                 Identifies the name of an ACL. (STRING 31)
   --type                 Identifies the type of an ACL. (mac|ipv4-std|ipv4-ext|ipv6-ext)
```

“create” command

Table 29. "create" command information

Name	create
Description	Creates a new ACL.
Full path	/acl/create
Mandatory Parameters	--type
Screen Output	No

Figure 111. CLI on line help on “create” command usage in this node context

```
/cli/acl> create ?

Usage:
  CREATE                  Create a new ACL.

   <MANDATORY>
   --type                 Identifies the type of an ACL. (mac|ipv4-std|ipv4-ext|ipv6-ext)

   [OPTIONAL]
   --ID                   Identifies a table entry by ID, in this context.
   --admin                  Administrative State. Enable/disable, in this context. (enable|disable)
   --name                   Identifies the name of an ACL. (STRING 31)
```

“remove” command

Table 30. "remove" command information

Name	remove
Description	Removes an existing ACL.
Full path	/acl/remove
Mandatory Parameters	--ID
Screen Output	No

Figure 112. CLI on line help on “remove” command usage in this node context

```
/cli/acl> remove ?

Usage:
  REMOVE                  Remove an existing ACL.

   <MANDATORY>
   --ID                   Identifies a table entry by ID, in this context.
```

“show” command

This command displays information on the current files configuration, in the format of a table.

Table 31. "show" command information

Name	show
Description	Shows the current ACLs configured.
Full path	/acl/show
Mandatory Parameters	No mandatory parameters
Screen Output	Table Figure 114 Table parameters are described inTable 71

Figure 113. CLI on line help on “show” command usage in this node context

```
/cli/acl> show ?

Usage:
  SHOW                    Show the current ACLs configured.

   [OPTIONAL]
   --type                 Identifies the type of an ACL. (mac|ipv4-std|ipv4-ext|ipv6-ext)
```

Figure 114.Output of ”show” command without arguments in this node context

```
/cli/acl> show
+-------------------------------------------------------------------------------------------------------------------+
|Access Control List                                                                                                |
+-------------------------------------------------------------+----------------+-----------+-----------------+
|                                                             |Association     |Interfaces |Network Services|
+------+----------+---------+-------------------------------+---------+------+----+------+-----------------+
|ACL ID|Type      |Rules    |Name                           |Direction|Admin |Slot|Port  |IDs              |
+------+----------+---------+-------------------------------+---------+------+----+------+-----------------+
|1     |IPv6 EXT  |1        |james                          |--       |--    |--  |--    |--               |
+------+----------+---------+-------------------------------+---------+------+----+------+-----------------+
```

Table 32. “show” command output table parameters

Parameter Group	Parameter	Description
	ACL ID	ACL identification (number)
	Type	ACL type (text)
	Rules	Number of existing rules for the ACL ID table entry (number)
	Name	ACL name (text)
Association	Direction	Traffic direction subject to ACL
	Admin	ACL Administrative status
Interfaces	Slot	Line card slot number of the port associated to ACL
	Port	ACL associated Port
Network Services	IDs	ACL Associated Services’

“showconfig” command

Table 33. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/acl/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 115. CLI on line help on “showconfig” command usage in this node context

```
/cli/acl> showconfig ?

Usage:
  SHOWCONFIG                Print the command list that enforces the current configuration
```

“interface” sub-node

“add” command

Table 34. "add" command information

Name	add
Description	Associates a given Interface to an ACL.
Full path	/acl/interface/add
Mandatory Parameters	--acl-id --port --slot
Screen Output	No

Figure 116. CLI on line help on “add” command usage in this node context

```
/cli/acl/interface> add ?

Usage:
  ADD                       Associate a given Interface to an ACL

   <MANDATORY>
   --acl-id                  Identifies an ACL by ID, in this context.
   --port                    Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot                    Identifies a slot.

   [OPTIONAL]
```

--admin	Administrative State. Enable/disable, in this context. (enable|disable)
--direction	Identifies an ACL Rule by ID, in this context.

"config" command

Table 35. "config" command information

Name	config
Description	Configures an existing Interface association.
Full path	/acl/interface/config
Mandatory Parameters	--acl-id --port --slot
Screen Output	No

Figure 117. CLI on line help on "config" command usage in this node context

```
/cli/acl/interface> config ?

Usage:
  CONFIG                Configure an existing Interface association.

   <MANDATORY>
   --acl-id             Identifies an ACL by ID, in this context.
   --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot               Identifies a slot.

   [OPTIONAL]
   --admin              Administrative State. Enable/disable, in this context. (enable|disable)
   --direction          Identifies an ACL Rule by ID, in this context.
```

"remove" command

Table 36. "remove" command information

Name	remove
Description	Removes an existing Interface association.
Full path	/acl/interface/remove
Mandatory Parameters	--acl-id --port --slot
Screen Output	No

Figure 118. CLI on line help on "remove" command usage in this node context

```
/cli/acl/interface> remove ?

Usage:
```

```
REMOVE                  Remove an existing Interface association

<MANDATORY>
--acl-id                Identifies an ACL by ID, in this context.
--port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
--slot                  Identifies a slot.
```

“network-service” sub-node

“add” command

Table 37. "add" command information

Name	add
Description	Associates a given Network Service to an ACL.
Full path	/acl/network-service/add
Mandatory Parameters	--acl-id --serviceID
Screen Output	No

Figure 119. CLI on line help on “add” command usage in this node context

```
/cli/acl/network-service> add ?

Usage:
  ADD                   Associate a given Network Service to an ACL

  <MANDATORY>
  --acl-id              Identifies an ACL by ID, in this context.
  --serviceID             Select an OLT service by ID.

  [OPTIONAL]
  --admin               Administrative State. Enable/disable, in this context. (enable|disable)
  --direction           Identifies an ACL Rule by ID, in this context.
```

“config” command

Table 38. "config" command information

Name	config
Description	Configures an existing Network Service association.
Full path	/acl/network-service/config
Mandatory Parameters	--acl-id --serviceID
Screen Output	No

Figure 120. CLI on line help on "config" command usage in this node context

```
/cli/acl/network-service> config ?

Usage:
  CONFIG                  Configure an existing Network Service association

   <MANDATORY>
   --acl-id               Identifies an ACL by ID, in this context.
   --serviceID              Select an OLT service by ID.

   [OPTIONAL]
   --admin                Administrative State. Enable/disable, in this context. (enable|disable)
   --direction            Identifies an ACL Rule by ID, in this context.
```

"remove" command

Table 39. "remove" command information

Name	remove
Description	Removes an existing Network Service association.
Full path	/acl/network-service/remove
Mandatory Parameters	--acl-id --serviceID
Screen Output	No

Figure 121. CLI on line help on "remove" command usage in this node context

```
/cli/acl/network-service> remove ?

Usage:
  REMOVE                  Remove an existing Network Service association

   <MANDATORY>
   --acl-id               Identifies an ACL by ID, in this context.
   --serviceID              Select an OLT service by ID.
```

"rule" sub-node

"config" command

Table 40. "config" command information

Name	config
Description	Configures any shared rule parameters
Full path	/acl/rule/config

Mandatory Parameters	--acl-id --rule-id
Screen Output	No

Figure 122. CLI on line help on "config" command usage in this node context

```
/cli/acl/rule> config ?

Usage:
  CONFIG                  Configure any shared rule parameters

   <MANDATORY>
   --acl-id               Identifies an ACL by ID, in this context.
   --rule-id              Identifies an ACL Rule by ID, in this context.

   [OPTIONAL]
   --action               permit or deny
   --admin                Administrative State. Enable/disable, in this context. (enable|disable)
   --name                 Set a name for a specific Rule (STRING 31)
```

"remove" command

Table 41. "remove" command information

Name	remove
Description	Removes an existing rule.
Full path	/acl/rule/remove
Mandatory Parameters	--acl-id --rule-id
Screen Output	No

Figure 123. CLI on line help on "remove" command usage in this node context

```
/cli/acl/rule> remove ?

Usage:
  REMOVE                  Remove an existing rule

   <MANDATORY>
   --acl-id               Identifies an ACL by ID, in this context.
   --rule-id              Identifies an ACL Rule by ID, in this context.
```

“rule-ipv4-ext” sub-node

“config” command

Table 42. "config" command information

Name	config
Description	Configures an existing IPv4 Extended Rule.
Full path	/acl/rule-ipv4-ext/config
Mandatory Parameters	--acl-id --rule-id
Screen Output	No

Figure 124. CLI on line help on “config” command usage in this node context

```
/cli/acl/rule-ipv4-ext> config ?

Usage:
  CONFIG                    Configure an existing IPv4 Extended Rule.

   <MANDATORY>
   --acl-id                 Identifies an ACL by ID, in this context.
   --rule-id                Identifies an ACL Rule by ID, in this context.

   [OPTIONAL]
   --action                 permit or deny
   --admin                   Administrative State. Enable/disable, in this context. (enable|disable)
   --dscp                   Match the DSCP value. (not-used|0..63)
   --dst-ipv4-addr             Destination IPv4 Address
   --dst-ipv4-mask              Destination IPv4 Mask
   --dst-port-end             Specify Destination L4 port number (not-used|0..65535)
   --dst-port-start           Specify Destination L4 port number (not-used|0..65535)
   --name                    Set a name for a specific Rule (STRING 31)
   --precedence               Match IP precedence value (not-used|0..7)
   --protocol                    Match the protocol number. Protocol field of the IPv4 header. (not-
used|0..255)
   --src-ipv4-addr            Source IPv4 Address
   --src-ipv4-mask             Source IPv4 Mask
   --src-port-end             Specify Source L4 port number (not-used|0..65535)
   --src-port-start           Specify Source L4 port number (not-used|0..65535)
   --tos                          Specify match condition based on IP TOS Mask value. Two-digit
hexadecimal number (0000..0XFF)
   --tos-mask                 Specify match condition based on IP TOS value. Two-digit hexadecimal
number (0000..0XFF)
```

“create” command

Table 43. "create" command information

Name	create
Description	Creates a new IPv4 Extended Rule for a given ACL ID.
Full path	/acl/rule-ipv4-ext/create
Mandatory Parameters	--acl-id --action
Screen Output	No

Figure 125. CLI on line help on “create” command usage in this node context

```
/cli/acl/rule-ipv4-ext> create ?

Usage:
  CREATE                  Create a new IPv4 Extended Rule for a given ACL ID.

   <MANDATORY>
   --acl-id               Identifies an ACL by ID, in this context.
   --action               permit or deny

   [OPTIONAL]
   --admin                Administrative State. Enable/disable, in this context. (enable|disable)
   --dscp                 Match the DSCP value. (not-used|0..63)
   --dst-ipv4-addr        Destination IPv4 Address
   --dst-ipv4-mask        Destination IPv4 Mask
   --dst-port-end         Specify Destination L4 port number (not-used|0..65535)
   --dst-port-start       Specify Destination L4 port number (not-used|0..65535)
   --name                 Set a name for a specific Rule (STRING 31)
   --precedence           Match IP precedence value (not-used|0..7)
   --protocol             Match the protocol number. Protocol field of the IPv4 header. (not-
used|0..255)
   --rule-id              Identifies an ACL Rule by ID, in this context.
   --src-ipv4-addr        Source IPv4 Address
   --src-ipv4-mask        Source IPv4 Mask
   --src-port-end         Specify Source L4 port number (not-used|0..65535)
   --src-port-start       Specify Source L4 port number (not-used|0..65535)
   --tos                  Specify match condition based on IP TOS Mask value. Two-digit
hexadecimal number (0000..0XFF)
   --tos-mask             Specify match condition based on IP TOS value. Two-digit hexadecimal
number (0000..0XFF)
```

“show” command

Table 44. "show" command information

Name	show
Description	Shows the current IPv4 Extended Rules configured.
Full path	/acl/rule-ipv4-ext/show

Mandatory Parameters	No mandatory parameters
Screen Output	Table, Figure 127. Table parameters description in Table 45.

Figure 126. CLI on line help on "show" command usage in this node context

```
/cli/acl/rule-ipv4-ext> show ?

Usage:
 SHOW                  Show the current IPv4 Extended Rules configured.

  [OPTIONAL]
  --acl-id             Identifies an ACL by ID, in this context.
```

Figure 127.Output of "show" command without arguments in this node context

```
/cli/acl> rule-ipv4-ext/show
+-------------------------------------------------------------------------------------------------------+
|IPv4 Extended Rules                                                                                    |
+-------+-------+---------+-------+--------------------+-----------------------------------------+
|ACL ID |Rule ID|Admin    |Action |Parameter           |Value                                    |
+-------+-------+---------+-------+--------------------+-----------------------------------------+
|1      |1      |disable  |permit |Name                |rule_1                                   |
|       |       |         |       |Protocol            |not-used                                 |
|       |       |         |       |DSCP                |not-used                                 |
|       |       |         |       |Src Start Port      |not-used                                 |
|       |       |         |       |Src End   Port      |not-used                                 |
|       |       |         |       |Dst Start Port      |not-used                                 |
|       |       |         |       |Dst End   Port      |not-used                                 |
|       |       |         |       |Source IP           |11.12.13.14                              |
|       |       |         |       |Source IP Mask      |15.16.17.18                              |
|       |       |         |       |Destination IP      |19.20.21.22                              |
|       |       |         |       |Destination IP Mask |23.24.25.26                              |
|       |       |         |       |TOS                 |0                                        |
|       |       |         |       |TOS Mask            |0                                        |
|       |       |         |       |Precedence          |not-used                                 |
|1      |2      |disable  |permit |Name                |rule_2                                   |
|       |       |         |       |Protocol            |not-used                                 |
|       |       |         |       |DSCP                |not-used                                 |
|       |       |         |       |Src Start Port      |not-used                                 |
|       |       |         |       |Src End   Port      |not-used                                 |
|       |       |         |       |Dst Start Port      |not-used                                 |
|       |       |         |       |Dst End   Port      |not-used                                 |
|       |       |         |       |Source IP           |0.0.0.0                                  |
|       |       |         |       |Source IP Mask      |0.0.0.0                                  |
|       |       |         |       |Destination IP      |0.0.0.0                                  |
|       |       |         |       |Destination IP Mask |0.0.0.0                                  |
|       |       |         |       |TOS                 |0                                        |
|       |       |         |       |TOS Mask            |0                                        |
|       |       |         |       |Precedence          |not-used                                 |
```

Table 45. "show" command output table parameters

Parameter	Description
ACL ID	ACL identification (number)
Rule ID	Rule identification (number)
Admin	ACL Administrative status
Action	Action implemented by the rule (permit|deny)

Parameter	Parameter identifier
Value	Parameter currently configured value

“rule-ipv4-std” sub-node

“config” command

Table 46. "config" command information

Name	config
Description	Configures an existing IPv4 Standard Rule.
Full path	/acl/rule-ipv4-std/config
Mandatory Parameters	--acl-id --rule-id
Screen Output	No

Figure 128. CLI on line help on “config” command usage in this node context

```
/cli/acl/rule-ipv4-std> config ?

Usage:
  CONFIG                  Configure an existing IPv4 Standard Rule.

   <MANDATORY>
   --acl-id               Identifies an ACL by ID, in this context.
   --rule-id              Identifies an ACL Rule by ID, in this context.

   [OPTIONAL]
   --action               permit or deny
   --admin                Administrative State. Enable/disable, in this context. (enable|disable)
   --name                 Set a name for a specific Rule (STRING 31)
   --src-ipv4-addr          Source IPv4 Address
   --src-ipv4-mask          Source Wildcard Mask
```

“create” command

Table 47. "create" command information

Name	create
Description	Creates a new IPv4 Standard Rule for a given ACL ID.
Full path	/acl/rule-ipv4-std/create
Mandatory Parameters	--acl-id --action
Screen Output	No

Figure 129. CLI on line help on “create” command usage in this node context

```
/cli/acl/rule-ipv4-std> create ?

Usage:
  CREATE                  Create a new IPv4 Standard Rule for a given ACL ID.

   <MANDATORY>
   --acl-id               Identifies an ACL by ID, in this context.
   --action               permit or deny

   [OPTIONAL]
   --admin                Administrative State. Enable/disable, in this context. (enable|disable)
   --name                 Set a name for a specific Rule (STRING 31)
   --rule-id              Identifies an ACL Rule by ID, in this context.
   --src-ipv4-addr        Source IPv4 Address
   --src-ipv4-mask        Source Wildcard Mask
```

“show” command

Table 48. "show" command information

Name	show
Description	Shows the current IPv4 Standard Rules configured.
Full path	/acl/rule-ipv4-std/show
Mandatory Parameters	No mandatory parameters
Screen Output	Table, Figure 131. Table parameters description in Table 49.

Figure 130. CLI on line help on “show” command usage in this node context

```
/cli/acl/rule-ipv4-std> show ?

Usage:
  SHOW                    Show the current IPv4 Standard Rules configured.

   [OPTIONAL]
   --acl-id               Identifies an ACL by ID, in this context.
```

Figure 131.Output of ”show” command without arguments in this node context

```
/cli/acl> rule-ipv4-std/show
+-------------------------------------------------------------------------------------+
|IPv4 Standard Rules                                                                  |
+-------+-------+----------------+---------+-------+-----------------+-----------------+
|ACL ID |Rule ID|Rule Name       |Admin    |Action |Source IP        |Source Mask      |
+-------+-------+----------------+---------+-------+-----------------+-----------------+
+-------+-------+----------------+---------+-------+-----------------+-----------------+
```

Table 49. "show" command output table parameters

Parameter	Description
ACL ID	ACL identification (number)
Rule ID	Rule identification (number)
Rule Name	Rule Name
Admin	ACL Administrative status
Action	Action implemented by the rule (permit|deny)
Source IP	Source IPv4 address
Source Mask	Source IPv4 mask

"rule-ipv6-ext" sub-node

"config" command

Table 50. "config" command information

Name	config
Description	Configures an existing IPv6 Extended Rule.
Full path	/acl/rule-ipv6-ext/config
Mandatory Parameters	--acl-id --rule-id
Screen Output	No

Figure 132. CLI on line help on "config" command usage in this node context

```
/cli/acl/rule-ipv6-ext> config ?

Usage:
  CONFIG                  Configure an existing IPv6 Extended Rule.

  <MANDATORY>
  --acl-id               Identifies an ACL by ID, in this context.
  --rule-id              Identifies an ACL Rule by ID, in this context.

  [OPTIONAL]
  --action               permit or deny
  --admin                 Administrative State. Enable/disable, in this context. (enable|disable)
  --dscp                 Match the DSCP value. (not-used|0..63)
  --dst-ipv6-addr          Destination IPv6 Address
  --dst-ipv6-prefix        Destination IPv6 prefix length (0..128)
  --dst-port-end          Specify Destination L4 port number (not-used|0..65535)
  --dst-port-start        Specify Destination L4 port number (not-used|0..65535)
  --flow-label            Match IPv6 flow label field (not-used|0..1048575)
  --name                 Set a name for a specific Rule (STRING 31)
  --protocol                  Match the protocol number. Protocol field of the IPv4 header. (not-
used|0..255)
  --src-ipv6-addr          Source IPv6 Address
  --src-ipv6-prefix        Source IPv6 prefix length (0..128)
```

```
  --src-port-end          Specify Source L4 port number (not-used|0..65535)
  --src-port-start        Specify Source L4 port number (not-used|0..65535)
```

"create" command

Table 51. "create" command information

Name	create
Description	Creates a new IPv6 Extended Rule for a given ACL ID.
Full path	/acl/rule-ipv6-ext/create
Mandatory Parameters	--acl-id --action
Screen Output	No

Figure 133. CLI on line help on "create" command usage in this node context

```
/cli/acl/rule-ipv6-ext> create ?

Usage:
  CREATE                Create a new IPv6 Extended Rule for a given ACL ID.

   <MANDATORY>
   --acl-id             Identifies an ACL by ID, in this context.
   --action             permit or deny

   [OPTIONAL]
   --admin              Administrative State. Enable/disable, in this context. (enable|disable)
   --dscp               Match the DSCP value. (not-used|0..63)
   --dst-ipv6-addr      Destination IPv6 Address
   --dst-ipv6-prefix    Destination IPv6 prefix length (0..128)
   --dst-port-end       Specify Destination L4 port number (not-used|0..65535)
   --dst-port-start     Specify Destination L4 port number (not-used|0..65535)
   --flow-label         Match IPv6 flow label field (not-used|0..1048575)
   --name               Set a name for a specific Rule (STRING 31)
   --protocol           Match the protocol number. Protocol field of the IPv4 header. (not-
used|0..255)
   --rule-id            Identifies an ACL Rule by ID, in this context.
   --src-ipv6-addr      Source IPv6 Address
   --src-ipv6-prefix    Source IPv6 prefix length (0..128)
   --src-port-end       Specify Source L4 port number (not-used|0..65535)
   --src-port-start     Specify Source L4 port number (not-used|0..65535)
```

"show" command

Table 52. "show" command information

Name	show
Description	Show the current IPv6 Extended Rules configured.
Full path	/acl/rule-ipv6-ext/show

Mandatory Parameters	No mandatory parameters
Screen Output	Table, Figure 135. Table parameters description in Table 53.

Figure 134. CLI on line help on "show" command usage in this node context

```
/cli/acl/rule-ipv6-ext> show ?

Usage:
  SHOW                  Show the current IPv6 Extended Rules configured.

   [OPTIONAL]
   --acl-id             Identifies an ACL by ID, in this context.
```

Figure 135.Output of "show" command without arguments in this node context

```
/cli/acl> rule-ipv6-ext/show
+-------------------------------------------------------------------------------
|IPv6 Extended Rules
+-------+-------+---------+-------+---------------------+-----------------
|ACL ID |Rule ID|Admin    |Action |Parameter            |Value
+-------+-------+---------+-------+---------------------+-----------------
+-------+-------+---------+-------+---------------------+-----------------
```

Table 53. "show" command output table parameters

Parameter	Description
ACL ID	ACL identification (number)
Rule ID	Rule identification (number)
Admin	ACL Administrative status
Action	Action implemented by the rule (permit|deny)
Parameter	Parameter identifier
Value	Parameter currently configured value

"rule-mac" sub-node

"config" command

Table 54. "config" command information

Name	config
Description	Configures an existing MAC Rule.
Full path	/acl/rule-mac/config
Mandatory Parameters	--acl-id --rule-id
Screen Output	No

Figure 136. CLI on line help on "config" command usage in this node context

```
/cli/acl/rule-mac> config ?

Usage:
  CONFIG                  Configure an existing MAC Rule.

   <MANDATORY>
   --acl-id               Identifies an ACL by ID, in this context.
   --rule-id              Identifies an ACL Rule by ID, in this context.

   [OPTIONAL]
   --action               permit or deny
   --admin                Administrative State. Enable/disable, in this context. (enable|disable)
   --cos                  Match condition based on the CoS value (not-used|0..7)
   --dst-mac-addr         Destination MAC address in the format [AA:BB:CC:DD:EE:FF]
   --dst-mac-mask         Destination MAC mask in the format [AA:BB:CC:DD:EE:FF]
   --ethernet-type        Four-digit hexadecimal number to specify an 'Ethertype' value (not-
used|0X600..0XFFFF)
   --name                 Set a name for a specific Rule (STRING 31)
   --src-mac-addr         Source MAC address in the format [AA:BB:CC:DD:EE:FF]
   --src-mac-mask         Source MAC mask in the format [AA:BB:CC:DD:EE:FF]
```

"create" command

Table 55. "create" command information

Name	create
Description	Creates a new MAC Rule for a given ACL ID.
Full path	/acl/rule-mac/create
Mandatory Parameters	--acl-id --action
Screen Output	No

Figure 137. CLI on line help on "create" command usage in this node context

```
/cli/acl/rule-mac> create ?

Usage:
  CREATE                  Create a new MAC Rule for a given ACL ID.

   <MANDATORY>
   --acl-id               Identifies an ACL by ID, in this context.
   --action               permit or deny

   [OPTIONAL]
   --admin                Administrative State. Enable/disable, in this context. (enable|disable)
   --cos                  Match condition based on the CoS value (not-used|0..7)
   --dst-mac-addr         Destination MAC address in the format [AA:BB:CC:DD:EE:FF]
   --dst-mac-mask         Destination MAC mask in the format [AA:BB:CC:DD:EE:FF]
   --ethernet-type        Four-digit hexadecimal number to specify an 'Ethertype' value (not-
```

```
used|0X600..0XFFFF)
  --name                Set a name for a specific Rule (STRING 31)
  --rule-id             Identifies an ACL Rule by ID, in this context.
  --src-mac-addr        Source MAC address in the format [AA:BB:CC:DD:EE:FF]
  --src-mac-mask        Source MAC mask in the format [AA:BB:CC:DD:EE:FF]
```

"show" command

Table 56. "show" command information

Name	show
Description	Shows the current MAC Rules configured.
Full path	/acl/rule-mac/show
Mandatory Parameters	No mandatory parameters
Screen Output	Table, Figure 135. Table parameters description in Table 53.

Figure 138. CLI on line help on "show" command usage in this node context

```
/cli/acl/rule-mac> show ?

Usage:
 SHOW                 Show the current MAC rules configured.

  [OPTIONAL]
  --acl-id            Identifies an ACL by ID, in this context.
```

Figure 139.Output of "show" command without arguments in this node context

```
/cli/acl> rule-mac/show
+-------------------------------------------------------------------------------------------------------------------------------------------------------+
|MAC Rules                                                                                                                                              |
+-------+-------+---------------+-------+------+----------+-------+-----------------+-----------------+-----------------+-----------------+
|ACL ID |Rule ID|Rule Name      |Admin  |Action|Eth-Type  |CoS    |Source MAC Addr  |Source MAC Mask  |Destination MAC Addr|Destination MAC Mask|
+-------+-------+---------------+-------+------+----------+-------+-----------------+-----------------+-----------------+-----------------+
+-------+-------+---------------+-------+------+----------+-------+-----------------+-----------------+-----------------+-----------------+
```

Table 57. "show" command output table parameters

Parameter	Description
ACL ID	ACL identification (number)
Rule ID	Rule identification (number)
Name	Rule Name (text)
Admin	ACL Administrative status
Action	Action implemented by the rule (permit|deny)
Eth-Type	Four-digit hexadecimal number to specify an 'Ethertype' value (not-used|0X600..0XFFFF)
CoS	Match condition based on the CoS value (not-used|0..7)
Source MAC Addr	Source MAC address
Source MAC Mask	Source MAC mask
Destination MAC Addr	Destination MAC address
Destination MAC Mask	Destination MAC mask

“applications” node

Figure 140. “applications” node tree

```
/cli/applications> tree
+ applications[]
  + aaa[@config, @show, @showconfig]
  + cli[]
    + aaa[@config, @show, @showconfig]
  + firmware-upgrade[]
    + files[@check, @config, @export, @import, @remove, @show, @status]
    + onu-upgrade[@apply-file, @availableValues, @execute]
  + http[@config, @show, @showconfig]
  + https[@config, @show, @showconfig]
    + certificate[@import, @reset]
  + manager[@config, @show, @showconfig]
  + olt-upgrade[@apply-file, @import]
  + time[]
    + ntp[@config, @create, @disable, @enable, @remove, @show, @showconfig]
    + time-zone[@availableValues, @config, @show, @showconfig]
  + webti[]
    + aaa[@config, @show, @showconfig]
```

APPLICATION CONFIGURATION

There are three authentication methods available TACACS+, RADIUS and local. The 'local' method uses the local database of the equipment for authentication.

Currently, the priorities of each method for application login are fixed and can be consulted with the following command:

`/applications/aaa/show` (Figure 144).

One method will only be attempted when there is no response from the previous method. If authentication fails at any point in this cycle—meaning that the security server or local username database responds by denying the user access—the authentication process stops and no other authentication methods are attempted.

Each method must be enabled/disabled on a per application basis. For CLI/SSH:

```
/applications/cli/aaa/config --local=enable --radius=enable --tacacs+=enable
```

PRIVILEGE CONFIGURATION

CLI enforces the permissions given by a RADIUS/TACACS+ server if the user was authenticated by one of those methods.

If the user was created locally (via WebTi or CLI), the authentication (password checking) will use the methods defined in /applications/aaa and /applications/cli/aaa, but the permissions given by the remote server will be ignored.

The permissions must be given by a numeric privilege level that has the following correspondence with the existing groups:

Table 58. Groups' privilege level

Privilege Group	Group
1-13	guest
14	poweruser
15	administrator

If the user does not exist locally and a privilege level was not set or was set to a different value of those in the table, then the user will not have permissions to execute any command.

TACACS+

The privilege-level must be specified in the 'priv-lvl' av-pair.

An example of a TACACS+ user given the permission group 'administrator' (15) is shown bellow.

Figure 141: User with administrator permission (group 15) login

```
Hello admin!

Your permission group is: administrator(15)

 ==========================================

                OLT  Solution
               CLI Application

               V3.6.0

 ==========================================

/cli>
```

RADIUS

The privilege-level must be specified in a Cisco av-pair attribute with the format shell:priv-lvl=x where x is the privilege level.

“aaa” sub-node

This sub-node can be used to config AAA methods, AAA (Authentication, Authorization, Accounting).

“config” command

Table 59. "config" command information

Name	config
Description	Configures AAA methods for equipment login
Full path	/applications/aaa/config
Mandatory Parameters	--tac-protocol --tac-service
Screen output	No

Figure 142. CLI on line help on “config” command usage in this node context

```
/cli/applications/aaa> config ?

Usage CONFIG:
  CONFIG                  Configure AAA methods for equipment login.

   [OPTIONAL]
   --tac-protocol          Set the value of the 'protocol' TACACS+ AV Pair
     --tac-service         Set the value of the 'service' TACACS+ AV Pair. (STRING 30)
```

“show” command

Table 60. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/applications/aaa/show
Mandatory Parameters	No mandatory parameters
Screen Output	Table, Figure 144. Table parameters are described in Table 61.

Figure 143. . CLI on line help on “show” command usage in this node context

```
  /cli/applications/firmware-upgrade/files> show ?

  Usage:
    SHOW          Show the current ONU firmware files.

     [OPTIONAL]
```

--fileID	Identifies a file by ID, in this context.

Figure 144.Output of "show" command in this node context

```
/cli/applications/aaa> show
+-------------------------------------------------------------+
|Global AAA Method Configuration                              |
+--------+----------+-----------------------------------------+
|Priority|Protocol  |(ID) Server Group                        |
+--------+----------+-----------------------------------------+
|1       |tacacs+   |( 1) login                               |
|2       |radius    |( 1) login                               |
|3       |local     |--                                       |
+--------+----------+-----------------------------------------+

+-----------------------------------------+
|TACACS+ AV Pairs                         |
+--------------------+--------------------+
|AV Pair             |Value               |
+--------------------+--------------------+
|service             |exec                |
|protocol            |                    |
+--------------------+--------------------+
```

"showconfig" command

Table 61. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/applications/aaa/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 145. CLI on line help on "showconfig" command usage in this node context

```
/cli/applications/aaa> showconfig ?

Usage SHOWCONFIG:
    SHOWCONFIG              Print the command list that enforces the current configuration
```

"cli" sub-node

This sub-node can be used to config AAA methods for usage with CLI interface.

"aaa" sub-node

"config" command

Table 62. "config" command information

Name	config
Description	Configures AAA
Full path	/applications/cli/aaa/config
Mandatory Parameters	--local --radius --tacacs+
Screen output	No

Figure 146. CLI on line help on "config" command usage in this node context

```
/cli/applications/cli/aaa> config ?

Usage CONFIG:
 CONFIG                  Configure AAA

  [OPTIONAL]
  --local                Enable or disable local authentication.(enable|disable)
  --radius               Enable or disable RADIUS.(enable|disable)
    --tacacs+              Enable or disable tacacs+.(enable|disable)
```

"show" command

Table 63. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/applications/cli/aaa/show
Mandatory Parameters	No mandatory parameters
Screen Output	Table, Figure 148.

Figure 147. . CLI on line help on "show" command usage in this node context

```
 /cli/applications/cli/aaa> show ?

 Usage:
  SHOW          Show the current configuration.
```

Figure 148.Output of "show" command in this node context

```
/cli/applications/cli/aaa> show
+--------------------------------+
|CLI AAA Configuration           |
+----------+----------+----------+
|local     |RADIUS    |TACACS+   |
+----------+----------+----------+
|enable    |disable   |disable   |
+----------+----------+----------+
```

"showconfig" command

Table 64. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/applications/cli/aaa/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 149. CLI on line help on "showconfig" command usage in this node context

```
/cli/applications/cli/aaa> showconfig ?

Usage SHOWCONFIG:
    SHOWCONFIG              Print the command list that enforces the current configuration
```

"firmware-upgrade" sub-node

This sub-node can be used to update the firmware of several ONTs in one operation (in **/applications/firmware-upgrade/onu-upgrade** node).

The **/applications/firmware-upgrade/files** node is used to manage the local firmware repository.

"files" sub-node

"check" command

Table 65. "check" command information

Name	check
Description	Calculates MD5SUM for all files to check for inconsistencies.

Full path	/applications/firmware-upgrade/files/check
Mandatory Parameters	This command has no parameters
Screen Output	No

Figure 150. CLI on line help on "check" command usage in this node context

```
/cli/applications> firmware-upgrade/files/check ?

Usage:
  CHECK          Calculate MD5SUM for all files to check for inconsistencies.
```

"config" command

Table 66. "config" command information

Name	config
Description	Configures usage by the system of existing configuration files in the repository
Full path	/applications/firmware-upgrade/files/config
Mandatory Parameters	--fileID
Screen output	No

Figure 151. CLI on line help on "config" command usage in this node context

```
/cli/applications/firmware-upgrade> files/config ?

Usage CONFIG:
  CONFIG                  Configure information for a given file ID.

  <MANDATORY>
  --fileID                Identifies a file by ID, in this context.

  [OPTIONAL]
  --asw-version           Set the active software version for a given file. (STRING 31)
  --description           Set a description for the specified file. (STRING 47)
  --hw-version            Set the hardware version for a given file. (STRING 31)
  --profileID             Identifies a profile by ID.
  --set-default           Set the default file for the 'auto' upgrade option. (true|false)
  --sw-version            Set the software version for a given file. (STRING 31)
```

"export" command

Table 67. "export" command information

Name	export
Description	Sends an existing file to a TFTP server.
Full path	/applications/firmware-upgrade/files/export
Mandatory Parameters	--fileID --ip-address
Screen output	No

Figure 152. . CLI on line help on "export" command usage in this node context

```
/cli/applications/firmware-upgrade> files/export ?

Usage EXPORT:
  EXPORT                  Send an existing file to a TFTP server.

   <MANDATORY>
   --fileID               Identifies a file by ID, in this context.
   --ip-address             IPv4 address

   [OPTIONAL]
   --ip-port              Identifies the IP port number to use. (1..65535)
   --remote-file            The Path/to/file on the TFTP server. (STRING 255)
```

"import" command

Table 68. "import" command information

Name	import
Description	Imports a new file from a TFTP server.
Full path	/applications/firmware-upgrade/files/import
Mandatory Parameters	--file-name --ip-address --profileID --remote-file --sw-version
Screen output	No

Figure 153. . CLI on line help on "import" command usage in this node context

```
/cli> applications/firmware-upgrade/files/import ?

  Usage IMPORT:
```

```
IMPORT                Import a new file from a TFTP server

<MANDATORY>
--file-name           Specify the file name (STRING 47)
--ip-address          IPv4 address
--profileID           Identifies a profile by ID.
--remote-file         The Path/to/file on the TFTP server. (STRING 255)
--sw-version          Set the software version for a given file. (STRING 31)

[OPTIONAL]
--asw-version         Set the active software version for a given file. (STRING 31)
--description         Set a description for the specified file. (STRING 47)
--hw-version          Set the hardware version for a given file. (STRING 31)
--ip-port             Identifies the IP port number to use. (1..65535)
```

"remove" command

Table 69. "remove" command information

Name	remove
Description	Removes an existing file from the repository.
Full path	/applications/firmware-upgrade/files/remove
Mandatory Parameters	No mandatory parameters
Screen Output	No

Figure 154. . CLI on line help on "remove" command usage in this node context

```
/cli/applications/firmware-upgrade/files> remove ?

Usage:
 REMOVE       Remove an existing file from the repository.

  [OPTIONAL]
  --fileID            Identifies a file by ID, in this context.
```

"show" command

Table 70. "show" command information

Name	show
Description	Shows the current ONU firmware files.
Full path	/applications/firmware-upgrade/files/show
Mandatory Parameters	No mandatory parameters

Screen Output	Table, Figure 156 and Figure 157. Table parameters are described in Table 71.

Figure 155. . CLI on line help on "show" command usage in this node context

```
/cli/applications/firmware-upgrade/files> show ?

Usage:
  SHOW          Show the current ONU firmware files.

   [OPTIONAL]
   --fileID                Identifies a file by ID, in this context.
```

Figure 156.Output of "show" command without arguments in this node context

```
/cli/applications/firmware-upgrade> files/show
+-----------------------------------------------------------------------------------------------------------------------------------------
|Files List
+---+-----------------------------+------------+-------+-----------------------------+-------------+-------------+-------------+-----------
|ID |Name                         |Size (Bytes)|Default|ONU Profile (ID) Name        |SW version   |ASW version  |HW version   |Description
+---+-----------------------------+------------+-------+-----------------------------+-------------+-------------+-------------+-----------
|1  |NT7SW03040001                |1426897     |No     |(1) SFU                      |NT7SW03040001|             |             |
+---+-----------------------------+------------+-------+-----------------------------+-------------+-------------+-------------+-----------
```

This command displays information on the current files configuration, in the format of a table.

Table 71. "show" command output table parameters

Parameter	Description
ID	File identification (number)
Name	File name (text)
Size (Bytes)	File size (Bytes)
Default	Identifies if the file is the default file (Yes|No)
(ID) ONT Profile Name	(ONT Profile ID (number)) ONT Profile Name (text)
SW version	Software version (text)
ASW	Active Software version (text)
HW version	Hardware version (text)
Description	File description (text)
MD5 Sum	File MD5 Sum calculated value (only displayed when the command is executed with a specific file as argument)

Figure 157. Output of ”show” command with argument fileID in this node context

```
/cli/applications/firmware-upgrade> files/show --fileID=1
+-----------------------------------------------------------
|File 1 - 'NT7SW03040001'
+------------------------+----------------------------------
|Parameter               |Value
+------------------------+----------------------------------
|ID                      |1
|Name                    |NT7SW03040001
|Size (Bytes)            |1426897
|Default                 |NO
|ONU Profile (ID) Name   |(1) SFU
|SW version              |NT7SW03040001
|HW version              |
|Description             |
|MD5 Sum                 |e9871334cc891926f9f14155e3b3d5aa
+------------------------+----------------------------------
```

“status” command

Table 72. "status" command information

Name	status
Description	Displays existing problems with the file repository.
Full path	/applications/firmware-upgrade/files/status
Mandatory Parameters	No parameters
Screen Output	Table, Figure 159. Table parameters are described in Table 73.

Figure 158. . CLI on line help on “status” command usage in this node context

```
/cli/applications/firmware-upgrade/files> status ?

Usage:
  STATUS        Display existing problems with the file repository
```

Figure 159. Output of ”status” command in this node context

```
/cli/applications/firmware-upgrade> files/status
+-------------------------------------------------------------------------------
|Files List
+---+-----------------------------------------+--------------------+----------
|ID |Name                                     |Status              |Solution
+---+-----------------------------------------+--------------------+----------
|1  |NT7SW03040001                            |OK                  |--
+---+-----------------------------------------+--------------------+----------
```

Table 73. "status" command output table parameters

Parameter	Description
ID	File identification (number)
Name	File name (text)
Status	File status. If Ok no problem exists with the file
Solution	Proposed solution for the identified problem

"onu-upgrade" sub-node

"apply-file" command

The command apply-file must ask for user confirmation before running.

If neither 'commit' nor 'activate' parameters are used in the command line or if both parameters are used but set to the <disable> value, the image is only downloaded into the ONU.

Table 74. "apply-file" command information

Name	apply-file
Description	Sends a specified firmware version to a specific ONU, or all ONUs in a specific <slot-port>.
Full path	/applications/firmware-upgrade/onu-upgrade/ apply-file
Mandatory Parameters	--fileID
Screen Output	No

Figure 160. CLI on line help on "apply-file" command usage in this node context

```
/cli/applications/firmware-upgrade/onu-upgrade> apply-file ?

Usage:
  APPLY-FILE      Send a specified firmware version to a specific ONU, or all ONUs in a specific
<slot-port>.

  <MANDATORY>
  --fileID              Identifies a file by ID, in this context.

  [OPTIONAL]
  --activate            The ONU reboots and starts up with this image. The default boot image is
                        not modified. (enable|disable)
  --commit              This image will be set to be the default boot image. (enable|disable)
  --onuID               Identifies an ONU by ID. (Not used means all ONUs)
  --port                Identifies an interface on the given slot. (only PON interfaces are available.
                        Not used means all PONs)
  --slot                 Identifies a slot. (Not used means all Slots)
```

“availableValues” command

Table 75. "availableValues" command information

Name	availableValues
Description	Shows available options for each argument.
Full path	/applications/firmware-upgrade/onu-upgrade/availableValues
Mandatory Parameters	No
Screen Output	Tables, Figure 162 and Figure 163. Tables parameters are described in Table 76

Figure 161. CLI on line help on “availableValues” command usage in this node context

```
/cli/applications/firmware-upgrade/onu-upgrade> availableValues ?

Usage:
  AVAILABLEVALUES   Show available options for each argument.

  [OPTIONAL]
  --port            Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot            Identifies a slot. (not used for LAG)        Not used means all PONs)
```

Figure 162. Output of ”availableValues” command in this node context

```
/cli/applications/firmware-upgrade/onu-upgrade> availableValues

+-------------------------------------------------------------------------------------------+
|Available Values for arguments 'slot', 'port' and 'onuID' -- Page 1                        |
+------+------+-------------------------------------------------------------------------------+
|Slot  |Port  |ONUs IDs list                                                                  |
+------+------+-------------------------------------------------------------------------------+
|3     |Pon 1 | 02 63                                                                         |
|3     |Pon 2 |                                                                               |
|3     |Pon 3 |                                                                               |
|3     |Pon 4 |                                                                               |
|3     |Pon 5 |                                                                               |
|3     |Pon 6 |                                                                               |
|3     |Pon 7 |                                                                               |
|3     |Pon 8 |                                                                               |
|3     |Pon 9 |                                                                               |
|3     |Pon 10|                                                                               |
|3     |Pon 11|                                                                               |
|3     |Pon 12|                                                                               |
|3     |Pon 13|                                                                               |
|3     |Pon 14|                                                                               |
|3     |Pon 15|                                                                               |
|3     |Pon 16|                                                                               |
+------+------+-------------------------------------------------------------------------------+
|4     |Pon 1 | 01 02 03                                                                      |
|4     |Pon 2 |                                                                               |
|4     |Pon 3 |                                                                               |
|4     |Pon 4 |                                                                               |
|4     |Pon 5 |                                                                               |
|4     |Pon 6 |                                                                               |
|4     |Pon 7 |                                                                               |
|4     |Pon 8 |                                                                               |
|4     |Pon 9 |                                                                               |
|4     |Pon 10|                                                                               |
|4     |Pon 11|                                                                               |
|4     |Pon 12|                                                                               |
|4     |Pon 13|                                                                               |
|4     |Pon 14|                                                                               |
|4     |Pon 15|                                                                               |
|4     |Pon 16|                                                                               |
+------+------+-------------------------------------------------------------------------------+
```

Table 76. “availableValues” command output table parameters

Parameter	Description
Slot	Used slots in the system
Port	Used PON interfaces
ONUs IDs list	List of ONUs per PON interface

Figure 163. Output of ”availableValues” command in this node context with arguments

```
/cli/applications/firmware-upgrade/onu-upgrade> availableValues --slot=3 --port=pon.1

+-------------------------------------------------------------------------------------------+
|Available Values for arguments 'slot', 'port' and 'onuID' -- Page 1                        |
+------+------+-------------------------------------------------------------------------------+
|Slot  |Port  |ONUs IDs list                                                                  |
+------+------+-------------------------------------------------------------------------------+
|3     |Pon 1 | 02 63                                                                         |
+------+------+-------------------------------------------------------------------------------+
```

“execute” command

Table 77. "execute" command information

Name	execute
Description	Updates firmware on all the ONUs in the given <slot,port>.
Full path	/applications/firmware-upgrade/onu-upgrade/execute
Mandatory Parameters	No
Screen Output	No

Figure 164. CLI on line help on “execute” command usage in this node context

```
/cli/applications> firmware-upgrade/onu-upgrade/execute ?

Usage:
  EXECUTE       Will update firmware on all the ONUs in the given <slot,port>.

  [OPTIONAL]
  --auto        Send firmware to all ONUs that have software version set to 'auto'.
                (enable|disable)
  --planned     Send firmware to all ONUs that have software version set to 'planned'.
                (enable|disable)
  --port        Identifies an interface on the given slot. (only PON interfaces are available.
                Not used means all PONs)
  --slot        Identifies a slot. (Not used means all Slots)
```

The command executed must ask for user confirmation before running.

In this command the user does not select a firmware file. The file is chosen automatically for each ONU based on the software version and hardware versions defined.

About the sw-version parameter:

- **OFF** – this ONU does not have a software version specified. See the **/applications/firmware-upgrade** node for more information.

- **AUTO** – this ONU has the software version set to automatically. This ONU will receive software updates from the default file for the configured profile. See the **/applications/firmware- upgrade** node for more information.
- **text** – Insert a valid sw-version or create a new one. This ONU will only receive updates executed as **"planned"** from the files that have a matching sw-version.

"http" sub-node

This sub-node can be used to config HTTP

"config" command

Table 78. "config" command information

Name	config
Description	Configures HTTP
Full path	/applications/http/config
Mandatory Parameters	No
Screen output	No

Figure 165. CLI on line help on "config" command usage in this node context

```
/cli/applications/http> config ?

Usage CONFIG:
  CONFIG                Configure HTTP

   [OPTIONAL]
   --admin              Administrative State. Enable/disable, in this context. (enable|disable)
     --ip-port            Identifies the IP port number to use. (1..65535)
```

"show" command

Table 79. "show" command information

Name	show
Description	Shows the current HTTP configuration.
Full path	/applications/http/show
Mandatory Parameters	No mandatory parameters
Screen Output	Table, Figure 167.

Figure 166. . CLI on line help on “show” command usage in this node context

```
/cli/applications/http> show ?

Usage SHOW:
    SHOW                    Show the current HTTP configuration
```

Figure 167.Output of ”show” command in this node context

```
/cli/applications/http> show
+--------------------+
|HTTP Configuration  |
+---------+----------+
|Admin    |Port      |
+---------+----------+
|enable   |80        |
+---------+----------+
```

“showconfig” command

Table 80. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/applications/http/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 168. CLI on line help on “showconfig” command usage in this node context

```
/cli/applications/http> showconfig ?

Usage SHOWCONFIG:
    SHOWCONFIG              Print the command list that enforces the current configuration
```

“https” sub-node

This sub-node can be used to config HTTPS

“config” command

Table 81. "config" command information

Name	config
Description	Configures HTTPS
Full path	/applications/https/config
Mandatory Parameters	No
Screen output	No

Figure 169. CLI on line help on “config” command usage in this node context

```
/ cli/applications/https> config ?

Usage CONFIG:
  CONFIG                  Configure HTTPS

   [OPTIONAL]
   --admin                Administrative State. Enable/disable, in this context. (enable|disable)
   --ip-port              Identifies the IP port number to use. (1..65535)
   --ssl-version           Specify the SSL Version (any|SSLv3|TLSv1|TLSv1.1|TLSv1.2)
```

“show” command

Table 82. "show" command information

Name	show
Description	Shows the current HTTPS configuration.
Full path	/applications/https/show
Mandatory Parameters	No mandatory parameters
Screen Output	Table, Figure 171.

Figure 170. . CLI on line help on “show” command usage in this node context

```
/cli/applications/https> show ?

Usage SHOW:
    SHOW                  Show the current HTTPS configuration
```

Figure 171.Output of "show" command in this node context

```
/cli/applications/https> show
+---------------------------------+
|HTTPS Configuration              |
+---------+----------+------------+
|Admin    |Port      |SSL Version |
+---------+----------+------------+
|disable  |443       |any         |
+---------+----------+------------+
```

"showconfig" command

Table 83. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/applications/http/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 172. CLI on line help on "showconfig" command usage in this node context

```
/cli/applications/https> showconfig ?

Usage SHOWCONFIG:
    SHOWCONFIG              Print the command list that enforces the current configuration
```

"certificate" sub-node

This sub-node can be used to import a certificate for use in HTTPS. The certificate must be in PEM format and the private key must not be encrypted.

"import" command

Table 84. "import" command information

Name	import
Description	Imports a certificate for use in HTTPS. Must be in PEM format and the private key must not be encrypted.
Full path	/applications/https/certificate/import
Mandatory Parameters	--file-name --ip-address
Screen Output	No

Figure 173. CLI on line help on "import" command usage in this node context

```
/cli/applications/https/certificate> import?

Usage IMPORT:
  IMPORT                  Imports a certificate for use in HTTPS. Must be in PEM format and the
private key must not be encrypted.

   <MANDATORY>
   --file-name            The path/to/olt/setup/filename to import from the TFTP server (STRING
255)
   --ip-address           IPv4 address

   [OPTIONAL]
   --ip-port              Identifies the IP port number to use. (1..65535)
   --protocol             The protocol used to transfer the file TFTP (default) or SSH/SCP.
(tftp|ssh)
   --username             User name. Valid only for SSH/SCP. (STRING 255)
```

"reset" command

Table 85. "reset" command information

Name	reset
Description	Restores the default certificate..
Full path	/applications/https/certificate/reset
Mandatory Parameters	No
Screen Output	No

Figure 174. CLI on line help on "reset" command usage in this node context

```
/cli/applications/https/certificate> reset ?

Usage RESET:
     RESET                 Restores the default certificate.
```

"manager" sub-node

This sub-node can be used to update the firmware of several ONTs in one operation (in /applications/firmware-upgrade/onu-upgrade node).

The /applications/firmware-upgrade/files node is used to manage the local firmware repository.

"config" command

Table 86. "config" command information

Name	config
Description	Configures management information
Full path	/applications/manager/config
Mandatory Parameters	--ID
Screen Output	No

Figure 175. CLI on line help on "config" command usage in this node context

```
/cli/applications> manager/config ?

Usage:
  CONFIG        Configure management information

  <MANDATORY>
  --ID                  Identifies a table entry by ID, in this context.

  [OPTIONAL]
  --admin               Administrative State. Enable/disable, in this context. (enable|disable)
  --buffer-size         Specify the trap buffer size in bytes (informs only).
  --interval            Wait the specified period of seconds before re-sending the trap when no
                        ACK is received (informs only).
  --ip-address          IPv4 address
  --ip-port             Identifies the IP port number to use. (1..65535)
  --permissions         Allow this manager to READ or READ/CONFIGURE on this equipment
                        (ro|rw)
  --retries             Number of retries before skipping the current trap (informs only).
  --trap-mode           Specify the trap mode (none|trap-ack|trap-v2|inform)
```

"show" command

Table 87. "show" command information

Name	show
Description	Shows the current management configuration
Full path	/applications/manager/show
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 177; table parameters description in Table 88

Figure 176. CLI on line help on "show" command usage in this node context

```
/cli/applications> manager/show ?
```

```
Usage:
  SHOW          Show the current management configuration
```

Figure 177. Output of "show" command in this node context

```
/cli/applications> manager/show
+-----------------------------------------------------------------------------------------------------------------------+
|Manager Configuration                                                                                                  |
+---+---------------+---------+----------+-------------+-----------+-------------------+--------------+---------+
|ID |Manager IP     |Admin    |Trap Mode |Permissions  |Send Port  |Buffer size (bytes)|Interval (s)  |Retries  |
+---+---------------+---------+----------+-------------+-----------+-------------------+--------------+---------+
|1  |0.0.0.0        |disable  |none      |read-write   |162        | --                | --           | --      |
|2  |0.0.0.0        |disable  |none      |read-write   |162        | --                | --           | --      |
|3  |0.0.0.0        |disable  |none      |read-write   |162        | --                | --           | --      |
+---+---------------+---------+----------+-------------+-----------+-------------------+--------------+---------+
```

Table 88. "show" command output table parameters

Parameter	Description
ID	Manager ID
Manager IP	Manager IPv4 address
Admin	Administrative State.
Trap Mode	Used Trap mode for the ME4620 OLT to communicate with Network Management System. (none|Trap/Ack|Trap V2|Inform)
Permissions	Manager permissions in the equipment (READ|READ/CONFIGURE)
Send Port	Used IP port number to send traps
Buffer size(bytes)	trap buffer size
Interval (s)	Waiting period of time before re-sending the trap when no ACK is received
Retries	Number of retries before skipping the current trap

"showconfig" command

Table 89. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/applications/manager/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 178. CLI on line help on "showconfig" command usage in this node context

```
/cli/applications/manager> showconfig ?

Usage SHOWCONFIG:
    SHOWCONFIG              Print the command list that enforces the current configuration
```

“olt-upgrade” sub-node

“apply-file” command

Table 90. "apply-file" command information

Name	apply-file
Description	Updates ME4600 OLT-OS with the last imported setup file. The system will reboot to use the new image.
Full path	/applications/olt-upgrade/apply-file
Mandatory Parameters	This command has no parameters
Screen Output	No

Figure 179. CLI on line help on “apply-file” command usage in this node context

```
/cli/applications> olt-upgrade/apply-file ?

Usage:
  APPLY-FILE      Update OLT-OS with the last imported setup file. The system will reboot to use
the new image.
```

“import” command

Table 91. "import" command information

Name	import
Description	Imports a new ME4600 OLT-OS setup file from a TFTP server.
Full path	/applications/olt-upgrade/import
Mandatory Parameters	--file-name --ip-address
Screen Output	No

Figure 180. CLI on line help on “import” command usage in this node context

```
/cli/applications> olt-upgrade/import ?

Usage:
  IMPORT        Import a new OLT-OS setup file from a TFTP server.

   <MANDATORY>
   --file-name            The path/to/olt/setup/filename to import from the TFTP server  (STRING
255)
   --ip-address           IPv4 address

   [OPTIONAL]
   --ip-port              Identifies the IP port number to use. (1..65535)
```

"time" sub-node

This sub-node can be used to update the firmware of several ONTs in one operation (in **/applications/firmware-upgrade/onu-upgrade** node).

The **/applications/firmware-upgrade/files** node is used to manage the local firmware repository.

"ntp" sub-node

This sub-node allows the configuration of the NTP servers.

"config" command

Table 92. "config" command information

Name	config
Description	Configures an existing NTP server.
Full path	/applications/time/ntp/config
Mandatory Parameters	--ID
Screen Output	No

Figure 181. CLI on line help on "config" command usage in this node context

```
/cli/applications> time/ntp/config ?

Usage:
 CONFIG       Configure

  <MANDATORY>
  --ID                  Identifies a table entry by ID, in this context.

  [OPTIONAL]
  --admin           Administrative State. Enable/disable, in this context. (enable|disable)
  --ip-address      IPv4 address
  --name            Define a name for this NTP server (STRING 15)
```

"create" command

Table 93. "config" command information

Name	create
Description	Creates a new NTP server entry
Full path	/applications/time/ntp/create

Mandatory Parameters	--ip-address --name
Screen Output	No

Figure 182. CLI on line help on "create" command usage in this node context

```
/cli/applications> time/ntp/create ?

Usage:
 CREATE        Create

  <MANDATORY>
  --ip-address          IPv4 address
  --name                Define a name for this NTP server (STRING 15)

  [OPTIONAL]
  --admin               Administrative State. Enable/disable, in this context. (enable|disable)
```

"disable" command

Table 94. "disable" command information

Name	disable
Description	Disables global NTP time configuration.
Full path	/applications/time/ntp/disable
Mandatory Parameters	This command has no parameters
Screen Output	No

Figure 183. CLI on line help on "disable" command usage in this node context

```
/cli/applications> time/ntp/disable ?

Usage:
 DISABLE       Disable global NTP time configuration.
```

"enable" command

Table 95. disable" command information

Name	enable
Description	Enables global NTP time configuration.
Full path	/applications/time/ntp/enable
Mandatory Parameters	This command has no parameters
Screen Output	No

Figure 184. CLI on line help on “enable” command usage in this node context

```
/cli/applications> time/ntp/enable ?

Usage:
  ENABLE        Enable global NTP time configuration.
```

“remove” command

Table 96. “remove" command information

Name	enable
Description	Removes a configured NTP server.
Full path	/applications/time/ntp/remove
Mandatory Parameters	--ID
Screen Output	No

Figure 185. CLI on line help on “remove” command usage in this node context

```
/cli/applications> time/ntp/remove ?

Usage:
  REMOVE        Remove

   <MANDATORY>
   --ID                 Identifies a table entry by ID, in this context.
```

“show” command

Table 97. "show" command information

Name	show
Description	Shows the current configuration
Full path	/applications/time/ntp/show
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 187; table parameters description in Table 98

Figure 186. CLI on line help on “show” command usage in this node context

```
/cli/applications> time/ntp/show ?

Usage:
  SHOW          Show the current configuration
```

Figure 187. Output of ”show” command in this node context

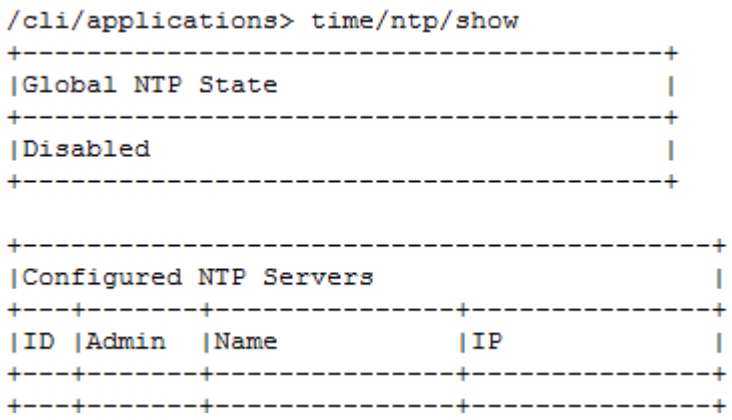


Table 98. “show” command output table parameters

Parameter	Description
Global NTP state	Current Global NTP server state (enabled|disabled)
ID	Current NTP server ID
Admin	Current administrative state
Name	Current NTP server name
IP	Current NTP server IP address (IPv4 address)

“showconfig” command

Table 99. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/applications/time/ntp/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 188. CLI on line help on “showconfig” command usage in this node context

```
/cli/applications> time/ntp/showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"time-zone" sub-node

This sub-node allows the configuration of the system time and the time zones.

"availableValues" command

Table 100. "availableValues" command information

Name	availableValues
Description	Displays all supported Time Zones and respective IDs.
Full path	/applications/time/time-zone/availableValues
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 190 . Table parameters described in Table 101

Figure 189. CLI on line help on "availableValues" command usage in this node context

```
/cli/applications> time/time-zone/availableValues ?

Usage:
  AVAILABLEVALUES Display all supported Time Zones and respective IDs.
```

Figure 190. Partial output of ”availableValues” command in this node context

```
+-------------------------------------------------------------------------------------------------------------
|Time Zones Available Values
+-----+-------------------------------------------------------------+-------------------------------------------
|ID   |Time-Zone Name                                               |Time-Zone Description
+-----+-------------------------------------------------------------+-------------------------------------------
|412  |America/Denver                                               |Mountain Time
|413  |America/Boise                                                |Mountain Time - south Idaho & east Oregon
|414  |America/Shiprock                                             |Mountain Time - Navajo
|415  |America/Phoenix                                              |Mountain Standard Time - Arizona
|416  |America/Los_Angeles                                          |Pacific Time
|417  |America/Anchorage                                            |Alaska Time
|418  |America/Juneau                                               |Alaska Time - Alaska panhandle
|419  |America/Sitka                                                |Alaska Time - southeast Alaska panhandle
|420  |America/Yakutat                                              |Alaska Time - Alaska panhandle neck
|421  |America/Nome                                                 |Alaska Time - west Alaska
|422  |America/Adak                                                 |Aleutian Islands
|423  |America/Metlakatla                                           |Metlakatla Time - Annette Island
|424  |Pacific/Honolulu                                             |Hawaii
|425  |America/Montevideo                                           |
|426  |Asia/Samarkand                                               |west Uzbekistan
|427  |Asia/Tashkent                                                |east Uzbekistan
|428  |Europe/Vatican                                               |
|429  |America/St_Vincent                                           |
|430  |America/Caracas                                              |
|431  |America/Tortola                                              |
|432  |America/St_Thomas                                            |
|433  |Asia/Ho_Chi_Minh                                             |
|434  |Pacific/Efate                                                |
|435  |Pacific/Wallis                                               |
|436  |Pacific/Apia                                                 |
|437  |Asia/Aden                                                    |
|438  |Indian/Mayotte                                               |
|439  |Africa/Johannesburg                                          |
|440  |Africa/Lusaka                                                |
|441  |Africa/Harare                                                |
|--   |UTC                                                          |
+-----+-------------------------------------------------------------+-------------------------------------------
```

Table 101. “availableValues” command output table parameters

Parameter	Description
ID	Time Zone identifier (number)
Time-Zone Name	Time Zone identifier (name)
Time-Zone description	Indicates region to which the indicated time zone is applicable

“config” command

Table 102. "config" command information

Name	config
Description	Configures time-zone information.
Full path	/applications/time/time-zone/config
Mandatory Parameters	No
Screen Output	No

Figure 191. CLI on line help on “config” command usage in this node context

```
/cli/applications> time/time-zone/config ?

Usage:
  CONFIG        Configure time-zone information.

   [OPTIONAL]
   --central-manager-time-zone        Select the time zone of the central manager. (string or
                                      ID from table 'availableValues') (STRING 63)
   --local-time-zone                  Select the time zone of the current equipment. (string
                                      or ID from table 'availableValues') (STRING 63)
```

“show” command

Table 103. "show" command information

Name	show
Description	Displays the current time zone configuration.
Full path	/applications/time/time-zone/show
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 193, table parameters described in Table 104

Figure 192. CLI on line help on “show” command usage in this node context

```
/cli/applications> time/time-zone/show ?

Usage:
  SHOW          Display the current time zone configuration.
```

Figure 193. Output of ”show” command in this node context

```
/cli/applications> time/time-zone/show
+-----------------------------------------
|Time Zones
+-----------------------------+-------------
|Reference                    |Time Zone
+-----------------------------+-------------
|Local                        |UTC
|Network Management Platform  |UTC
+-----------------------------+-------------
```

Table 104. "show" command output table parameters

Parameter	Description
Reference	Indicates the currently used reference used either by the equipment (Local) and the Network Management Platform
Time Zone	Indicates the currently used Time Zone

"showconfig" command

Table 105. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration.
Full path	/applications/time/time-zone/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 194. CLI on line help on "showconfig" command usage in this node context

```
/cli/applications> time/time-zone/showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"webti" sub-node

This sub-node can be used to config AAA methods for usage with WebTi interface.

"aaa" sub-node

"config" command

Table 106. "config" command information

Name	config
Description	Configures AAA
Full path	/applications/webti/aaa/config
Mandatory Parameters	--local --radius --tacacs+
Screen output	No

Figure 195. CLI on line help on "config" command usage in this node context

```
/cli/applications/webti/aaa> config ?

Usage CONFIG:
 CONFIG                 Configure AAA

  [OPTIONAL]
  --local               Enable or disable local authentication.(enable|disable)
  --radius              Enable or disable RADIUS.(enable|disable)
    --tacacs+               Enable or disable tacacs+.(enable|disable)
```

"show" command

Table 107. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/applications/webti/aaa/show
Mandatory Parameters	No mandatory parameters
Screen Output	Table, Figure 197.

Figure 196. . CLI on line help on "show" command usage in this node context

```
/cli/applications/cli/aaa> show ?

Usage:
 SHOW         Show the current configuration.
```

Figure 197.Output of "show" command in this node context

```
/cli/applications/webti/aaa> show
+--------------------------------+
|WEBTI AAA Configuration         |
+----------+----------+----------+
|local     |RADIUS    |TACACS+   |
+----------+----------+----------+
|enable    |disable   |disable   |
+----------+----------+----------+
```

"showconfig" command

Table 108. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/applications/webti/aaa/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 198. CLI on line help on "showconfig" command usage in this node context

```
/cli/applications/webti/aaa> showconfig ?

Usage SHOWCONFIG:
    SHOWCONFIG              Print the command list that enforces the current configuration
```

"arp-inspection" node

Node to configure Dynamic ARP inspection – DAI.

"acl" sub-node

"config" command

Table 109. "config" command information

Name	config
Description	Configures Dynamic ARP inspection - DAI.
Full path	/arp-inspection/acl/config
Mandatory Parameters	--arp-acl-id
Screen output	No

Figure 199. CLI on line help on "config" command usage in this node context

```
/cli/arp-inspection/acl> config ?

Usage CONFIG:
  CONFIG                Configure parameters for an existing ARP Inspection ACL entry.

    <MANDATORY>
```

```
--arp-acl-id          Identifies an ACL by ID, in this context.

[OPTIONAL]
--name                Identifies the ARP Inspection ACL name. (STRING 32)
```

"create" command

Table 110. "create" command information

Name	create
Description	Creates a new ARP Inspection ACL entry.
Full path	/arp-inspection/acl/create
Mandatory Parameters	--name
Screen Output	No

Figure 200. CLI on line help on "create" command usage in this node context

```
/cli/arp-inspection/acl> create ?

Usage CREATE:
 CREATE               Create a new ARP Inspection ACL entry.

  <MANDATORY>
  --name              Identifies the ARP Inspection ACL name. (STRING 32)

  [OPTIONAL]
  --arp-acl-id        Identifies an ACL by ID, in this context.
```

"remove" command

Table 111. "remove" command information

Name	remove
Description	Removes an existing ARP Inspection ACL entry
Full path	/arp-inspection/acl/remove
Mandatory Parameters	No
Screen output	No

Figure 201. CLI on line help on "remove" command usage in this node context

```
/cli/arp-inspection/acl> remove ?

Usage REMOVE:
```

```
REMOVE              Remove an existing ARP Inspection ACL entry.

[OPTIONAL]
--arp-acl-id        Identifies an ACL by ID, in this context.
--name              Identifies the ARP Inspection ACL name. (STRING 32)
```

"show" command

Table 112. "show" command information

Name	show
Description	Shows the current ARP Inspection ACLs configuration
Full path	/arp-inspection/acl/show
Mandatory Parameters	No mandatory parameters
Screen Output	Table, Figure 203.

Figure 202. . CLI on line help on "show" command usage in this node context

```
/cli/arp-inspection/acl> show ?

Usage SHOW:
  SHOW              Show the current ARP Inspection ACLs configured.

/cli/arp-inspection/acl>
```

Figure 203.Output of "show" command in this node context

```
/cli/arp-inspection/acl> show
+-------------------------------------+
|ARP Inspection Access Control List   |
+------+------------------------------+
|ACL ID|Name                          |
+------+------------------------------+
|1     |teste                         |
+------+------------------------------+
```

"showconfig" command

Table 113. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/arp-inspection/acl/showconfig

Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 204. CLI on line help on "showconfig" command usage in this node context

```
/cli/arp-inspection/acl> showconfig ?

Usage SHOWCONFIG:
    SHOWCONFIG              Print the command list that enforces the current configuration
```

"rule" sub-node

"config" command

Table 114. "config" command information

Name	config
Description	Configures any shared rule parameters.
Full path	/arp-inspection/acl/rule/config
Mandatory Parameters	--arp-acl-id --rule-id
Screen output	No

Figure 205. CLI on line help on "config" command usage in this node context

```
/cli/arp-inspection/acl/rule> config ?

Usage CONFIG:
  CONFIG                  Configure any shared rule parameters

   <MANDATORY>
   --arp-acl-id            Identifies an ACL by ID, in this context.
   --rule-id               Identifies an ACL Rule by ID, in this context.

   [OPTIONAL]
   --admin                 Administrative State. Enable/disable, in this context. (enable|disable)
   --sender-ipv4-addr      DAI ARP ACL Sender IPv4 Address
   --sender-mac-addr       DAI ARP ACL Sender MAC address in the format
[AA:BB:CC:DD:EE:FF]
```

"create" command

Table 115. "create" command information

Name	create
Description	Creates a new Rule for a given DAI ACL ID
Full path	/arp-inspection/acl/rule/create
Mandatory Parameters	--arp-acl-id
Screen Output	No

Figure 206. CLI on line help on "create" command usage in this node context

```
/cli/arp-inspection/acl/rule> create ?

Usage CREATE:
  CREATE                Create a new Rule for a given DAI ACL ID.

   <MANDATORY>
   --arp-acl-id         Identifies an ACL by ID, in this context.

   [OPTIONAL]
   --admin              Administrative State. Enable/disable, in this context. (enable|disable)
   --rule-id            Identifies an ACL Rule by ID, in this context.
   --sender-ipv4-addr       DAI ARP ACL Sender IPv4 Address
   --sender-mac-addr                DAI ARP ACL Sender MAC address in the format
[AA:BB:CC:DD:EE:FF]
```

"remove" command

Table 116. "remove" command information

Name	remove
Description	Removes an existing rule.
Full path	/arp-inspection/acl/rule/remove
Mandatory Parameters	--arp-acl-id --rule-id
Screen output	No

Figure 207. CLI on line help on "remove" command usage in this node context

```
/cli/arp-inspection/acl/rule> remove ?

Usage REMOVE:
  REMOVE                Remove an existing rule
```

```
<MANDATORY>
--arp-acl-id          Identifies an ACL by ID, in this context.
--rule-id             Identifies an ACL Rule by ID, in this context.
```

"show" command

Table 117. "show" command information

Name	show
Description	Shows the current DAI ARP ACLs configured.
Full path	/arp-inspection/acl/rule/show
Mandatory Parameters	No mandatory parameters
Screen Output	Table, Figure 209.

Figure 208. CLI on line help on "show" command usage in this node context

```
/cli/arp-inspection/acl/rule> show ?

Usage SHOW:
  SHOW                Show the current DAI ARP ACLs configured.
```

Figure 209.Output of "show" command in this node context

```
/cli/arp-inspection/acl> rule/show
+-------------------------------------------------------------------+
|ARP Inspection ACL Rules                                           |
+-------+-------+---------+--------------------+--------------------+
|ACL ID |Rule ID|Admin    |Sender IP Address   |Sender MAC Address  |
+-------+-------+---------+--------------------+--------------------+
|1      |1      |enable   |192.168.2.200       |00:00:00:00:00:10   |
|1      |2      |enable   |192.168.2.201       |00:00:00:00:00:20   |
|3      |1      |enable   |192.168.2.200       |00:00:00:00:00:10   |
|3      |2      |enable   |192.168.2.200       |00:00:00:00:00:10   |
|4      |1      |enable   |192.168.2.200       |00:00:00:00:00:10   |
|4      |2      |disable  |192.168.2.201       |00:00:00:00:00:20   |
+-------+-------+---------+--------------------+--------------------+
```

“global” sub-node

“config” command

Table 118. "config" command information

Name	config
Description	Configures global Dynamic ARP inspection options.
Full path	/arp-inspection/global/config
Mandatory Parameters	No
Screen output	No

Figure 210. CLI on line help on “config” command usage in this node context

```
//cli/arp-inspection/global> config ?

Usage CONFIG:
  CONFIG                  Configure global Dynamic ARP Inspection options.

  [OPTIONAL]
  --validate-dst-mac      Enable or disable Destination MAC validation. (enable|disable)
  --validate-ip-addr      Enable or disable IP Address validation. (enable|disable)
  --validate-src-mac      Enable or disable Source MAC validation. (enable|disable)
```

“show” command

Table 119. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/arp-inspection/global/show
Mandatory Parameters	No
Screen Output	Table, Figure 212.

Figure 211. . CLI on line help on “show” command usage in this node context

```
/cli/arp-inspection/global> show ?

Usage SHOW:
  SHOW                    Show the current configuration
```

Figure 212.Output of "show" command in this node context

```
/cli/arp-inspection/global> show
+-------------------------------------------------------------+
|ARP Inspection                                               |
+-------------------+-------------------+---------------------+
|Src MAC validation |Dst MAC validation |IP Address validation |
+-------------------+-------------------+---------------------+
|disable            |disable            |disable              |
+-------------------+-------------------+---------------------+
```

"showconfig" command

Table 120. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/arp-inspection/global/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 213. CLI on line help on "showconfig" command usage in this node context

```
/cli/arp-inspection/acl> showconfig ?

Usage SHOWCONFIG:
    SHOWCONFIG              Print the command list that enforces the current configuration
```

"services" sub-node

"config" command

Table 121. "config" command information

Name	config
Description	Configures ARP Inspection parameters for a given service.
Full path	/arp-inspection/services/config
Mandatory Parameters	--serviceID
Screen output	No

Figure 214. CLI on line help on "config" command usage in this node context

```
/cli/arp-inspection/services> config ?

Usage CONFIG:
  CONFIG                Configure ARP Inspection parameters for a given service.

   <MANDATORY>
   --serviceID           Select an OLT service by ID.

   [OPTIONAL]
   --arp-acl-id          Identifies an ARP ACL by ID (1..100 or none)
   --arp-acl-static      Enable or disable ARP Packet validation by the ARP ACL rules
                         (enable|disable)
   --log-invalid-pkts    Enable or disable Invalid Packets Logging (enable|disable)
```

"show" command

Table 122. "show" command information

Name	show
Description	Shows ARP Inspection configuration for DAI enabled services.
Full path	/arp-inspection/services/show
Mandatory Parameters	No
Screen Output	Table, Figure 216.

Figure 215. . CLI on line help on "show" command usage in this node context

```
/cli/arp-inspection/services> show ?

Usage SHOW:
  SHOW                  Show ARP Inspection configuration for DAI enabled services.
```

Figure 216.Output of "show" command in this node context

```
/cli/arp-inspection/services> show
+-------------------------------------------------------------------------------+
|ARP Inspection Services                                                        |
+---+--------------------------------+-----------+-------------------------+-------+
|ID |Service Name                    |ARP ACL ID |Logging Invalid Packets  |Static |
+---+--------------------------------+-----------+-------------------------+-------+
|29 |Unicast_9                       |1          |disable                  |enable |
|33 |unicastunstackeddai             |1          |disable                  |enable |
|34 |Unicast_15                      |none       |disable                  |enable |
+---+--------------------------------+-----------+-------------------------+-------+
```

“show-all” command

Table 123. "show-all" command information

Name	Show-all
Description	Show ARP Inspection configuration for all services.
Full path	/arp-inspection/services/show-all
Mandatory Parameters	No
Screen Output	Table, Figure 218.

Figure 217. . CLI on line help on “show” command usage in this node context

```
/cli/arp-inspection/services> show-all ?

Usage SHOW-ALL:
  SHOW-ALL                Show ARP Inspection configuration for all services.
```

Figure 218.Output of ”show-all” command in this node context

```
/cli/arp-inspection/services> show-all
+-------------------------------------------------------------------------------------+
|ARP Inspection Services                                                              |
+---+--------------------------------+-----------+------------------------+-------+
|ID |Service Name                    |ARP ACL ID |Logging Invalid Packets |Static |
+---+--------------------------------+-----------+------------------------+-------+
|1  |E1_0_NTA_GPON                   |none       |disable                 |disable|
|2  |E1_1_NTA_GPON                   |none       |disable                 |disable|
|3  |E1_2_NTA_GPON                   |none       |disable                 |disable|
|4  |E1_3_NTA_GPON                   |none       |disable                 |disable|
|5  |E1_0_NTA_AE                     |none       |disable                 |disable|
|6  |E1_1_NTA_AE                     |none       |disable                 |disable|
|7  |E1_2_NTA_AE                     |none       |disable                 |disable|
|8  |E1_3_NTA_AE                     |none       |disable                 |disable|
|9  |VOD_NTA_GPON                    |none       |disable                 |disable|
|10 |IPTV_NTA                        |none       |disable                 |disable|
+---+--------------------------------+-----------+------------------------+-------+
```

“showconfig” command

Table 124. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/arp-inspection/services/showconfig
Mandatory	This command has no parameters

Parameters	
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 219. CLI on line help on "showconfig" command usage in this node context

```
/cli/arp-inspection/services> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG                Print the command list that enforces the current configuration
```

"backup-manager" node

"create" command

Table 125. "create" command information

Name	create
Description	Creates a new backup file from the current system state.
Full path	/backup-manager/create
Mandatory Parameters	No
Screen Output	No

Figure 220. CLI on line help on "create" command usage in this node context

```
/cli/backup-manager> create ?

Usage:
  CREATE        Creates a new backup file from the current system state.

    [OPTIONAL]
    --description                Set a description for the new backup file. Cannot be modified later.
(STRING 63)
```

"del-serv-conf" command

Table 126. "del-serv-conf" command information

Name	del-serv-conf
Description	Delete the Service configuration. Resets to factory settings.
Full path	/backup-manager/del-serv-conf
Mandatory	This command has no parameters

Parameters	
Screen output	No

Figure 221. CLI on line help on "del-serv-conf" command usage in this node context

```
/cli/backup-manager> del-serv-conf ?

Usage:
  DEL-SERV-CONF   Delete the Service configuration. Resets to factory settings.
```

"export" command

Table 127. "export" command information

Name	export
Description	Sends an existing backup file to a TFTP server.
Full path	/backup-manager/export
Mandatory Parameters	--local-file --server-ip
Screen output	No

Figure 222. CLI on line help on "export" command usage in this node context

```
Usage EXPORT:
  EXPORT                  Send an existing backup file to a TFTP server.

  <MANDATORY>
  --local-file            A file name on the local repository. (STRING 63)
  --server-ip             The TFTP server IP address

  [OPTIONAL]
  --remote-file           The Path/to/file on the TFTP server. (STRING 255)
  --server-port           The TFTP server port number
```

"import" command

Table 128. "import" command information

Name	import
Description	Gets a previously exported backup file from a TFTP server.
Full path	/backup-manager/import
Mandatory	--remote-file

Parameters	--server-ip
Screen output	No

Figure 223. CLI on line help on "import" command usage in this node context

```
Usage IMPORT:
  IMPORT                Get a previously exported backup file from a TFTP server.

  <MANDATORY>
  --remote-file          The Path/to/file on the TFTP server. (STRING 255)
  --server-ip           The TFTP server IP address

  [OPTIONAL]
  --local-file          A file name on the local repository. (STRING 63)
  --server-port          The TFTP server port number
```

"remove" command

Table 129. "remove" command information

Name	remove
Description	Deletes an existing backup file.
Full path	/backup-manager/remove
Mandatory Parameters	--local-file
Screen output	No

Figure 224. CLI on line help on "remove" command usage in this node context

```
/cli/backup-manager> remove ?

Usage REMOVE:
  REMOVE                Deletes an existing backup file.

  <MANDATORY>
  --local-file          A file name on the local repository. (STRING 63).
```

"restore" command

Table 130. "restore" command information

Name	restore

Description	Applies a backup file to the current system. The equipment will reboot.
Full path	/backup-manager/ restore
Mandatory Parameters	--local-file
Screen output	No

Figure 225. CLI on line help on "restore" command usage in this node context

```
/cli/backup-manager> restore ?

Usage:
  RESTORE        Apply a backup file to the current system. The equipment will reboot.

   <MANDATORY>
  --local-file                A file name on the local repository. (STRING 63).
```

"show" command

Table 131. "show" command information

Name	show
Description	Displays a table with all existing backup files.
Full path	/backup-manager/show
Mandatory Parameters	This command has no parameters
Screen output	Table, Figure 227; table parameter description in Table 132

Figure 226. CLI on line help on "show" command usage in this node context

```
/cli/backup-manager> show ?

Usage:
  SHOW          Display a table with all existing backup files.
```

Figure 227. Output of ”show” command in this node context

```
/cli/backup-manager> show
+-----------------------------------------------------------------------------------------------------------------------
|Backups List
+-----------------------------------------------------------------+-----------+---------+-------------------------------
|Name                                                             |Date       |Time     |Description
+-----------------------------------------------------------------+-----------+---------+-------------------------------
|file20000115_224300_10_112_42_124.db                             |2000/01/15 |22:43:00 |bug fix test
|file20140620_153018_192_168_122_235.db                           |2014/06/20 |15:30:18 |2014-06-20 - ERP
|file20140910_151123_10_112_42_124.db                             |2014/09/10 |15:11:23 |2014-09-10 before reset
|file20140919_181314_10_112_42_124.db                             |2014/09/19 |18:13:14 |no comments
|file20141002_103509_10_112_42_124.db                             |2014/10/02 |10:35:09 |barbosa
|file20141003_151328_10_112_42_124.db                             |2014/10/03 |15:13:28 |no comments
|file20141028_104539_10_112_42_124.db                             |2014/10/28 |10:45:39 |Antes de fazer ResetDefault
|file20141028_152133_10_112_42_124.db                             |2014/10/28 |15:21:33 |no comments
|file20141105_115537_10_112_42_124.db                             |2014/11/05 |11:55:37 |barbosa antes do reset default
+-----------------------------------------------------------------+-----------+---------+-------------------------------
```

Table 132. “show” command output table parameters

Parameter	Description
Name	Backup filename
Date	Date of backup file creation
Time	Time of backup file creation
Description	Backup file short description

“cfm-probe” node

Figure 228. “cfm-node” tree

```
/cli/cfm-probe> tree
+ cfm-probe[@config, @create, @remove, @show, @showconfig, @status]
  + unx-ccm[@remove, @show]
```

“config” command

Table 133. "config" command information

Name	config
Description	Configures a specific CFM probe.
Full path	/cfm-probe/config
Mandatory Parameters	--ID --slot
Screen Output	No

Figure 229. CLI on line help on “config” command usage in this node context

```
/cli/cfm-probe> config ?
```

```
Usage CONFIG:
 CONFIG                Configure a specific CFM probe.

  <MANDATORY>
  --ID                 Identifies a table entry by ID, in this context.
  --slot               Identifies a slot.

  [OPTIONAL]
  --admin              Administrative State. Enable/disable, in this context. (enable|disable)
  --icc-umc            Specify the concatenated ICC and UMC fields of the MEG ID
according to ITU-T Y.1731
  --level              Specify level (only 7 allowed)
  --md-format          Specify the MD Name Format (no-md|dns-based|mac+integer|string)
  --md-name            Specify the Maintenance Domain (MD) Name according to IEEE
802.1ag
  --mep                Specify MEP Id
  --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --rmep               Specify RMEP Id
  --sma-format         Specify the Short MA Name Format (primary-
vid|string|integer|rfc2685-vpn-id)
  --sma-name           Specify the short MA Name according to IEEE 802.1ag
  --transmission-period Specify the transmission period (10ms|100ms|1s|10s|1min|10min)
  --vlan               Choose a VLAN ID.
```

“create” command

Table 134. "create" command information

Name	create
Description	Creates a new CFM probe.
Full path	/cfm-probe/create
Mandatory Parameters	--mep --port --slot
Screen output	No

Figure 230. CLI on line help on “create” command usage in this node context

```
/cli/cfm-probe> create ?

Usage:
 CREATE       Create a new CFM probe.

  <MANDATORY>
  --mep                Specify MEP Id
  --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

--slot	Identifies a slot.
[OPTIONAL]	
--admin	Administrative State. Enable/disable, in this context. (enable|disable)
--icc-umc	Specify the concatenated ICC and UMC fields of the MEG ID according to ITU-T Y.1731
--level	Specify level (only 7 allowed)
--md-format	Specify the MD Name Format (no-md|dns-based|mac+integer|string)
--md-name	Specify the Maintenance Domain (MD) Name according to IEEE 802.1ag
--rmep	Specify RMEP Id
--sma-format	Specify the Short MA Name Format (primary-vid|string|integer|rfc2685-vpn-id)
--sma-name	Specify the short MA Name according to IEEE 802.1ag
--transmission-period	Specify the transmission period (10ms|100ms|1s|10s|1min|10min)
--vlan	Choose a VLAN ID.

"remove" command

Table 135. "remove " command information

Name	remove
Description	Removes an existing CFM probe.
Full path	/cfm-probe/ remove
Mandatory Parameters	--ID --slot
Screen output	No

Figure 231. CLI on line help on "remove" command usage in this node context

```
/cli/cfm-probe> remove ?

Usage:
  REMOVE        Remove an existing CFM probe.

   <MANDATORY>
   --ID                 Identifies a table entry by ID, in this context.
   --slot               Identifies a slot.
```

"show" command

Table 136. "show" command information

Name	show
Description	Show the current CFM probe configuration

Full path	/cfm-probe/show
Mandatory Parameters	No
Screen output	Table, Figure 233 and Figure 234. Tables parameters description in Table 137

Figure 232. CLI on line help on "show" command usage in this node context

```
/cli/cfm-probe> show ?

Usage:
  SHOW          Show the current CFM probe configuration

  [OPTIONAL]
  --ID                  Identifies a table entry by ID, in this context.
  --slot                Identifies a slot. (not used for LAG)
```

Figure 233. Output of "show" command without arguments in this node context

```
/cli/cfm-probe> show
+-----------------------------------------------------------------------------------------------------------------------------------------------+
|CFM Probes                                                                                                                                     |
+----+---+--------+------+-----+-----+-----+-----------------+-----------------------------------------------------------------------+-----+
|Slot|ID |Admin   |Port  |MEP  |RMEP |Level|Transmission Period|MEG ID / MAID                                                          |VLAN |
+----+---+--------+------+-----+-----+-----+-----------------+-----------------------------------------------------------------------+-----+
|5   |1  |enable  |Eth 1 |2    |5    |7    |---              |ICC+UMC: abcde                                                         |558  |
+----+---+--------+------+-----+-----+-----+-----------------+-----------------------------------------------------------------------+-----+
```

Figure 234. Output of "show" command with arguments ID and slot in this node context

```
/cli/cfm-probe> show --ID=1 --slot=5
+-----------------------------------------------------------------------------------------------------------------------------------------------+
|CFM Probe (1)                                                                                                                                  |
+--------------------+--------------------------------------------------------------------------------------------------------------------------+
|Parameter           |Value                                                                                                                     |
+--------------------+--------------------------------------------------------------------------------------------------------------------------+
|Slot                |5                                                                                                                         |
|ID                  |1                                                                                                                         |
|Admin               |enable                                                                                                                    |
|Port                |Eth 1                                                                                                                     |
|MEP                 |2                                                                                                                         |
|RMEP                |5                                                                                                                         |
|Level               |7                                                                                                                         |
|Timeout             |                                                                                                                          |
|VLAN                |558                                                                                                                       |
|MEG ID / MAID       |ICC+UMC: abcde                                                                                                            |
|MEG ID / MAID (raw):|01200D6162636465000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000000    |
+--------------------+--------------------------------------------------------------------------------------------------------------------------+
```

Table 137. "show" command output table parameters

Parameter	Description
Slot	Slot to which the monitored Physical interface belongs to
ID	CFM-probe ID
Admin	CFM probe administrative state
Port	Physical interface that the probe is monitoring

MEP	MEP Identification forwarded by the probe in the CCM message
RMEP	MEP ID of the remote MEP with which this probe makes P2P
Level	Probe OAM level, from 0-7 **Operator** (0, 1, 2) **Provider** (3, 4) **Customer** (5, 6, 7)
Transmission Period	Forwarding period of the CCM frames
MEG ID/MAID	Identification of the CFM maintenance group
VLAN	VLAN that encapsulates the CCM frame sent by the probe

"showconfig" command

Table 138. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration.
Full path	/cfm-probe/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 235. CLI on line help on "showconfig" command usage in this node context

```
/cli/cfm-probe> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"status" command

Table 139. "status" command information

Name	status
Description	Shows the current CFM probes status
Full path	/cfm-probe/status
Mandatory Parameters	No
Screen Output	Table, Figure 237. Table parameters description in Table 140.

Figure 236. CLI on line help on "status" command usage in this node context

```
/cli/cfm-probe> status ?
```

```
Usage:
 STATUS        Show the current CFM probes status

 [OPTIONAL]
 --slot                Identifies a slot. (not used for LAG)
```

Figure 237. Output of "status" command in this node context

```
/cli/cfm-probe> status
+-------------------------------------------------------------------------
|CFM Probe Status
+----+---+----------+-------+------+------+-------+------------+---------
|Slot|ID |Admin     |Port   |MEP   |RMEP  |VLAN   |Last CCM(ms)|Alarms
+----+---+----------+-------+------+------+-------+------------+---------
|5   |1  |enable    |Eth 1  |2     |5     |558    |--          |LOC
+----+---+----------+-------+------+------+-------+------------+---------
```

Table 140. "status" command output table parameters

Parameter	Description
Slot	Slot to which the monitored Physical interface belongs to
ID	CFM-probe ID
Admin	CFM probe administrative state
Port	Physical interface that the probe is monitoring
MEP	MEP Identification forwarded by the probe in the CCM message
RMEP	MEP ID of the remote MEP with which this probe makes P2P
VLAN	VLAN that encapsulates the CCM frame sent by the probe
Last CCM (ms)	Instant of time of arrival of last received CCM packet
Alarms	This alarms triggers when no packets are transmitted/received

"unx-ccm" sub-node

"remove" command

Table 141. "remove" command information

Name	remove
Description	Clears the list of Unexpected CCMs received.
Full path	/cfm-probe/unx-ccm/remove
Mandatory Parameters	--slot
Screen Output	No

Figure 238. CLI on line help on “remove” command usage in this node context

```
/cli/cfm-probe/unx-ccm> remove ?

Usage:
  REMOVE        Clears the list of Unexpected CCMs received

   <MANDATORY>
   --slot                 Identifies a slot.
```

“show” command

Table 142. "show" command information

Name	show
Description	Shows a list of Unexpected CCMs received.
Full path	/cfm-probe//unx-ccm/show
Mandatory Parameters	No
Screen Output	Table, Figure 240. Table parameters description in Table 143.

Figure 239. CLI on line help on “show” command usage in this node context

```
/cli/cfm-probe/ unx-ccm>show ?

Usage:
  SHOW          Shows a list of Unexpected CCMs received

   [OPTIONAL]
   --slot                 Identifies a slot. (not used for LAG)
```

Figure 240. Output of ”show” command in this node context

```
/cli/cfm-probe/unx-ccm> show
+-----------------------------------------------------------------------------------------------------------------------+
|Unexpected CCMs Received                                                                                               |
+----+---+-------+------+------+----------+--------------+-------+--------------------+--------------------+--------+
|Slot|ID |Port   |MEP   |RMEP  |MEG-Format|MEG ICC/UMC   |VLAN   |Fist occur.         |Last occur.         |# occur.|
+----+---+-------+------+------+----------+--------------+-------+--------------------+--------------------+--------+
+----+---+-------+------+------+----------+--------------+-------+--------------------+--------------------+--------+
```

Table 143. “show” command output table parameters

Parameter	Description
Slot	Slot to which the monitored Physical interface belongs to
ID	CFM-probe ID
Admin	CFM probe administrative state
Port	Physical interface that the probe is monitoring
MEP	MEP Identification forwarded by the probe in the CCM

	message
RMEP	MEP ID of the remote MEP with which this probe makes P2P
MEG-Format	ITU-T Y.1731 or IEEE 802.1ag
MEG ICC/UMC	ITU Carrier Code or Unique MEG Code
VLAN	VLAN that encapsulates the CCM frame sent by the probe
Fist occur.	Date of first Unexpected CCM Packet type occurrence
Last occur.	Date of last Unexpected CCM Packet type occurrence
# occur.	Number of Unexpected CCM Packet type occurrences

"class-map" node

Figure 241. "class-map" tree

```
/cli/class-map> tree
+ class-map[]
  + ip-dscp-to-tc[@config, @create, @remove, @show, @showconfig]
  + ip-prec-to-tc[@config, @create, @remove, @show, @showconfig]
  + pbits-to-tc[@config, @create, @remove, @show, @showconfig]
```

"ip-dscp-to-tc" sub-node

"config" command

Table 144. "config" command information

Name	config
Description	Configures an existing IP DSCP to Traffic Class mapping
Full path	/class-map/ip-dscp-to-tc/config
Mandatory Parameters	No
Screen Output	No

Figure 242. CLI on line help on "config" command usage in this node context

```
/cli/class-map/ip-dscp-to-tc> config ?

Usage CONFIG:
 CONFIG              Configure an existing IP DSCP to Traffic Class mapping.

  [OPTIONAL]
  --ID               Identifies a table entry by ID, in this context.
  --admin            Administrative State. Enable/disable, in this context. (enable|disable)
  --ip-dscp          Specify the DSCP value (0..63). Ranges are accepted (eg. 0-7,10,20)
  --name             Specify a name for the IP DSCP to Traffic Class map. (STRING 32)
  --traffic-class    Specify the Traffic Class value (0..7)
```

“create” command

Table 145. "create" command information

Name	create
Description	Creates a new IP DSCP to Traffic Class mapping.
Full path	/class-map/ip-dscp-to-tc/create
Mandatory Parameters	--name
Screen Output	No

Figure 243. CLI on line help on “create” command usage in this node context

```
/cli/class-map/ip-dscp-to-tc> create ?

Usage CREATE:
  CREATE                Create a new IP DSCP to Traffic Class mapping.

  <MANDATORY>
  --name                Specify a name for the IP DSCP to Traffic Class map. (STRING 32)

  [OPTIONAL]
  --ID                  Identifies a table entry by ID, in this context.
  --admin               Administrative State. Enable/disable, in this context. (enable|disable)
  --ip-dscp             Specify the DSCP value (0..63). Ranges are accepted (eg. 0-7,10,20)
  --traffic-class       Specify the Traffic Class value (0..7)
```

“remove” command

Table 146. "remove" command information

Name	remove
Description	Removes an existing IP DSCP to Traffic Class mapping.
Full path	/class-map/ip-dscp-to-tc/remove
Mandatory Parameters	No
Screen Output	No

Figure 244. CLI on line help on “remove” command usage in this node context

```
/cli/class-map/ip-dscp-to-tc> remove ?

Usage REMOVE:
  REMOVE                Remove an existing IP DSCP to Traffic Class mapping.
```

```
[OPTIONAL]
--ID            Identifies a table entry by ID, in this context.
--name          Specify a name for the IP DSCP to Traffic Class map. (STRING 32).
```

“show” command

Table 147. "show" command information

Name	show
Description	Shows existing IP DSCP to Traffic Class mappings.
Full path	/class-map/ip-dscp-to-tc/show
Mandatory Parameters	No
Screen Output	Tables, Figure 246 and Figure 247. Tables parameter description in Table 148 and Table 149.

Figure 245. CLI on line help on “show” command usage in this node context

```
/ cli/class-map/ip-dscp-to-tc> show ?

Usage SHOW:
  SHOW          Show existing IP DSCP to Traffic Class mappings.

  [OPTIONAL]
  --ID          Identifies a table entry by ID, in this context.
```

Figure 246. Output of ”show” command in this node context

```
/cli/class-map/ip-dscp-to-tc> show
+-----------------------------------------------+
|IP DSCP to Traffic Class                       |
+-------+-------------------------------+-------+
|ID     |Name                           |Admin  |
+-------+-------------------------------+-------+
|1      |default-ip-dscp-to-tc          |enable |
|7      |default-ip-dscp-to-tc          |enable |
+-------+-------------------------------+-------+
```

Table 148. “show” command output table parameters

Parameter	Description
ID	Identifies a table entry by ID, in this context
Name	IP DSCP to Traffic Class map name
Admin	Administrative State

Figure 247. Output of ”show” command, with argument ID, in this node context

```
/cli/class-map/ip-dscp-to-tc> show --ID=1
+-------------------------------------------------------+
|IP DSCP to Traffic Class 1 - default-ip-dscp-to-tc     |
+------+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
+------+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|DSCP  |0 |1 |2 |3 |4 |5 |6 |7 |8 |9 |10|11|12|13|14|15|
|TC    |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |
+------+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|DSCP  |16|17|18|19|20|21|22|23|24|25|26|27|28|29|30|31|
|TC    |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |
+------+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|DSCP  |32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|
|TC    |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |
+------+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|DSCP  |48|49|50|51|52|53|54|55|56|57|58|59|60|61|62|63|
|TC    |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |
+------+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
```

Table 149. “show” command, with argument ID, output table parameters

Parameter	Description
Table Name	IP DSCP to Traffic Class # (ID - number) – Used map name
DSCP	DSCP value
TC	Traffic Class number (0-7) to which the DSCP value maps to

“showconfig” command

Table 150. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration.
Full path	/dhcp/dhcp-services/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 248. CLI on line help on “showconfig” command usage in this node context

```
/cli/class-map/ip-dscp-to-tc> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG                Print the command list that enforces the current configuration
```

“ip-prec-to-tc” sub-node

“config” command

Table 151. "config" command information

Name	config
Description	Configures an existing IP Precedence to Traffic Class mapping
Full path	/class-map/ip-prec-to-tc/config
Mandatory Parameters	No
Screen Output	No

Figure 249. CLI on line help on “config” command usage in this node context

```
/cli/class-map/ip-prec-to-tc> config ?

Usage CONFIG:
  CONFIG                  Configure an existing IP Precedence to Traffic Class mapping.

  [OPTIONAL]
  --ID                  Identifies a table entry by ID, in this context.
  --admin                 Administrative State. Enable/disable, in this context. (enable|disable)
  --ip-prec               Specify the IP Precedence value (0..7)
  --name                  Specify a name for the IP Precedence to Traffic Class map. (STRING 32)
  --traffic-class          Specify the Traffic Class value (0..7)
```

“create” command

Table 152. "create" command information

Name	create
Description	Creates a new IP Precedence to Traffic Class mapping.
Full path	/class-map/ip-prec-to-tc/create
Mandatory Parameters	--name
Screen Output	No

Figure 250. CLI on line help on “create” command usage in this node context

```
/cli/class-map/ip-prec-to-tc> create ?

Usage CREATE:
  CREATE                  Create a new IP Precedence to Traffic Class mapping.

   <MANDATORY>
```

```
  --name              Specify a name for the IP Precedence to Traffic Class map. (STRING
32)

  [OPTIONAL]
  --ID                Identifies a table entry by ID, in this context.
  --admin             Administrative State. Enable/disable, in this context. (enable|disable)
  --ip-prec           Specify the IP Precedence value (0..7)
  --traffic-class     Specify the Traffic Class value (0..7)
```

"remove" command

Table 153. "remove" command information

Name	remove
Description	Removes an existing IP Precedence to Traffic Class mapping.
Full path	/class-map/ ip-prec-to-tc/remove
Mandatory Parameters	No
Screen Output	No

Figure 251. CLI on line help on "remove" command usage in this node context

```
/cli/class-map/ip-prec-to-tc> remove ?

Usage REMOVE:
 REMOVE              Remove an existing IP Precedence to Traffic Class mapping.

  [OPTIONAL]
  --ID                Identifies a table entry by ID, in this context.
  --name              Specify a name for the IP Precedence to Traffic Class map. (STRING 32)
```

"show" command

Table 154. "show" command information

Name	show
Description	Shows existing IP Precedence to Traffic Class mappings.
Full path	/class-map/ip-prec-to-tc/show
Mandatory Parameters	No
Screen Output	Tables, Figure 253 and Figure 254. Tables parameter description in Table 155 and Table 156.

Figure 252. CLI on line help on "show" command usage in this node context

```
/cli/class-map/ip-prec-to-tc> show ?
```

Usage SHOW:

SHOW	Show existing IP Precedence to Traffic Class mappings.
[OPTIONAL]	
--ID	Identifies a table entry by ID, in this context.

Figure 253. Output of "show" command in this node context

```
/cli/class-map/ip-prec-to-tc> show
+-----------------------------------------+
|IP Precedence to Traffic Class           |
+---+---------------------------------+-------+
|ID |Name                             |Admin  |
+---+---------------------------------+-------+
|1  |default-ip-prec-to-tc            |enable |
+---+---------------------------------+-------+
```

Table 155. "show" command output table parameters

Parameter	Description
ID	Identifies a table entry by ID, in this context
Name	IP Precedence to Traffic Class map name
Admin	Administrative State

Figure 254. Output of "show" command, with argument ID, in this node context

```
/cli/class-map/ip-prec-to-tc> show --ID=1
+-------------------------------------------------------------------------+
|IP Precedence to Traffic Class                                           |
+---+---------------------------------+-------+-------+---------------+
|   |                                 |       |       |IP Precedence  |
+---+---------------------------------+-------+-------+-+-+-+-+-+-+-+-+
|ID |Name                             |Admin  |TC     |0|1|2|3|4|5|6|7|
+---+---------------------------------+-------+-------+-+-+-+-+-+-+-+-+
|1  |default-ip-prec-to-tc            |enable |0      |x| | | | | | | |
|   |                                 |       |1      | |x| | | | | | |
|   |                                 |       |2      | | |x| | | | | |
|   |                                 |       |3      | | | |x| | | | |
|   |                                 |       |4      | | | | |x| | | |
|   |                                 |       |5      | | | | | |x| | |
|   |                                 |       |6      | | | | | | |x| |
|   |                                 |       |7      | | | | | | | |x|
+---+---------------------------------+-------+-------+-+-+-+-+-+-+-+-+
```

Table 156. “show” command, with argument ID, output table parameters

Parameter	Description
Table Name	IP Precedence to Traffic Class
ID	Table entry Identifier, in this context
Name	IP Precedence to Traffic Class map name
Admin	Administrative state
IP Precedence (0-7)	IP Precedence value
TC	Traffic Class number (0-7) to which each IP Precedence value maps to

“showconfig” command

Table 157. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration.
Full path	/class-map/ip-prec-to-tc/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 255. CLI on line help on “showconfig” command usage in this node context

```
/cli/class-map/ip-prec-to-tc> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG                Print the command list that enforces the current configuration
```

“pbits-to-tc” sub-node

“config” command

Table 158. "config" command information

Name	config
Description	Configures an existing P-bits to Traffic Class mapping.
Full path	/class-map/pbits-to-tc/config
Mandatory Parameters	No
Screen Output	No

Figure 256. CLI on line help on “config” command usage in this node context

```
/cli/class-map/pbits-to-tc> config ?
```

```
Usage CONFIG:
  CONFIG                Configure an existing P-bits to Traffic Class mapping.

  [OPTIONAL]
  --ID                  Identifies a table entry by ID, in this context.
  --admin               Administrative State. Enable/disable, in this context. (enable|disable)
  --name                Specify a name for the P-bits to Traffic Class map. (STRING 32)
  --pbits               Specify the P-bits value for the P-bits to Traffic Class map (0..7).
--traffic-class         Specify the Traffic Class (0..7)
```

"create" command

Table 159. "create" command information

Name	create
Description	Creates a new P-bits to Traffic Class mapping.
Full path	/class-map/pbits-to-tc/create
Mandatory Parameters	--name
Screen Output	No

Figure 257. CLI on line help on "create" command usage in this node context

```
/cli/class-map/pbits-to-tc> create ?

Usage CREATE:
  CREATE                Create a new P-bits to Traffic Class mapping.

  <MANDATORY>
  --name                Specify a name for the P-bits to Traffic Class map. (STRING 32)

  [OPTIONAL]
  --ID                  Identifies a table entry by ID, in this context.
  --admin               Administrative State. Enable/disable, in this context. (enable|disable)
  --pbits               Specify the P-bits value for the P-bits to Traffic Class map (0..7).
  --traffic-class       Specify the Traffic Class (0..7)
```

"remove" command

Table 160. "remove" command information

Name	remove
Description	Removes an existing P-bits to Traffic Class mapping.
Full path	/class-map/pbits-to-tc/remove
Mandatory	No

Parameters	
Screen Output	No

Figure 258. CLI on line help on "remove" command usage in this node context

```
/cli/class-map/pbits-to-tc> remove ?

Usage REMOVE:
 REMOVE                Remove an existing P-bits to Traffic Class mapping.

  [OPTIONAL]
  --ID                 Identifies a table entry by ID, in this context.
  --name               Specify a name for the P-bits to Traffic Class map. (STRING 32)
```

"show" command

Table 161. "show" command information

Name	show
Description	Shows existing IP Precedence to Traffic Class mappings.
Full path	/class-map/ip-prec-to-tc/show
Mandatory Parameters	No
Screen Output	Tables, Figure 260 and Figure 261. Tables parameter description in Table 162 and Table 163

Figure 259. CLI on line help on "show" command usage in this node context

```
/cli/class-map/pbits-to-tc> show ?

Usage SHOW:
 SHOW                  Show existing P-bits to Traffic Class mappings.

  [OPTIONAL]
  --ID                 Identifies a table entry by ID, in this context.
```

Figure 260. Output of ”show” command in this node context

```
/cli/class-map/pbits-to-tc> show
+-----------------------------------------+
|P-bits to Traffic Class                  |
+---+-------------------------------+-------+
|ID |Name                           |Admin  |
+---+-------------------------------+-------+
|1  |default-p-bits-to-tc           |enable |
|2  |teste                          |disable|
|3  |rf                             |enable |
+---+-------------------------------+-------+
```

Table 162. “show” command output table parameters

Parameter	Description
ID	Identifies a table entry by ID, in this context
Name	P-bits to Traffic Class map name
Admin	Administrative State

Figure 261. Output of ”show” command, with argument ID, in this node context

```
/cli/class-map/pbits-to-tc> show --ID=1
+-------------------------------------------------------------------------+
|P-bits to Traffic Class                                                  |
+---+-------------------------------+-------+-------+---------------+
|   |                               |       |       |P-bits         |
+---+-------------------------------+-------+-------+-+-+-+-+-+-+-+-+
|ID |Name                           |Admin  |TC     |0|1|2|3|4|5|6|7|
+---+-------------------------------+-------+-------+-+-+-+-+-+-+-+-+
|1  |default-p-bits-to-tc           |enable |0      |x| | | | | | | |
|   |                               |       |1      | |x| | | | | | |
|   |                               |       |2      | | |x| | | | | |
|   |                               |       |3      | | | |x| | | | |
|   |                               |       |4      | | | | |x| | | |
|   |                               |       |5      | | | | | |x| | |
|   |                               |       |6      | | | | | | |x| |
|   |                               |       |7      | | | | | | | |x|
+---+-------------------------------+-------+-------+-+-+-+-+-+-+-+-+
```

Table 163. “show” command, with argument ID, output table parameters

Parameter	Description
Table Name	P-bits to Traffic Class
ID	Table entry Identifier, in this context
Name	P-bits to Traffic Class map name
Admin	Administrative state
P-bits (0-7)	P-bits value

TC	Traffic Class number (0-7) to which each P-bits value maps to

"showconfig" command

Table 164. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration.
Full path	/class-map/pbits-to-tc/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 262. CLI on line help on "showconfig" command usage in this node context

```
/cli/class-map/pbits-to-tc> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG                Print the command list that enforces the current configuration
```

"dhcp" node

Circuit ID template String Syntax

The Syntax for the circuit ID template string is the following:

$accessnodeid PON $rack/$subrack/$slot/$port:$onuid.$svid

Template circuit ID parameters, variables and usable values are listed in the following table:

Table 165. Template circuit ID syntax

Parameter	Variable	Value
Access Node	$accessnodeid	String(63)
Rack	$rack	0..99
Sub-Rack	$subrack	0..99
Shelf	$shelf	0..99
Ethernet Priority	$ethprty	0..7
Shelf	$shelf	0..99
Ethernet Priority	$ethprty	0..7
ONU ID	$onuid	0..999
Slot	$slot	0..99
Port	$port	0..99
Q-VLAN ID	$qvid	0..4095

S-VLAN ID	$svid	0..4095
C-VLAN ID	$cvid	0..4095

Figure 263. "dhcp" tree

```
/cli/dhcp> tree
+ dhcp[]
  + dhcp-services[@config, @show, @showconfig]
  + global[@config, @show, @showconfig]
  + leases[@remove, @show]
```

"dhcp-services" sub-node

"config" command

Table 166. "config" command information

Name	config
Description	Configures DHCP parameters for a given service.
Full path	/dhcp/dhcp-services/config
Mandatory Parameters	--serviceID
Screen Output	No

Figure 264. CLI on line help on "config" command usage in this node context

```
/cli/dhcp/dhcp-services> config ?

Usage CONFIG:
 CONFIG                  Configure DHCP parameters for a given service.

  <MANDATORY>
  --serviceID             Select an OLT service by ID.

  [OPTIONAL]
  --broadcast-flag              Configure the Broadcast flag for DHCP Discover and request
messages (transparent|force-set|force-clear)
  --circuit-id-str        template string for circuit-id (STRING 255)
  --dhcp-op18               Enable or disable the DHCP Op.18 (enable|disable)
  --dhcp-op37               Enable or disable the DHCP Op.37 (enable|disable)
  --dhcp-op82               Enable or disable the DHCP Op.82 (enable|disable)
  --eth-priority          pbit value in the DHCP packets (0=<n=<7)
  --use-global           If enabled, this service will use the global circuit-id string (enable|disable)
```

"show" command

Table 167. "show" command information

Name	show
Description	Shows DHCP services information.
Full path	/dhcp/dhcp-services/show
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 266.Table parameter description in Table 168.

Figure 265. CLI on line help on "show" command usage in this node context

```
/cli/dhcp/dhcp-services> show ?

Usage:
  SHOW          Show DHCP services information.
```

Figure 266. Output of "show" command in this node context

```
/cli/dhcp/dhcp-services> show
+-------------------------------------------------------------------------------------------------------------------
|DHCP Services Configuration
+-------------------------------------------------------------+--------+-----------------------------------
|                                                             |DHCP Opt|Circuit-ID
+---+---------------------------------+--------+--------------+--+--+--+----------+-------------------------
|ID |Service Name                     |Priority|Broadcast flag|82|37|18|Use Global|Service Template String
+---+---------------------------------+--------+--------------+--+--+--+----------+-------------------------
|1  |ID 1                             |5       |transparent   |X |X |X |enable    |--
|2  |VOD                              |5       |transparent   |  |  |  |enable    |--
|6  |ID 6                             |5       |transparent   |  |  |  |enable    |--
|8  |ID 8                             |5       |transparent   |  |  |  |enable    |--
+---+---------------------------------+--------+--------------+--+--+--+----------+-------------------------
```

Table 168. "show" command output table parameters

Parameter	Description
ID	ME4620 OLT service ID
Service Name	ME4620 OLT service Name.
DHCP Opt	DHCP Options:18/37/82 – Enabled DHCP options in the service
Priority	pbit value in the DHCP packets (0<=n<=7)
Broadcast Flag	Broadcast flag for DHCP Discover and request messages (transparent|force-set|force-clear)
Circuit Id	**Use Global:** if Enabled the Circuit-Id configure in the Global DHCP configuration window is being used. **Service Template String :** Circuit-Id template used for the service if Use Global Disabled.

"showconfig" command

Table 169. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration.
Full path	/dhcp/dhcp-services/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 267. CLI on line help on "showconfig" command usage in this node context

```
/cli/dhcp/dhcp-services> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"global" sub-node

"config" command

Table 170. "config" command information

Name	config
Description	Configures global DHCP parameters.
Full path	/dhcp/global/config
Mandatory Parameters	--circuit-id-str
Screen Output	No

Figure 268. CLI on line help on "config" command usage in this node context

```
/cli/dhcp/global> config ?

Usage:
  CONFIG        Configure global DHCP parameters.

   <MANDATORY>
   --circuit-id-str[=STRING]                    template string for circuit-id (STRING 255)
```

"show" command

Table 171. "show" command information

Name	show

Description	Shows DHCP global configuration.
Full path	/dhcp/global/show
Mandatory Parameters	This command has no parameters
Screen Output	Text string, Figure 270.Template string parameter description in Table 165.

Figure 269. CLI on line help on "show" command usage in this node context

```
/cli/dhcp/global> show ?

Usage:
  SHOW          Show DHCP global configuration.
```

Figure 270. Output of "show" command in this node context

```
/cli/dhcp/global> show
Global DHCP circuit ID Template String:
"$accessnodeid PON $rack/$subrack/$slot/$port:$onuid.$svid"
```

"showconfig" command

Table 172. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/dhcp/global/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 271. CLI on line help on "showconfig" command usage in this node context

```
/cli/dhcp/global> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"leases" sub-node

"remove" command

Table 173. "remove" command information

Name	remove
Description	Removes DHCP leases from the Table
Full path	/dhcp/leases/remove
Mandatory Parameters	--mac --port --serviceID --slot
Screen Output	No

Figure 272. CLI on line help on "remove" command usage in this node context

```
/cli/dhcp/leases> remove ?

Usage REMOVE:
 REMOVE                 Remove DHCP leases from the Table.

  <MANDATORY>
  --mac                 Identify/Set a MAC entry, in this context.
  --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --serviceID           Select an OLT service by ID.
  --slot                Identifies a slot.
```

"show" command

Table 174. "show" command information

Name	show
Description	Shows DHCP leases information.
Full path	/dhcp/leases/show
Mandatory Parameters	No
Screen Output	Table Figure 274.Table parameter description in Table 175.

Figure 273. CLI on line help on "show" command usage in this node context

```
/cli/dhcp/leases> show ?

Usage:
 SHOW          Show DHCP leases information.

  [OPTIONAL]
  --slot                Identifies a slot. (not used for LAG)
```

Figure 274. Output of ”show” command in this node context

```
/cli/dhcp/leases> show
+-----------------------------------------------------------------------------------------------------------------------------------+
|DHCP Leases                                                                                                                        |
+----+-------+------+-----------------------------+-----------------------------------------+-----------------+----------+
|Slot|Port   |ONU ID|(ID)Service                  |IP                                       |MAC              |Leave Time|
+----+-------+------+-----------------------------+-----------------------------------------+-----------------+----------+
|4   |Pon 1  |1     |(1)ID 1                      |192.129.0.1                              |00:00:65:05:01:02|00:01:11  |
|4   |Pon 1  |1     |(1)ID 1                      |3000:0:0:8001::                          |00:00:65:05:01:02|00:00:44  |
|4   |Pon 1  |3     |(2)VOD                       |172.22.211.80                            |00:26:44:03:53:E0|00:00:46  |
+----+-------+------+-----------------------------+-----------------------------------------+-----------------+----------+
```

Table 175. “show” command output table parameters

Parameter	Description
Slot	Slot number
Port	Identifies interface
ONU ID	Identifies ONT (number)
(ID)	Service ID (number)
Service	Service name (text)
IP	IP address
MAC	MAC address
Leave Time	Use of Global circuit Id string (enabled|disabled)

“equipment” node

Figure 275. “equipment” node tree

```
/cli/equipment> tree
+ equipment[@status]
  + boards[@config, @reboot, @show, @showconfig]
  + slot[@apply, @config, @show, @showconfig]
  + switch-fabric[@show, @switch, @update, @upgrade-sw]
  + system[@config, @reboot, @show, @showconfig, @status]
```

“status” command

Table 176. "status" command information

Name	status
Description	Shows the current equipment status.
Full path	/equipment/status
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 277. Table parameters description in Table 177.

Figure 276. CLI on line help on “status” command usage in this node context

```
/cli/equipment> status ?

Usage:
  STATUS        Show the current equipment status.
```

Figure 277. Output of ”status” command in this node context

```
/cli/equipment> status
+-----------------+
|Equipment Status|
+-----------------+
|Status           |
+-----------------+
|OK               |
+-----------------+
```

Table 177. “status” command output table parameters

Parameter	Description
Status	Indicates equipment status.

“boards” sub-node

“config” command

Table 178. "config" command information

Name	config
Description	Configure HW slots.
Full path	/equipment/boards/config
Mandatory Parameters	--admin --slot
Screen Output	No

Figure 278. CLI on line help on “config” command usage in this node context

```
/cli/equipment/boards> config ?

Usage:
  CONFIG        Configure HW slots

   <MANDATORY>
   --admin              Administrative State. Enable/disable, in this context. (enable|disable)
   --slot               Identifies a slot..
```

“reboot” command

Table 179. "reboot" command information

Name	reboot
Description	Sends the reboot command to one board.
Full path	/equipment/boards/reboot
Mandatory Parameters	--slot
Screen Output	No

Figure 279. CLI on line help on “reboot” command usage in this node context

```
/cli/equipment/boards> reboot ?

Usage:
  REBOOT                Send the reboot command to one board.

   <MANDATORY>
   --slot               Identifies a slot.
```

“show” command

Table 180. "show" command information

Name	show
Description	Show the current configuration.
Full path	/equipment/boards/show
Mandatory Parameters	This command has no parameters.
Screen Output	Table Figure 281.Table parameter description in Table 181.

Figure 280. CLI on line help on “show” command usage in this node context

```
/cli/equipment/boards> show ?

Usage:  SHOW          Show the current configuration
```

Figure 281. Output of "show" command in this node context"

```
/cli> equipment/boards/show
+-----------------------------------------------------------------------------------------------------------------------------------------------+
|Equipment Boards Information                                                                                                                   |
+----+--------------+---------+--------+-----------+-------+--------+--------+-----------+-------------------+
|Slot|Name          |State    |Admin   |Temperature (C)|CPU (%)|Memory (%)|Capacity (%)|Serial number|FW / HW version    |
+----+--------------+---------+--------+-----------+-------+--------+--------+-----------+-------------------+
|1   | --           |Empty    | --     | --        | --    | --     | --     | --        | --                |
|2   | --           |Empty    | --     | --        | --    | --     | --     | --        | --                |
|3   | --           |Empty    | --     | --        | --    | --     | --     | --        | --                |
|4   | --           |Empty    | --     | --        | --    | --     | --     | --        | --                |
|5   |AMX-48GE      |OK       |enable  |32.00      |36.35  |44.18   |87.72   |7614100028 |1.6.42 / PCB 3.2   |
|6   | --           |Empty    | --     | --        | --    | --     | --     | --        | --                |
|7   | --           |Empty    | --     | --        | --    | --     | --     | --        | --                |
|8   | --           |Empty    | --     | --        | --    | --     | --     | --        | --                |
|9   |AMX-16GPON    |OK       |enable  |36.00      |12.43  |80.74   |86.27   |7321100045 |3.10.45 / PCB 3.2  |
|10  | --           |Empty    | --     | --        | --    | --     | --     | --        | --                |
|11  |AMX-48GE      |OK       |enable  |36.00      |33.79  |88.37   |87.70   |0000000000 |1.6.42 / PCB 0.0   |
|12  | --           |Empty    | --     | --        | --    | --     | --     | --        | --                |
|13  | --           |Empty    | --     | --        | --    | --     | --     | --        | --                |
|14  | --           |Empty    | --     | --        | --    | --     | --     | --        | --                |
|15  | --           |Empty    | --     | --        | --    | --     | --     | --        | --                |
|16  | --           |Empty    | --     | --        | --    | --     | --     | --        | --                |
|17  |UMX-4x10GE    |OK       |enable  |26.50      |1.50   |61.37   |38.55   |7393100004 |2.4.20 / PCB 1.2   |
|18  | --           |Empty    | --     | --        | --    | --     | --     | --        | --                |
|19  | --           |Empty    | --     | --        | --    | --     | --     | --        | --                |
|20  |XCO-640 (ACT) |OK       |enable  |33.00      |32.88  |76.61   |86.45   |7460100012 |3.7.45 / PCB 1.6   |
+----+--------------+---------+--------+-----------+-------+--------+--------+-----------+-------------------+

+-----------------------------------------------------------------------------------------+
|Equipment Fans Information                                                               |
+-----+-----------------------------------------------------------------------------------+
|     |RPM                                                                                |
+-----+---------+---------+---------+---------+---------+---------+---------+---------+
|Slot |Fan 1    |Fan 2    |Fan 3    |Fan 4    |Fan 5    |Fan 6    |Fan 7    |Fan 8    |
+-----+---------+---------+---------+---------+---------+---------+---------+---------+
|21   |3794     |3693     |3711     |3731     |3805     |3837     |3739     |3737     |
+-----+---------+---------+---------+---------+---------+---------+---------+---------+
```

Table 181. "show" command output table parameters

Parameter	Description
Slot	Slot number
Name	Board Name
State	Slot State
Admin	Board administrative State
Temperature (ºC)	Board Temperature
CPU (%)	Board CPU usage
Memory (%)	Board Memory usage
Capacity (%)	Board capacity usage
Serial Number	Board serial number
FW / HW version	Board firmware and hardware version
Fan Nr	FAN current working speed (RPM)

"showconfig" command

Table 182. "showconfig" command information

Name	showconfig

Description	Prints the command list that enforces the current configuration
Full path	/equipment/boards/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 282. CLI on line help on "showconfig" command usage in this node context

```
/cli/equipment/board> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"slot" sub-node

"apply" command

Table 183. "apply" command information

Name	apply
Description	Applies the current configuration to the HW
Full path	/equipment/slot/apply
Mandatory Parameters	This command has no parameters
Screen Output	No

Figure 283. CLI on line help on "apply" command usage in this node context

```
/cli/equipment/slot> apply ?

Usage:
  APPLY          Applies the current configuration to the HW
```

"config" command

Table 184. "config" command information

Name	config
Description	Configures HW slots (not immediately applied)
Full path	/equipment/slot/config
Mandatory Parameters	--mode --slot
Screen Output	No

Figure 284. CLI on line help on “config” command usage in this node context

```
/cli/equipment/slot> config ?

Usage:
  CONFIG        Configure HW slots (not immediately applied)

   <MANDATORY>
   --mode               Specify the mode (modeA|modeB|modeC)
   --slot               Identifies a slot.
```

“show” command

Table 185. "show" command information

Name	show
Description	Shows the current Slot-Mode configuration.
Full path	/equipment/slot/show
Mandatory Parameters	This command has no parameters.
Screen Output	Tables Figure 285.Tables parameter description Table 186

Figure 285. CLI on line help on “show” command usage in this node context

```
/cli/equipment/slot> show ?

Usage:
  SHOW          Show the current Slot-Mode configuration.
```

Figure 286. Output of ”show” command in this node context”

```
/cli> equipment/slot/show
+-------------------------------------------------------------------------------------------------------------------------
|Equipment Slot Information
+----+--------------------------------+---------------+-------+---------------+---------------+---------------
|Slot|Card Name                       |Card Status    |Admin  |Config. Mode   |FW Mode        |FW Status
+----+--------------------------------+---------------+-------+---------------+---------------+---------------
|2   | --                             | --            | --    |modeA          |modeA          |Disabled
|3   | --                             | --            | --    |modeA          |modeA          |Disabled
|4   | --                             | --            | --    |modeB          |modeB          |Disabled
|5   |AMX-48GE                        |OK             |enable |modeC          |modeC          |OK
|6   | --                             | --            | --    |modeA          |modeA          |Disabled
|7   | --                             | --            | --    |modeA          |modeA          |Disabled
|8   | --                             | --            | --    |modeB          |modeB          |Disabled
|9   |AMX-16GPON                      |OK             |enable |modeB          |modeB          |OK
|10  | --                             | --            | --    |modeB          |modeB          |Disabled
|11  |AMX-48GE                        |OK             |enable |modeC          |modeC          |OK
|12  | --                             | --            | --    |modeB          |modeB          |Disabled
|13  | --                             | --            | --    |modeB          |modeB          |Disabled
|14  | --                             | --            | --    |modeA          |modeA          |Disabled
|15  | --                             | --            | --    |modeA          |modeA          |Disabled
|16  | --                             | --            | --    |modeC          |modeC          |Disabled
|17  |UMX-4x10GE                      |OK             |enable |modeB          |modeB          |OK
|18  | --                             | --            | --    |modeA          |modeA          |Disabled
|19  | --                             | --            | --    |modeA          |modeA          |Disabled
+----+--------------------------------+---------------+-------+---------------+---------------+---------------
```

Table 186. “show” command output table parameters

Parameter	Description
Slot	Slot number
Card Name	Name of the card in the specified slot
Card Status	Card status (newboard|operational|configuration error|absent|proc.)
Admin	Board administrative State
Config. Mode	Configured mode on card (Mode A|Mode B|Mode C)
FW Mode	Detected firmware mode on card (Mode A|Mode B|Mode C)
FW Status	Card firmware Status (OK|Disabled|Unsupported mode for this card)

“showconfig” command

Table 187. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/equipment/slot/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 287. CLI on line help on “showconfig” command usage in this node context

```
/cli/equipment/slot> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

“switch-fabric” sub-node

“show” command

Table 188. "show" command information

Name	show
Description	Shows the current Switch Fabric status.
Full path	/equipment/switch-fabric/show
Mandatory Parameters	This command has no parameters.
Screen Output	Tables Figure 289.Tables parameter description Table 189

Figure 288. CLI on line help on “show” command usage in this node context

```
/cli/equipment/switch-fabric> show ?

Usage:
  SHOW          Show the current Switch Fabric status.
```

Figure 289. Output of ”show” command in this node context”

```
/cli/equipment/switch-fabric> show
+-----------------------------------------------------------------------------------------------------------------------------+
|Switch Fabric Status                                                                                                         |
+----+----------+----------+-----------------------------------------------+-------------------------+-----------------------------+
|Slot|Status    |FW Status |Software                                       |Data                     |Commands                     |
+----+----------+----------+-------------------------------+---------------+----------+---------------+-----------------------------+
|    |          |          |Version                        |Upgrade Status |Database  |Configurations |                             |
+----+----------+----------+-------------------------------+---------------+----------+---------------+-----------------------------+
|1   |active    |OK        | v3.6.0-r372                   | --            | --       | --            | -- / -- / --                |
+----+----------+----------+-------------------------------+---------------+----------+---------------+-----------------------------+
```

Table 189. “show” command output table parameters

Parameter	Description
Slot	Switch Fabric slot number
Status	Status of Switch Fabric board (activity and data state)
FW Status	Indicates the Firmware Status (OK|NOK)
Software	**Version:** Indicates the OS Version **Upgrade** Status: Indicates Software upgrade status

Data	**Database:** Indicates if database data is Updated **Configurations:** Indicates if database configurations are Updated
Commands	Commands to make the manual or forced switching Switch fabric commutation. If it's manual, if the system detects any fail during the commutation process, the switching Switch Fabric won't commutate. If it's forced, the switching Switch Fabric will commutate whether or not there is any problem.

"switch" command

Table 190. "switch" command information

Name	switch
Description	Sets the other Switch Fabric (if any) to be active. Deactivates the current Switch Fabric
Full path	/equipment/switch-fabric/switch
Mandatory Parameters	This command has no parameters
Screen Output	No

Figure 290. CLI on line help on "switch" command usage in this node context

```
/cli/equipment/switch-fabric> switch ?

Usage:
  SWITCH          Set the other Switch Fabric (if any) to be active. Deactivate the current Switch
Fabric.
```

"update" command

Table 191. "update" command information

Name	update
Description	Updates information on the active Switch Fabric, if not up to date.
Full path	/equipment/switch-fabric/update
Mandatory Parameters	This command has no parameters
Screen Output	No

Figure 291. CLI on line help on "update" command usage in this node context

```
/cli/equipment/switch-fabric> update ?

Usage:
```

```
UPDATE          Updates information on the active Switch Fabric, if not up to date.
```

“upgrade-sw” command

Table 192. "upgrade-sw" command information

Name	Upgrade-sw
Description	Upgrades the inactive matrix software to the same version as the active matrix.
Full path	/equipment/switch-fabric/upgrade-sw
Mandatory Parameters	This command has no parameters
Screen Output	No

Figure 292. CLI on line help on “upgrade-sw” command usage in this node context

```
/cli/equipment/switch-fabric> upgrade-sw ?

Usage:
  UPGRADE-SW                    Upgrade the inactive matrix software to the same version as the
active matrix.
```

“system” sub-node

“config” command

Table 193. "config" command information

Name	config
Description	Configures Global system parameters.
Full path	/equipment/system/config
Mandatory Parameters	No
Screen Output	No

Figure 293. CLI on line help on “config” command usage in this node context

```
/cli/equipment/system> config ?

Usage CONFIG:
  CONFIG                Configure Global system parameters.

  [OPTIONAL]
  --access-node             Access Node ID (STRING 63)
  --alarm-rep-mode          Define the alarm reporting mode. (none|snmp|xml)
```

```
--auto-update          Automatically upgrade the second matrix. (enable|disable)
--contact              Set the OLT contact information as appropriate (STRING 31)
--date                 Set the system date as YYYY/MM/DD (UTC)
--description          Set the global OLT system description (STRING 63)
--location             Set the OLT location information as appropriate (STRING 31)
--name                 Set the global OLT system name (STRING 64)
--numerical-rack       system rack (numerical value)
--numerical-shelf      system shelf (numerical value)
--numerical-sub-rack   system subrack (numerical value)
--rack                 system rack (STRING 31)
--shelf                system shelf (STRING 31)
--sub-rack             system subrack (STRING 31)
--time                 Set the system time as hh:mm:ss (UTC)
```

"reboot" command

Table 194. "reboot" command information

Name	reboot
Description	Sends the reboot command to the equipment.
Full path	/equipment/system/reboot
Mandatory Parameters	This command has no parameters
Screen Output	No

Figure 294. CLI on line help on "reboot" command usage in this node context

```
/cli/equipment/system> reboot ?

Usage:
 REBOOT                Send the reboot command to the equipment.
```

"show" command

Table 195. "show" command information

Name	show
Description	Shows the current global system configuration.
Full path	/equipment/system/show
Mandatory Parameters	This command has no parameters.
Screen Output	Table, Figure 296.Table parameter description Table 196.

Figure 295. CLI on line help on "show" command usage in this node context

```
/cli/equipment/system> show ?
```

Usage:	
SHOW	Show the current global system configuration.

Figure 296. Output of "show" command in this node context"

```
/cli/equipment/system> show
+-----------------------------------------------------------------------
|System Configuration
+---------------------------------------+-------------------------------
|Properties                             |Values
+---------------------------------------+-------------------------------
|Equipment Type                         |ME4620
+---------------------------------------+-------------------------------
|Equipment Name                         |
|Description                            |
|Access Node ID                         |
|Serial Number                          |--
|Rack                                   | 0 - 1
|SubRack                                | 0 - 1
|Shelf                                  | 0 - 1
|Contact                                |
|Location                               |
+---------------------------------------+-------------------------------
|Firmware version                       | v3.6.0-r372
+---------------------------------------+-------------------------------
|Date On Equipment (UTC)                |2015/10/26
|Time On Equipment (UTC)                |19:03:02
+---------------------------------------+-------------------------------
|Equipment IP (for management)          |10.112.42.169
|Administrative Status                  |Not registered
|Alarms Reporting Mode                  |none
+---------------------------------------+-------------------------------
|Automatically Upgrade the second Matrix |Disabled
+---------------------------------------+-------------------------------
```

Table 196. "show" command output table parameters

Parameter	Description
Equipment Type	Type/Model of the equipment
Equipment Name	Name of the equipment
Description	Equipment brief description
Access Node ID	Identification of the Access Node
Serial Number	Equipment serial number
Rack	Equipment location rack (number)
Sub Rack	Equipment location sub-rack (number)
Shelf	Equipment location shelf (number)
Contact	contact information of the entity responsible for this equipment (department, person, etc)
Location	Equipment location

Firmware version	Version of the current firmware
Date On Equipment	Date
Time On Equipment	Time
Equipment IP (for management)	Equipment IPv4 address
Administrative status	Equipment administrative status
Alarms Reporting Mode	(none|SNMP|XML)
Automatically Upgrade the second Matrix	(enabled|disabled)

"showconfig" command

Table 197. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/equipment/system/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 297. CLI on line help on "showconfig" command usage in this node context

```
/cli/equipment/system> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"status" command

Table 198. "status" command information

Name	status
Description	Shows the current global system status.
Full path	/equipment/system/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 299; Table parameters description in Table 199.

Figure 298. CLI on line help on "status" command usage in this node context

```
/cli/equipment/system> status ?
```

```
Usage STATUS:
 STATUS                 Show the current global system status.
```

Figure 299. Output of "status" command in this node context"

```
/cli/equipment/system> status
+-----------------------------------------------------+
|System Status                                        |
+-----------------------------+-----------------------+
|Properties                   |Values                 |
+-----------------------------+-----------------------+
|Sensor 1 (AC Power Sensor)   |OK                     |
|Sensor 2 (Open Door Sensor)  |closed door            |
|Sensor 3                     |OK                     |
|Sensor 4                     |OK                     |
+-----------------------------+-----------------------+
```

Table 199. "status" command output table parameters

Parameter	Description
Sensor 1 (AC Power Sensor)	Indicates the AC Power Sensor State (OK| NOK)
Sensor 2 (Open Door Sensor)	Indicates the Open Door Sensor State (Closed door|Open door))
Sensor 3	Indicates Sensor 3 State (OK| NOK)
Sensor 4	Indicates Sensor 4 State (OK| NOK)

"erp-ring" node

Figure 300. "erp-ring" node tree

```
/cli/erp-ring> tree
+ erp-ring[@config, @create, @remove, @show, @showconfig]
  + status[@command, @show]
    + aps-channel[@show]
```

"config" command

Table 200. "config" command information

Name	config
Description	Configures an existing ERP instance.
Full path	/erp-ring/config
Mandatory	--ID

Parameters	
Screen Output	No

Figure 301. CLI on line help on "config" command usage in this node context

```
/cli/erp-ring> config ?

Usage CONFIG:
 CONFIG                Configure an existing ERP instance.

  <MANDATORY>
  --ID                 Identifies a table entry by ID, in this context.

  [OPTIONAL]
  --add-vlan            Add one Protected vlan entry to the list (1..4094)
  --admin              Administrative State. Enable/disable, in this context. (enable|disable)
  --aps-ch-vlan          Set the APS channel VLAN (1..4094)
  --aps-meg-level         Set APS channel MEG level value (0..7) min
  --del-vlan           Delete one Protected vlan entry from the list (1..4094)
  --guard-time           Set the guard time (1..200) x10ms
  --holdoff-time          Set the hold off time, in hundreds of milliseconds (0..100) x100ms
  --open-ring           Specify whether the ring is open or not. (enable|disable)
  --p0-cfm-probe-id         Identify a CFM probe by ID (0 for none)
  --p0-port            Identify a Port (e.g.: eth.1, pon.3, lag.2)
  --p0-slot            Identify a Slot (not used for LAG)
  --p0-type            Set the port type (non-rpl|rpl|rpl-neighbor)
  --p1-cfm-probe-id         Identify a CFM probe by ID (0 for none)
  --p1-port            Identify a Port (e.g.: eth.1, pon.3, lag.2)
  --p1-slot            Identify a Slot (not used for LAG)
  --p1-type            Set the port type (non-rpl|rpl|rpl-neighbor)
  --revertive          Specify is reversion is enabled. (enable|disable)
  --ring-id            Set the ring ID
  --wtr                Set the Wait to Restore time (1..12) x10ms
```

"create" command

Table 201. "create" command information

Name	create
Description	Creates a new Ethernet Ring Protection (ERP) instance.
Full path	/erp-ring/create
Mandatory Parameters	No
Screen Output	No

Figure 302. CLI on line help on "create" command usage in this node context

```
/cli/erp-ring> create ?

Usage CREATE:
  CREATE                Create a new Ethernet Ring Protection (ERP) instance.

  [OPTIONAL]
  --ID                  Identifies a table entry by ID, in this context.
  --add-vlan            Add one Protected vlan entry to the list (1..4094)
  --admin               Administrative State. Enable/disable, in this context. (enable|disable)
  --aps-ch-vlan         Set the APS channel VLAN (1..4094)
  --aps-meg-level       Set APS channel MEG level value (0..7) min
  --del-vlan            Delete one Protected vlan entry from the list (1..4094)
  --guard-time          Set the guard time (1..200) x10ms
  --holdoff-time        Set the hold off time, in hundreds of milliseconds (0..100) x100ms
  --open-ring           Specify whether the ring is open or not. (enable|disable)
  --p0-cfm-probe-id     Identify a CFM probe by ID (0 for none)
  --p0-port             Identify a Port (e.g.: eth.1, pon.3, lag.2)
  --p0-slot             Identify a Slot (not used for LAG)
  --p0-type             Set the port type (non-rpl|rpl|rpl-neighbor)
  --p1-cfm-probe-id     Identify a CFM probe by ID (0 for none)
  --p1-port             Identify a Port (e.g.: eth.1, pon.3, lag.2)
  --p1-slot             Identify a Slot (not used for LAG)
  --p1-type             Set the port type (non-rpl|rpl|rpl-neighbor)
  --revertive           Specify is reversion is enabled. (enable|disable)
  --ring-id             Set the ring ID
  --wtr                 Set the Wait to Restore time (1..12) x10ms
```

"remove" command

Table 202. "remove" command information

Name	remove
Description	Removes an existing ERP instance.
Full path	/erp-ring/remove
Mandatory Parameters	--ID
Screen Output	No

Figure 303. CLI on line help on "remove" command usage in this node context

```
/cli/erp-ring> remove ?

Usage:
  REMOVE        Remove an existing ERP instance.

   <MANDATORY>
```

--ID	Identifies a table entry by ID, in this context.

“show” command

Table 203. "show" command information

Name	show
Description	Shows the summary configuration for all ERP instances. Specify an ID to see details.
Full path	/erp-ring/show
Mandatory Parameters	No
Screen Output	Tables Figure 305 and Figure 306. Tables parameter description Table 203 and Table 204.

Figure 304. CLI on line help on “show” command usage in this node context

```
/cli/erp-ring> show ?

Usage:
  SHOW        Show the summary configuration for all ERP instances. Specify an ID to see details.

   [OPTIONAL]
   --ID                  Identifies a table entry by ID, in this context.
```

Figure 305. Output of ”show” command without arguments in this node context”

```
/cli/erp-ring> show
+-------------------------------------------------------------------------------------------------------------------------------+
|Ethernet Ring Protection Instances Summary                                                                                     |
+---------------------------------------+-------------+-----------------------------------------------------------------------+
|                                       |APS Channel  |                                                                       |
+---+-------+---------+---------+-------+-----+-------+---------------------+---------------------+---------------------+
|ID |Admin  |Ring ID  |Open Ring|Revertive|VLAN |MEG Level|Wait to restore (min) |Holdoff Time (x100ms) |Guard time (x100ms) |
+---+-------+---------+---------+-------+-----+-------+---------------------+---------------------+---------------------+
|1  |enable |1        |enable   |enable   |200  |1      |5                    |0                    |5                    |
+---+-------+---------+---------+-------+-----+-------+---------------------+---------------------+---------------------+
```

Table 204. “show” command output without arguments table parameters

Parameter	Description
ID	ERP instance Id
Admin	ERP administrative state
Ring ID	ERP Id
Open Ring	Open Ring Flag (enable/disable)
Revertive	Revertive flag (enable/disable)
APS Channel	**VLAN:** VLAN used by the Automatic Protection Switch Channel **MEG level:** Maintenance Entity Group OAM level, from 0-7

	(Operator (0, 1, 2)/Provider (3, 4)/Customer (5, 6, 7))
Wait to restore (min)	1 to 12 min, default value -5min
Holdoff Time (x100ms)	1 to 10secs, default value- 0secs
Guard Time (x100ms)	10ms to 2secs, default value 500ms

Figure 306. Output of "show" command with argument ID in this node context"

```
/cli/erp-ring> show --ID=1
+-----------------------------------------------
|Ethernet Ring Protection Instance -- ID 1
+-----------------------+---------------------
|Parameter              |Value
+-----------------------+---------------------
|Admin                  |enable
|Ring ID                |1
|Open Ring              |enable
|Revertive              |enable
|Wait to restore   (min)|5
|Holdoff Time   (x100ms)|0
|Guard Time      (x10ms)|5
+-----------------------+---------------------
|P0                     |
|   Slot / Interface    |5 / Eth 1
|   Type                |RPL
|   CFM Probe ID        |--
+-----------------------+---------------------
|P1                     |
|   Slot / Interface    |5 / Eth 2
|   Type                |RPL Neigh.
|   CFM Probe ID        |--
+-----------------------+---------------------
|APS Channel VLAN       |200
|APS Channel MEG Level  |1
+-----------------------+---------------------
|Protected VLANs        |
|                       |101
+-----------------------+---------------------
```

Table 205. "show" command output with argument ID table parameters

Parameter	Description
Admin	ERP administrative state
Ring ID	ERP Id
Open Ring	Open Ring Flag (enable/disable)
Revertive	Revertive flag (enable/disable)
Wait to restore (min)	1 to 12 min, default value -5min
Holdoff Time (x100ms)	1 to 10secs, default value- 0secs
Guard Time (x100ms)	10ms to 2secs, default value 500ms
P0	**Slot/Interface:** P0 ERP port , identified by pair Slot/interface in the slot

	Type: ERP interface classification (RPL/Non RPL/RPL Neighbor) **CFM Probe ID:**
P1	**Slot/Interface:** P1 ERP port , identified by pair Slot/interface in the slot **Type:** ERP interface classification (RPL/Non RPL/RPL Neighbor) **CFM Probe ID**:
APS Channel	**VLAN:** VLAN used by the Automatic Protection Switch Channel **MEG level:** Maintenance Entity Group OAM level, from 0-7 (Operator (0, 1, 2)/Provider (3, 4)/Customer (5, 6, 7))
Protected VLANs	Protected VLANs' Identifiers

"showconfig" command

Table 206. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/erp-ring/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 307. CLI on line help on "showconfig" command usage in this node context

```
/cli/erp-ring> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"status" sub-node

"command" command

Table 207. "command" command information

Name	command
Description	Specifies the command to execute on a given ERP instance port.
Full path	/erp-ring/status/command
Mandatory Parameters	--ID --erp-port --type

Screen Output	No

Figure 308. CLI on line help on “command” command usage in this node context

```
/cli/erp-ring/status> command ?

Usage:
  COMMAND        Specify the command to execute on a given ERP instance port.

   <MANDATORY>
   --ID                Identifies a table entry by ID, in this context.
   --erp-port          Choose the ERP port to execute the command (p0|p1)
   --type              Identify the command to execute (clear|forced-switch|manual-switch)
```

“show” command

Table 208. "show" command information

Name	show
Description	Shows the status information for all active ERP instances.
Full path	/erp-ring/status/show
Mandatory Parameters	This command has no parameters.
Screen Output	Table, Figure 310; Table parameters description Table 209

Figure 309. CLI on line help on “show” command usage in this node context

```
/cli/erp-ring/status> show ?

Usage:
  SHOW          Show the status information for all active ERP instances.
```

Figure 310. Output of ”show” in this node context”

```
/cli/erp-ring> status/show
+-------------------------------------------------------------------------------------------------------------------------------------+
|Active Ethernet Ring Protection Instances Status                                                                                     |
+-----------------------+-----------------------------------------+-----------------------------------------+-------------------------------+
|                       |P0                                       |P1                                       |Timers (ms)                    |
+---+-------------+-----+------------+----------+-----+----------+------------+----------+-----+----------+-------+-------+-------+-------+
|ID |Node State   |DNF  |Slot / Port |Type      |Alarm|State     |Slot / Port |Type      |Alarm|State     |Guard  |WTR    |WTB    |Holdoff|
+---+-------------+-----+------------+----------+-----+----------+------------+----------+-----+----------+-------+-------+-------+-------+
|1  |Protection   |NO   |5 / eth.1   |RPL       |SF   |Blocking  |5 / eth.2   |RPL Neigh.|SF   |Blocking  |--     |--     |--     |--     |
+---+-------------+-----+------------+----------+-----+----------+------------+----------+-----+----------+-------+-------+-------+-------+
```

Table 209. “show” command output table parameters

Parameter Group	Parameter	Description
	ID	ERP instance Id (number)

	Node State	Identifies node state Protection/--
	DNF	Do Not Flush – correspond to status DNF bit set when filtering database (FDB) flush is not necessary.
P0	**Slot/Port**	Identifies P0 interface in the system by Slot/ Port pair
	Type	Identifies P0 interface protection classification (RPL/Non RPL/RPL Neighbor)
	Alarm	This alarm signals activity in the P0 interface
	State	P0 Interface state (Blocking/Flushing)
P1	**Slot/Port**	Identifies P1 interface in the system by Slot/ Port pair
	Type	Identifies P1 interface protection classification (RPL/Non RPL/RPL Neighbor)
	Alarm	This alarm signals activity in the P1 interface
	State	P1 Interface state (Blocking/Flushing)
Timers (ms)	**Guard**	Shows configured guard timer value
	WTR	Shows configured Wait to Restore timer value
	WTB	Shows configured Wait to Block timer value
	Holdoff	Shows configured Holdoff timer value

"aps-channel" sub-node

"show" command

Table 210. "show" command information

Name	show
Description	Shows APS channel information (RX/TX) for a given ERP instance.
Full path	/erp-ring/status/aps-channel/show
Mandatory Parameters	--ID
Screen Output	Tables, Figure 312 and Figure 313; Tables' parameters description in Table 211 and Table 212.

Figure 311. CLI on line help on "show" command usage in this node context

```
/cli/erp-ring/status/aps-channel> show ?

Usage:
  SHOW          Show APS channel information (RX/TX) for a given ERP instance.

   <MANDATORY>
   --ID                  Identifies a table entry by ID, in this context.
```

Figure 312. Output of "show" without arguments in this node context"

```
/cli/erp-ring> aps-channel/show
+-----------------------------------------------------------------------------------------------------------------------------------------+
|Ethernet Ring Protection Instances Summary                                                                                               |
+-----------------------------------------+--------------+--------------------------------------------------------------------------------+
|                                         |APS Channel   |                                                                                |
+---+-------+---------+---------+---------+-----+--------+--------------------+--------------------+--------------------+
|ID |Admin  |Ring ID  |Open Ring|Revertive|VLAN |MEG Level|Wait to restore (min) |Holdoff Time (x100ms) |Guard time (x100ms) |
+---+-------+---------+---------+---------+-----+--------+--------------------+--------------------+--------------------+
|1  |enable |1        |enable   |enable   |200  |1       |5                   |0                   |5                   |
+---+-------+---------+---------+---------+-----+--------+--------------------+--------------------+--------------------+
```

Table 211. "show" command without arguments output table parameters

Parameter Group	Parameter	Description
	ID	instance Id (number)
	Admin	Administrative state
	Ring ID	ERP Id
	Open Ring	Open Ring Flag (enable/disable)
	Revertive	Revertive flag (enable/disable)
APS Channel	**VLAN**	VLAN used by the Automatic Protection Switch Channel
	MEG Level	Maintenance Entity Group OAM level, from 0-7 (Operator (0, 1, 2)/Provider (3, 4)/Customer (5, 6, 7))
	Wait to Restore (min)	1 to 12 min, default value -5min
	Holdoff Time (x100ms)	1 to 10secs, default value- 0secs
	Guard Time (x10ms)	10ms to 2secs, default value 500ms

Figure 313. Output of ”show” command with argument ID in this node context”

```
/cli/erp-ring> aps-channel/show --ID=1
+-----------------------------------------
|Ethernet Ring Protection Instance -- ID 1
+-----------------------+-----------------
|Parameter              |Value
+-----------------------+-----------------
|Admin                  |enable
|Ring ID                |1
|Open Ring              |enable
|Revertive              |enable
|Wait to restore   (min)|5
|Holdoff Time   (x100ms)|0
|Guard Time      (x10ms)|5
+-----------------------+-----------------
|P0                     |
|   Slot / Interface    |5 / Eth 1
|   Type                |RPL
|   CFM Probe ID        |--
+-----------------------+-----------------
|P1                     |
|   Slot / Interface    |5 / Eth 2
|   Type                |RPL Neigh.
|   CFM Probe ID        |--
+-----------------------+-----------------
|APS Channel VLAN       |200
|APS Channel MEG Level  |1
+-----------------------+-----------------
|Protected VLANs        |
|                       |101
+-----------------------+-----------------
```

Table 212. “show” command output table parameters

Parameter Group	Parameter	Description
General	Admin	ERP administrative state
	Ring ID	ERP instance Id
	Open Ring	Open Ring Flag (enable/disable)
	Revertive	Revertive flag (enable/disable)
	Wait to Restore (min)	1 to 12 min, default value -5min
	Holdoff Time (x100ms)	1 to 10secs, default value- 0secs
	Guard Time (x10ms)	10ms to 2secs, default value 500ms
Ports	P0/P1	**Slot/Port:** Identifies P0/P1 interface in the system by Slot/ Port pair **Type:** ERP P0/P1 interface classification (RPL/Non RPL/RPL Neighbor) **CFM Probe ID:** Connectivity Fault Management Probe Identifier

APS Channel	**APS Channel VLANs**	VLAN used by the Automatic Protection Switch Channel
	APS Channel MEG Level	Maintenance Entity Group OAM level, from 0-7 (Operator (0, 1, 2)/Provider (3, 4)/Customer (5, 6, 7))
	Protected VLANs	Protected VLANs' Identifiers

"eth-protection" node

Figure 314. "eth-protection" node tree

```
/cli/eth-protection> tree
+ eth-protection[@command, @config, @create, @remove, @show, @showconfig, @status]
```

"command" command

Table 213. "command" command information

Name	command
Description	Executes a command on a given Protection entity.
Full path	/eth-protection/command
Mandatory Parameters	--ID --type
Screen Output	No

Figure 315. CLI on line help on "command" command usage in this node context

```
/cli/eth-protection> command ?

Usage:
  COMMAND                  Execute a command on a given Protection entity.

   <MANDATORY>
   --ID                    Identifies a table entry by ID, in this context.
   --type                  Identify the command to execute (clear|lockout|force-to-protection|force-to-
working|manual-to-protection|manual-to-working)
```

"config" command

Table 214. "config" command information

Name	config
Description	Configures one Protection Group parameters.
Full path	/eth-protection/config
Mandatory Parameters	--ID
Screen Output	No

Figure 316. CLI on line help on "config" command usage in this node context

```
/cli/eth-protection> config ?

Usage:
  CONFIG                  Configure ethernet Protection Group parameters.

   <MANDATORY>
   --ID                  Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --admin                Administrative State. Enable/disable, in this context. (enable|disable)
   --hold-off-time           Hold Off Time (0..100) x100ms
   --hp-lc-fail           high priority: Generalized Line Card Failure (enable|disable)
   --hp-los              high priority: Generalized LOS (enable|disable)
   --p-port              Identifies the Protecting Interface ID.
   --p-slot              Identifies the Protecting Interface Slot.
   --reversible            Specify is reversion is enabled (enable|disable)
   --w-port              Identifies the Working Interface ID.
   --w-slot              Identifies the Working Interface Slot.
   --wtr-time              Wait to Restore Time (WTR) (5..12) min
```

"create" command

Table 215. "create" command information

Name	create
Description	Creates a new Protection Group.
Full path	/eth-protection/create
Mandatory Parameters	This command has no mandatory parameters
Screen Output	No

Figure 317. CLI on line help on "create" command usage in this node context

```
/cli/eth-protection> create ?

Usage:
  CREATE                  Create a new ethernet Protection Group..

   [OPTIONAL]
   --ID                  Identifies a table entry by ID, in this context.
   --admin                Administrative State. Enable/disable, in this context. (enable|disable)
   --hold-off-time           Hold Off Time (0..100) x100ms
   --hp-lc-fail           high priority: Generalized Line Card Failure (enable|disable)
   --hp-los              high priority: Generalized LOS (enable|disable)
   --p-port              Identifies the Protecting Interface ID.
   --p-slot              Identifies the Protecting Interface Slot.
   --reversible            Specify is reversion is enabled (enable|disable)
```

```
--w-port          Identifies the Working Interface ID.
--w-slot          Identifies the Working Interface Slot.
--wtr-time        Wait to Restore Time (WTR) (5..12) min
```

"remove" command

Table 216. "remove" command information

Name	remove
Description	Removes an existing Protection Group.
Full path	/eth-protection/remove
Mandatory Parameters	--ID
Screen Output	No

Figure 318. CLI on line help on "remove" command usage in this node context

```
/cli/eth-protection> remove ?

Usage:
 REMOVE              Remove an existing ethernet Protection Group.

  <MANDATORY>
  --ID               Identifies a table entry by ID, in this context.
```

"show" command

Table 217. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/eth-protection/show
Mandatory Parameters	This command has no mandatory parameters
Screen Output	Tables Figure 320 and Figure 321. Tables' parameter description Table 218 and Table 219.

Figure 319. CLI on line help on "show" command usage in this node context

```
/cli/eth-protection> show ?

Usage:
 SHOW                Show the current configuration

  [OPTIONAL]
  --ID               Identifies a table entry by ID, in this context.
```

Figure 320. Output of "show" command without arguments in this node context"

```
/cli/eth-protection> show
+-----------------------------------------------------------------------------------------------+
|Ethernet Protection Groups                                                                     |
+------------------+-----------------+--------------------+-------------------------------------+
|                  |Interface Working|Interface Protecting|                                     |
+---+-------+------+----+------------+----+---------------+----------+---------+-----------------+
|ID |Admin  |Mode  |Slot|Port        |Slot|Port           |Reversible|WTR (min)|Hold Off (x100ms)|
+---+-------+------+----+------------+----+---------------+----------+---------+-----------------+
|1  |enable |1 to 1|11  |Eth 1       |11  |Eth 2          |disable   |5        |3                |
|2  |disable|1 to 1|11  |Eth 2       |11  |Eth 3          |disable   |5        |0                |
+---+-------+------+----+------------+----+---------------+----------+---------+-----------------+
```

Table 218. "show" command output without arguments table parameters

Parameter Group	Parameter	Description
	ID	Ethernet protection group Id
	Admin	Ethernet protection group administrative state
	Mode	1 to 1
Interface Working	Slot	Identifies the Working slot
	Port	Identifies the Working Interface
Interface Protecting	Slot	Identifies the Protecting slot
	Port	Identifies the Protecting Interface
	Reversible	Indicates if reversion is enabled (enable|disable)
	WTR (min)	Wait to restore (5..12) min
	Hold Off (x100ms)	Hold Off Time (0 to 100) (x100ms)

Figure 321. Output of "show" command with argument ID in this node context"

```
/cli/eth-protection> show --ID=1
+-----------------------------------------------------------------------------+
|Details for Ethernet Protection Group ID 1                                   |
+-------------------------------------------------------------------+----------+
|Parameter                                                          |Value     |
+-------------------------------------------------------------------+----------+
|ID                                                                 |1         |
|Admin                                                              |enable    |
|Interface Working                                                  |Eth 1     |
|Interface Protecting                                               |Eth 2     |
|Reversibility                                                      |disable   |
|Wait to Restore (min)                                              |5         |
|Hold Off (x100ms)                                                  |3         |
|High Priority conditions:                                          |          |
|   Generalized Line Card Failure                                    |enable    |
|   LOS                                                             |enable    |
+-------------------------------------------------------------------+----------+
```

Table 219. "show" command output with argument ID table parameters

Parameter	Description
ID	Ethernet protection group Id

Admin	Ethernet protection group administrative state (enable|disable)
Interface Working	Identifies the Working Interface
Interface Protection	Identifies the Protecting Interface
Reversible	Indicates if reversion is enabled (enable|disable)
W to Restore (min)	Wait to restore (5..12) min
Hold Off (x100ms)	Hold Off Time (0 to 100) (x100ms)
High Priority conditions (for switching to protection state)	**Generalized Line Card Failure:** Flag (enable|disable) **LOS:** Loss of Signal Flag (enable|disable)

"showconfig" command

Table 220. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/eth-protection/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 322. CLI on line help on "showconfig" command usage in this node context

```
/cli/eth-protection> showconfig ?

Usage:
  SHOWCONFIG                Print the command list that enforces the current configuration
```

"status" command

Table 221. "status" command information

Name	status
Description	Show status information for one Protection Group.
Full path	/eth-protection/status
Mandatory Parameters	This command has no parameters
Screen Output	Tables Figure 324.Tables parameter description Table 222

Figure 323. CLI on line help on "status" command usage in this node context

```
/cli/eth-protection> status ?

Usage:
  STATUS                Show status information for one Protection Group.
```

Figure 324. Output of ”status” command in this node context”

```
/cli/eth-protection> status
+-------------------------------------------------------------------------------------------------------------------------------+
|Ethernet Protection Group Status                                                                                              |
+---+---------------------------+---------------------------+-------------------------------------------------------------------+
|   |Interface Working          |Interface Protecting       |                                                                   |
+---+----+------+---------------+----+------+---------------+----------+------+-------------------------------------+-------------------+
|ID |Slot|Port  |Status         |Slot|Port  |Status         |Active    |WTR(s)|Last Switch-over Cause                |Last Cmd           |
+---+----+------+---------------+----+------+---------------+----------+------+-------------------------------------+-------------------+
|1  |11  |Eth 1 |Failure: LOS   |11  |Eth 2 |Failure: LOS   |working   |--    |Signal fail[LOS]                      |Clear              |
+---+----+------+---------------+----+------+---------------+----------+------+-------------------------------------+-------------------+
```

Table 222. “status” command output table parameters

Parameter Group	Parameter	Description
	ID	Ethernet protection group Id
Interface Working	Slot	Identifies the Working slot
	Port	Identifies the Working Interface
	Status	Working interface Status information
Interface Protecting	Slot	Identifies the Protecting slot
	Port	Identifies the Protecting Interface
	Status	Protecting interface Status information
	Active	Indicates which interface is active
	WTR (s)	Wait to restore time
	Last Switch-over Cause	Indicates the cause for last switch-over
	Last Cmd	Indicates last executed Command

“gpon-protection” node

Figure 325. “gpon-protection” node tree

```
/cli/gpon-protection> tree
+ gpon-protection[@command, @config, @create, @remove, @show, @showconfig, @status]
```

“command” command

Table 223. "command" command information

Name	command
Description	Executes a command on a given Protection entity.
Full path	/gpon-protection/command
Mandatory Parameters	--ID --type
Screen Output	No

Figure 326. CLI on line help on “command” command usage in this node context

```
/cli/gpon-protection> command ?

Usage:
```

```
  COMMAND                 Execute a command on a given Protection entity.

  <MANDATORY>
  --ID                  Identifies a table entry by ID, in this context.
  --type                  Identify the command to execute (clear|lockout|force-to-protection|force-
to-working|manual-to-protection|manual-to-working)
```

“config” command

Table 224. "config" command information

Name	config
Description	Configures one Protection Group parameters.
Full path	/gpon-protection/config
Mandatory Parameters	--ID
Screen Output	No

Figure 327. CLI on line help on “config” command usage in this node context

```
/cli/gpon-protection> config ?

Usage:
  CONFIG                  Configure one Protection Group parameters.

  <MANDATORY>
  --ID                  Identifies a table entry by ID, in this context.

  [OPTIONAL]
  --admin                 Administrative State. Enable/disable, in this context. (enable|disable)
  --hold-off-time           Hold Off Time (0..100) x100ms
  --hp-lc-fail              high priority: Generalized Line Card Failure (enable|disable)
  --hp-losi-all-onus          high priority: Generalized LOSi on all ONUs connected to this OLT
interface  (enable|disable)
  --p-port                Identifies the Protecting Interface ID. (e.g.: pon.2)
  --p-slot                Identifies the Protecting Interface Slot.
  --reversible              Specify is reversion is enabled (enable|disable)
  --w-port                Identifies the Working Interface ID. (e.g.: pon.2)
  --w-slot                Identifies the Working Interface Slot.
  --wtr-time                Wait to Restore Time (WTR) (5..12) min
```

“create” command

Table 225. "create" command information

Name	create
Description	Creates a new Protection Group.

Full path	/gpon-protection/create
Mandatory Parameters	This command has no mandatory parameters
Screen Output	No

Figure 328. CLI on line help on "create" command usage in this node context

```
/cli/gpon-protection> create ?

Usage:
  CREATE                    Create a new Protection Group.

   [OPTIONAL]
   --ID                   Identifies a table entry by ID, in this context.
   --admin                  Administrative State. Enable/disable, in this context. (enable|disable)
   --hold-off-time             Hold Off Time (0..100) x100ms
   --hp-lc-fail              high priority: Generalized Line Card Failure (enable|disable)
   --hp-losi-all-onus              high priority: Generalized LOSi on all ONUs connected to this OLT
interface  (enable|disable)
   --p-port                 Identifies the Protecting Interface ID. (e.g.: pon.2)
   --p-slot                 Identifies the Protecting Interface Slot.
   --reversible              Specify is reversion is enabled (enable|disable)
   --w-port                 Identifies the Working Interface ID. (e.g.: pon.2)
   --w-slot                 Identifies the Working Interface Slot.
   --wtr-time                Wait to Restore Time (WTR) (5..12) min
```

"remove" command

Table 226. "remove" command information

Name	remove
Description	Removes an existing Protection Group.
Full path	/gpon-protection/remove
Mandatory Parameters	--ID
Screen Output	No

Figure 329. CLI on line help on "remove" command usage in this node context

```
/cli/gpon-protection> remove ?

Usage:
  REMOVE                    Remove an existing Protection Group.

   <MANDATORY>
   --ID                   Identifies a table entry by ID, in this context.
```

“show” command

Table 227. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/gpon-protection/show
Mandatory Parameters	This command has no mandatory parameters
Screen Output	Tables Figure 331 and Figure 332.Tables parameter description Table 228 and Table 229.

Figure 330. CLI on line help on “show” command usage in this node context

```
/cli/gpon-protection> show ?

Usage:
  SHOW                    Show the current configuration

  [OPTIONAL]
  --ID                    Identifies a table entry by ID, in this context.
```

Figure 331. Output of ”show” command without arguments in this node context”

```
/cli/gpon-protection> show
+-----------------------------------------------------------------------------------------------------+
|GPON Protection Type B Groups                                                                        |
+------------------+-----------------+--------------------+-------------------------------------+
|                  |Interface Working|Interface Protecting|                                     |
+---+-------+------+----+------------+----+---------------+----------+---------+-----------------+
|ID |Admin  |Mode  |Slot|Port        |Slot|Port           |Reversible|WTR (min)|Hold Off (x100ms)|
+---+-------+------+----+------------+----+---------------+----------+---------+-----------------+
|1  |enable |1 to 1|16  |PON 1       |19  |PON 1          |disable   |5        |0                |
|2  |enable |1 to 1|16  |PON 2       |19  |PON 2          |disable   |5        |0                |
|3  |enable |1 to 1|16  |PON 3       |19  |PON 3          |disable   |5        |0                |
|4  |enable |1 to 1|16  |PON 4       |19  |PON 4          |disable   |5        |0                |
|5  |enable |1 to 1|16  |PON 5       |19  |PON 5          |disable   |5        |0                |
|6  |enable |1 to 1|16  |PON 6       |19  |PON 6          |disable   |5        |0                |
|7  |enable |1 to 1|16  |PON 7       |19  |PON 7          |disable   |5        |0                |
|8  |enable |1 to 1|16  |PON 8       |19  |PON 8          |disable   |5        |0                |
|9  |enable |1 to 1|16  |PON 9       |19  |PON 9          |disable   |5        |0                |
|10 |enable |1 to 1|16  |PON 10      |19  |PON 10         |disable   |5        |0                |
|11 |enable |1 to 1|16  |PON 11      |19  |PON 11         |disable   |5        |0                |
|12 |enable |1 to 1|16  |PON 12      |19  |PON 12         |disable   |5        |0                |
|13 |enable |1 to 1|16  |PON 13      |19  |PON 13         |disable   |5        |0                |
|14 |enable |1 to 1|16  |PON 14      |19  |PON 14         |disable   |5        |0                |
|15 |enable |1 to 1|16  |PON 15      |19  |PON 15         |disable   |5        |0                |
|16 |enable |1 to 1|16  |PON 16      |19  |PON 16         |disable   |5        |0                |
+---+-------+------+----+------------+----+---------------+----------+---------+-----------------+
```

Table 228. “show” command output table parameters

Parameter Group	Parameter	Description
	ID	GPON Type B protection group Id

	Admin	GPON Type B protection group administrative state
	Mode	1to 1
Interface Working	**Slot**	Identifies the Working slot
	Port	Identifies the Working Interface
Interface Protection	**Slot**	Identifies the Protecting slot
	Port	Identifies the Protecting Interface
	Reversible	Indicates if reversion is enabled (enable|disable)
	WTR (min)	Wait to restore (5..12) min
	Hold Off (x100ms)	Hold Off Time (0 to 100) (x100ms)

Figure 332. Output of "show" command with argument ID in this node context"

```
+-------------------------------------------------------------------------------+
|Details for GPON Protection Group ID 1                                         |
+-------------------------------------------------------------------+-----------+
|Parameter                                                          |Value      |
+-------------------------------------------------------------------+-----------+
|ID                                                                 |1          |
|Admin                                                              |enable     |
|Interface Working                                                  |PON 1      |
|Interface Protecting                                               |PON 1      |
|Reversibility                                                      |disable    |
|Wait to Restore (min)                                              |5          |
|Hold Off (x100ms)                                                  |0          |
|High Priority conditions:                                          |           |
|   Generalized Line Card Failure                                   |enable     |
|   Generalized LOSi on all ONUs connected to this OLT interface    |enable     |
+-------------------------------------------------------------------+-----------+
```

Table 229. "show" command output with argument ID table parameters

Parameter	Description
ID	GPON Type B protection group Id
Admin	GPON Type B protection group administrative state
Interface Working	Identifies the Working Interface
Interface Protection	Identifies the Protecting Interface
Reversibility	Indicates if reversion is enabled; Flag (enable|disable)
Wait to Restore (min)	Wait to restore (5..12) min
Hold Off (x100ms)	Hold Off Time (0 to 100) (x100ms)
High Priority conditions (for switching to protection state)	**Generalized Line Card Failure:** Flag (enable|disable) **Generalized LOSi on all ONUs connected to this OLT interface:** Flag (enable|disable)

"showconfig" command

Table 230. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration

Full path	/gpon-protection/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 333. CLI on line help on “showconfig” command usage in this node context

```
/cli/gpon-protection> showconfig ?

Usage:
  SHOWCONFIG                    Print the command list that enforces the current configuration
```

“status” command

Table 231. "status" command information

Name	status
Description	Shows status information for one Protection Group.
Full path	/gpon-protection/status
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 335.Table parameter description, Table 232.

Figure 334. CLI on line help on “status” command usage in this node context

```
/cli/gpon-protection> status ?

Usage:
  STATUS                    Show status information for one Protection Group.
```

Figure 335. Output of ”status” command in this node context”

```
/cli/gpon-protection> status
+-------------------------------------------------------------------------------------------------------------------------------------------------+
|GPON Protection Type B Group Status                                                                                                              |
+---+-------------------------+-------------------------+-------------------------------------------------------------------------------------------+
|   |Interface Working        |Interface Protecting     |                                                                                           |
+---+----+------+--------------+----+------+--------------+---------+-----------------------+------+-----------------------------------+-------------------+
|ID |Slot|Port  |Status        |Slot|Port  |Status        |Active   |Sync. Status           |WTR(s)|Last Switch-over Cause              |Last Cmd           |
+---+----+------+--------------+----+------+--------------+---------+-----------------------+------+-----------------------------------+-------------------+
|1  |16  |PON 1 |OK            |19  |PON 1 |Failure PON LOS|working  |Synchronizing          |--    |Operator Manual Switch Command      |Clear              |
|2  |16  |PON 2 |OK            |19  |PON 2 |OK            |working  |Synchronizing          |--    |Operator Force Switch Command       |Clear              |
|3  |16  |PON 3 |OK            |19  |PON 3 |OK            |working  |Synchronizing          |--    |Operator Force Switch Command       |Clear              |
|4  |16  |PON 4 |OK            |19  |PON 4 |OK            |working  |Synchronizing          |--    |Operator Force Switch Command       |Clear              |
|5  |16  |PON 5 |OK            |19  |PON 5 |OK            |working  |Synchronizing          |--    |Operator Force Switch Command       |Clear              |
|6  |16  |PON 6 |OK            |19  |PON 6 |OK            |working  |Synchronizing          |--    |Operator Force Switch Command       |Clear              |
|7  |16  |PON 7 |OK            |19  |PON 7 |OK            |working  |Synchronizing          |--    |Operator Force Switch Command       |Forced to Working  |
|8  |16  |PON 8 |OK            |19  |PON 8 |OK            |working  |Synchronizing          |--    |Operator Force Switch Command       |Forced to Working  |
|9  |16  |PON 9 |OK            |19  |PON 9 |OK            |working  |Synchronizing          |--    |Operator Force Switch Command       |Forced to Working  |
|10 |16  |PON 10|OK            |19  |PON 10|OK            |working  |Synchronizing          |--    |Operator Force Switch Command       |Forced to Working  |
|11 |16  |PON 11|OK            |19  |PON 11|OK            |working  |Synchronizing          |--    |Operator Force Switch Command       |Forced to Working  |
|12 |16  |PON 12|OK            |19  |PON 12|OK            |working  |Synchronizing          |--    |Operator Force Switch Command       |Forced to Working  |
|13 |16  |PON 13|OK            |19  |PON 13|Failure PON LOS|working  |Synchronizing          |--    |Operator Force Switch Command       |Forced to Working  |
|14 |16  |PON 14|OK            |19  |PON 14|Failure PON LOS|working  |Synchronizing          |--    |Operator Force Switch Command       |Forced to Working  |
|15 |16  |PON 15|OK            |19  |PON 15|Failure PON LOS|working  |Synchronizing          |--    |Operator Force Switch Command       |Forced to Working  |
|16 |16  |PON 16|OK            |19  |PON 16|OK            |working  |Synchronizing          |--    |Operator Force Switch Command       |Forced to Working  |
+---+----+------+--------------+----+------+--------------+---------+-----------------------+------+-----------------------------------+-------------------+
```

Table 232. "status" command output table parameters

Parameter Group	Parameter	Description
	ID	GPON Type B protection group Id
Interface Working	Slot	Identifies the Working slot
	Port	Identifies the Working Interface
	Status	Working interface Status information
Interface Protecting	Slot	Identifies the Protecting slot
	Port	Identifies the Protecting Interface
	Status	Protecting interface Status information
	Active	Indicates which interface is active
	Sync. Status	Indicates synchronism Status
	WTR (s)	Wait to restore time
	Last Switch-over Cause	Indicates the cause for last switch-over
	Last Cmd	Indicates last executed Command

"interfaces" node

Figure 336. "interfaces" node tree

```
/cli/interfaces> tree
+ interfaces[@config, @show, @showconfig]
  + analog-rf[@config, @show, @showconfig]
    + status[@show]
  + ethernet[@config, @show, @showconfig]
    + arp-inspection[@config, @show, @showconfig]
    + blocking-traffic[@config, @show, @showconfig]
    + cos[@config, @show, @showconfig]
      + policy-map[@config, @show, @showconfig]
    + cos-queue[@config, @show, @showconfig]
    + dhcp[@config, @show, @showconfig]
    + mac-limit[@config, @show, @showconfig, @status]
    + multicast[@config, @show, @showconfig]
    + services[@add, @availableValues, @config, @remove, @show, @showconfig]
      + mcast-package[@create, @remove, @show, @showconfig]
      + statistics[]
        + counters[@availableValues, @show, @show-active, @start, @stop]
        + dhcp[@show]
        + igmp[@show]
    + statistics[@show]
    + status[@show]
      + SFPs[@show]
      + active-channels[@show]
    + storm-control[@config, @show, @showconfig]
    + traffic-shape[@config, @show, @showconfig]
    + vlan[@config, @show, @showconfig]
  + gpon[@config, @show, @showconfig]
    + arp-inspection[@config, @show, @showconfig]
```

```
    + blocking-traffic[@config, @show, @showconfig]
    + cos[@config, @show, @showconfig]
      + policy-map[@config, @show, @showconfig]
    + cos-queue[@config, @show, @showconfig]
    + dhcp[@config, @show, @showconfig]
    + mac-limit[@config, @show, @showconfig, @status]
    + multicast[@config, @show, @showconfig]
    + statistics[]
      + errors[@show]
      + ethernet[@show]
      + gpon[@show]
    + status[@show]
      + SFPs[@show]
      + rx-power[@read, @read-all, @show]
    + storm-control[@config, @show, @showconfig]
    + traffic-shape[@config, @show, @showconfig]
  + lag[@config, @create, @remove, @show, @showconfig]
    + arp-inspection[@config, @show, @showconfig]
    + cos[@config, @show, @showconfig]
      + policy-map[@config, @show, @showconfig]
    + cos-queue[@config, @show, @showconfig]
    + mac-limit[@config, @show, @showconfig, @status]
    + mapping[@attach, @availableValues, @detach]
    + statistics[@show]
    + status[@show]
    + traffic-shape[@config, @show, @showconfig]
    + vlan[@config, @show, @showconfig]]
```

“config” command

Table 233. "config" command information

Name	config
Description	Configures general interfaces settings.
Full path	/interfaces/config
Mandatory Parameters	--port
Screen Output	No

Figure 337. CLI on line help on “config” command usage in this node context

```
cli/interfaces> config ?

Usage CONFIG:
 CONFIG                  Configure general interface settings

  <MANDATORY>
  --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

```
[OPTIONAL]
--description          Set port description (STRING 64)
  --slot               Identifies a slot. (not used for LAG)
```

“show” command

Table 234. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/interfaces/show
Mandatory Parameters	No
Screen Output	Tables, Figure 339 and Figure 340. Tables parameter description in Table 235.

Figure 338. CLI on line help on “show” command usage in this node context

```
/cli/interfaces> show ?

Usage SHOW:
 SHOW                 Shows general interface settings.

  [OPTIONAL]
  --slot              Identifies a slot. (not used for LAG)
```

Figure 339. Output of ”show” command without arguments in this node context

```
/cli/interfaces> show
+-----------------------------------------------------
|LAGs information - General interface settings
+----------+------------------------------------------
|Name      |Description
+----------+------------------------------------------
|LAG 1     |
|LAG 2     |
+----------+------------------------------------------
```

Figure 340. Output of ”show” command, with argument slot, in this node context

```
/cli> interfaces/show --slot=3
+-----------------------------------------------
|Slot 3 AMX-16GPON - General interface settings
+----------+------------------------------------
|Name      |Description
+----------+------------------------------------
|PON 1     |
|PON 2     |
|PON 3     |
|PON 4     |
|PON 5     |
|PON 6     |
|PON 7     |
|PON 8     |
|PON 9     |
|PON 10    |
|PON 11    |
|PON 12    |
|PON 13    |
|PON 14    |
|PON 15    |
|PON 16    |
+----------+------------------------------------
```

Table 235. “show” command output table

Parameter	Description
Table Name	LAGs information / Slot# Cardname-General interface settings
Name	Name of the interface
Description	Interface description

“showconfig” command

Table 236. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 341. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces>showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"ethernet" sub-node

"config" command

Table 237. "config" command information

Name	config
Description	Configures the given Ethernet interface.
Full path	/interfaces/ethernet/config
Mandatory Parameters	--port --slot
Screen Output	No

Figure 342. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/ethernet> config ?

Usage CONFIG:
  CONFIG                    Configure the given Ethernet interface

   <MANDATORY>
   --port                   Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot                   Identifies a slot.

   [OPTIONAL]
   --admin                  Administrative State. Enable/disable, in this context. (enable|disable)
   --esmc                   Enables sending SSM packets over ESMCChannel. (enable|disable)
   --ip-source-guard        Enable/Disable IP Source Guard filtering for the specified interface.
(enable|disable)
   --media-type             Media Type (100-base-X-full|1000-base-X-full-auto-neg-on|1000-
base-X-full-auto-neg-off|1000-base-T-full-auto-neg-off|10G-base-
   --mtu                    Sets the Maximum Transmission Unit, which corresponds to the largest
packet that can be transmitted(1518..9600 Bytes).
   --timeout                Set the timeout used by the LACPDUs packets (short|long)(1s|30s)
```

"show" command

Table 238. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/interfaces/ethernet/show
Mandatory Parameters	No
Screen Output	Tables Figure 344 and Figure 345 (with argument –slot).Tables' parameter description in Table 238 and Table 240.

Figure 343. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet> show ?

Usage:
  SHOW          Shows Ethernet information for a specific slot.

   [OPTIONAL]
   --slot                 Identifies a slot. (not used for LAG)
```

Figure 344. Output of "show" command without arguments in this node context

```
/cli/interfaces/ethernet> show
+-------------------------------------+
|General Information                  |
+----+---------------+---------------+
|Slot|Card Name      |Details        |
+----+---------------+---------------+
|5   |AMX-48GE       |YES            |
|9   |AMX-16GPON     |               |
|11  |AMX-48GE       |YES            |
|17  |UMX-4x10GE     |YES            |
|20  |XCO-640        |               |
|21  |FAN            |               |
+----+---------------+---------------+
```

Table 239. "show" command output table

Parameter	Description
Slot	Slot number
Card Name	Name of the board inserted in a slot
Details	YES, if there are Ethernet interfaces in the board and detailed information the interfaces is available

This command used with arguments provides detailed information on the existing Ethernet interfaces, in the format of a table.

Figure 345. Output of "show" command used with argument --slot, in this node context

```
/cli/interfaces/ethernet> show --slot=17
+-------------------------------------------------------------------------------------------------------------------------------+
|Slot 17 UMX-4x10GE - Ethernet Configuration                                                                                    |
+---+----------+----------+----------+----------+-------------------------+---------------+-----+----------+-------------+
|ID |Name      |Admin     |LAG       |Timeout   |Media Type               |Flow Control   |MTU  |ESMC      |IP Src Guard|
+---+----------+----------+----------+----------+-------------------------+---------------+-----+----------+-------------+
|0  |Eth 1     |disable   |--        |--        |10G BASE X               |Disabled       |2048 |Disabled  |--           |
|1  |Eth 2     |disable   |--        |--        |10G BASE X               |Disabled       |2048 |Disabled  |--           |
|2  |Eth 3     |enable    |--        |--        |10G BASE X               |Disabled       |2048 |Disabled  |--           |
|3  |Eth 4     |disable   |--        |--        |10G BASE X               |Disabled       |2048 |Disabled  |--           |
+---+----------+----------+----------+----------+-------------------------+---------------+-----+----------+-------------+
```

Table 240. "show" command output used with argument --slot

Parameter	Description
ID	Interface ID (number)
Name	Name of the board inserted in a slot
Admin	Interface administrative state
LAG	Lag identification
Timeout	Timeout used by the LACPDUs packets (short|long)
Media Type	Interface standard
Flow Control	(enabled|disabled)
MTU	Maximum transfer unit (number
ESMC	SSM packets over ESMC Channel sending (enabled|disabled)
IP Src Guard	IP Source Guard filtering for the specified interface; Flag (enable|disable)

"showconfig" command

Table 241. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/cli/interfaces/ethernet/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 346. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces/ethernet> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"arp-inspection" sub-node

This node is used to manage ARP Inspection parameters for the given ETH interfaces.

"config" command

Table 242. "config" command information

Name	config
Description	Configures ARP Inspection parameters for the given ETH interfaces.
Full path	/interfaces/ethernet/arp-inspection/config
Mandatory Parameters	--port --slot
Screen Output	No

Figure 347. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/ethernet/arp-inspection> config ?

Usage CONFIG:
  CONFIG                  Configure ARP Inspection parameters for the given ETH interfaces.

  <MANDATORY>
  --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                  Identifies a slot.

  [OPTIONAL]
  --burst-interval        Set the ARP Burst Interval (1..15)
  --rate-limit            Set the ARP Rate Limit (no-limit or 0..300)
    --trust-state         Set the ARP Trust State (trusted|untrusted)
```

"show" command

This command provides information on all the equipment Ethernet interfaces ETH ARP Inspection information for a specific HW slot.

Table 243. "show" command information

Name	show
Description	Shows ETH ARP Inspection information for a specific HW slot
Full path	/interfaces/ethernet/arp-inspection/show
Mandatory Parameters	No
Screen Output	Tables, Figure 349 and Figure 350. Tables parameters description in Table 244 and Table 245.

Figure 348. CLI on line help on "show" command usage in this node context

```
cli/interfaces/ethernet/arp-inspection> show ?

Usage SHOW:
 SHOW                  Shows ETH ARP Inspection information for a specific HW slot.

  [OPTIONAL]
    --slot             Identifies a slot. (not used for LAG)
```

Figure 349. "show" command, without arguments, output in this node context

```
/cli/interfaces/ethernet/arp-inspection> show
+-----------------------------------+
|General Information                |
+----+---------------+---------------+
|Slot|Card Name      |Details        |
+----+---------------+---------------+
|1   |XCO-640        |               |
|3   |AMX-16GPON     |               |
|8   |AMX-48GE       |YES            |
|9   |UMX-4x10GE     |YES            |
|10  |UMX-4x10GE     |YES            |
|11  |UMX-4x10GE     |YES            |
|12  |UMX-4x10GE     |YES            |
|18  |AMX-16GPON     |               |
|20  |XCO-640        |               |
|21  |FAN            |               |
+----+---------------+---------------+
```

Table 244. "show" command, without arguments, output table

Parameter	Description
Slot	Slot number
Card Name	Name of the board inserted in a slot
Details	YES, if there are Ethernet interfaces in the board and detailed information the interfaces is available

Figure 350. "show" command, with argument slot, output in this node context

```
/cli/interfaces/ethernet/arp-inspection> show  --slot=9
+-------------------------------------------------------------------+
|ARP Inspection Configuration on Slot 9 UMX-4x10GE                  |
+----------+--------------------+---------------+------------------+
|Name      |Trust State         |Rate Limit(pps)|Burst Interval(s) |
+----------+--------------------+---------------+------------------+
|Eth 1     |trusted             |no limit       |--                |
|Eth 2     |trusted             |no limit       |--                |
|Eth 3     |trusted             |no limit       |--                |
|Eth 4     |trusted             |no limit       |--                |
+----------+--------------------+---------------+------------------+
```

Table 245. "show" command output table

Parameter	Description
Table Title	Card #(slot number) –name of the card inserted in that slot
Name	Ethernet port identification in the board
Trust State	ARP Trust State (trusted|untrusted)
Rate Limit	ARP Rate Limit (no-limit or 0..300)
Burst interval	ARP Burst Interval (1..15)

"showconfig" command

Table 246. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/ethernet/arp-inspection/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 351. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces/ethernet/arp-inspection> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG              Print the command list that enforces the current configuration
```

"blocking-traffic" sub-node

This node is used to manage blocking traffic parameters for the given ETH interfaces.

"config" command

Table 247. "config" command information

Name	config
Description	Configures Blocking traffic parameters for the given ETH interfaces.
Full path	/interfaces/ethernet/blocking-traffic/config
Mandatory Parameters	--port --slot
Screen Output	No

Figure 352. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/ethernet/blocking-traffic> config ?

Usage CONFIG:
 CONFIG                  Configure Blocking traffic parameters for the given ETH interfaces.

  <MANDATORY>
  --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                 Identifies a slot.

  [OPTIONAL]
  --block-multicast             Blocks Multicast traffic. (enable|disable)
  --block-unknown-unicast       Blocks unknown Unicast traffic. (enable|disable)
```

"show" command

This command provides information on all the equipment Ethernet interfaces Blocking Traffic information for a specific HW slot.

Table 248. "show" command information

Name	show
Description	Shows Blocking Traffic information for a specific HW slot
Full path	/interfaces/ethernet/blocking-traffic/show
Mandatory Parameters	No
Screen Output	Tables, Figure 354 and Figure 355. Tables parameters description in Table 249 and Table 250.

Figure 353. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet/blocking-traffic> show ?

Usage SHOW:
 SHOW                   Shows Blocking Traffic information for a specific HW slot.
```

[OPTIONAL]
--slot Identifies a slot. (not used for LAG)

Figure 354. "show" command, without arguments, output in this node context

```
/cli/interfaces/ethernet/blocking-traffic> show
+-----------------------------------+
|General Information                |
+----+---------------+--------------+
|Slot|Card Name      |Details       |
+----+---------------+--------------+
|1   |XCO-640        |              |
|3   |AMX-16GPON     |              |
|8   |AMX-48GE       |YES           |
|9   |UMX-4x10GE     |YES           |
|10  |UMX-4x10GE     |YES           |
|11  |UMX-4x10GE     |YES           |
|12  |UMX-4x10GE     |YES           |
|18  |AMX-16GPON     |              |
|20  |XCO-640        |              |
|21  |FAN            |              |
+----+---------------+--------------+
```

Table 249. "show" command, without arguments, output table

Parameter	Description
Slot	Slot number
Card Name	Name of the board inserted in a slot
Details	YES, if there are Ethernet interfaces in the board and detailed information the interfaces is available

Figure 355. "show" command, with argument slot, output in this node context

```
/cli/interfaces/ethernet/blocking-traffic> show  --slot=9
+-------------------------------------------------------------+
|Blocking Traffic Configuration on Slot 9 UMX-4x10GE          |
+----------+-------------------------+------------------------+
|Name      |Block Unknown Unicast    |Block Multicast         |
+----------+-------------------------+------------------------+
|Eth 1     |disable                  |disable                 |
|Eth 2     |disable                  |disable                 |
|Eth 3     |disable                  |disable                 |
|Eth 4     |disable                  |disable                 |
+----------+-------------------------+------------------------+
```

Table 250. "show" command output table

Parameter	Description
Table Title	Card #(slot number) –name of the card inserted in that slot
Name	Ethernet port identification in the board
Block unknown unicast	Blocks unknown Unicast traffic. (enable|disable)
Block multicast	Blocks Multicast traffic. (enable|disable)

"showconfig" command

Table 251. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/ethernet/blocking-traffic/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 356. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces/ethernet/arp-inspection> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG                Print the command list that enforces the current configuration
```

"cos" sub-node

This node is used to manage CoS configuration of ethernet interfaces in all slots.

"config" command

Table 252. "config" command information

Name	config
Description	Configures CoS information for Eth interfaces.
Full path	/interfaces/ethernet/cos/config
Mandatory Parameters	--port --slot
Screen Output	No

Figure 357. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/ethernet/cos> config ?
```

```
Usage CONFIG:
 CONFIG                 Configure cos parameters for the given ETH interfaces.

  <MANDATORY>
  --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                Identifies a slot.

  [OPTIONAL]
  --class-map           View available Class Map profile IDs in /class-map.
  --trust-mode          Identifies the Trust Mode. (untrusted|p-bits|ip-dscp|ip-prec)
```

"show" command

Table 253. "show" command information

Name	show
Description	Shows the current CoS configuration.
Full path	/interfaces/ethernet/cos/show
Mandatory Parameters	No
Screen Output	Tables Figure 359 and Figure 360. Table parameter description in Table 254 and Table 255..

Figure 358. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet/cos> show ?

Usage:
 SHOW       Show the current CoS configuration

  [OPTIONAL]
  --slot            Identifies a slot. (not used for LAG)
```

Figure 359. "show" command, without arguments, output in this node context

```
/cli/interfaces/ethernet/cos> show
+-----------------------------------+
|General Information                |
+----+--------------+---------------+
|Slot|Card Name     |Details        |
+----+--------------+---------------+
|1   |XCO-640       |               |
|3   |AMX-16GPON    |               |
|8   |AMX-48GE      |YES            |
|9   |UMX-4x10GE    |YES            |
|10  |UMX-4x10GE    |YES            |
```

```
|11   |UMX-4x10GE      |YES             |
|12   |UMX-4x10GE      |YES             |
|18   |AMX-16GPON      |                |
|20   |XCO-640         |                |
|21   |FAN             |                |
+----+---------------+---------------+
```

Table 254. "show" command output table

Parameter	Description
Slot	Slot number
Card Name	Name of the board inserted in a slot
Details	YES, if there are Ethernet interfaces in the board and detailed information the interfaces is available

Figure 360. "show" command, with argument slot, output in this node context

```
/cli/interfaces/ethernet/cos> show  --slot=9
+-------------------------------------------------------------+
| Ingress Class Map on Slot 9 UMX-4x10GE                      |
+----------+----------+-----------------------------------------+
|Port      |Trust Mode|Class Map                                |
+----------+----------+-----------------------------------------+
|Eth 1     |p-bits    |(1) default-p-bits-to-tc                 |
|Eth 2     |p-bits    |(1) default-p-bits-to-tc                 |
|Eth 3     |p-bits    |(1) default-p-bits-to-tc                 |
|Eth 4     |p-bits    |(1) default-p-bits-to-tc                 |
+----------+----------+-----------------------------------------+
```

Table 255. "show" command, with argument slot, output table

Parameter	Description
Table Title	Card #(slot number) –name of the card inserted in that slot
Port	Ethernet port identification in the board
Trust Mode	Type of configured trust mode (untrusted/p-bits/ip-dscp/ip-prec)
Class Map	Configured Class map profile identified by number (ID) and name

"showconfig" command

Table 256. "showconfig" command information

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/interfaces/ethernet/cos/showconfig

Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 361. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces/ethernet/cos> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"policy-map" sub-node

This node is used to manage CoS policy map information for Eth interfaces.

"config" command

Table 257. "config" command information

Name	config
Description	Configures CoS policy map information for Eth interfaces.
Full path	/interfaces/ethernet/cos/policy-map/config
Mandatory Parameters	--port --profile-id --slot --traffic-class
Screen Output	No

Figure 362. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/ethernet/cos/policy-map> config ?

Usage CONFIG:
  CONFIG                  Configure CoS policy map information for Eth interfaces.

   <MANDATORY>
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --profile-id             Identifies an ethernet profile by ID (use 'none' for no profile).
   --slot                 Identifies a slot.
   --traffic-class          Specify the Traffic Class value (0..7)
```

"show" command

Table 258. "show" command information

Name	show
Description	Shows the current CoS configuration.
Full path	/interfaces/ethernet/cos/policy-map/show
Mandatory Parameters	No
Screen Output	Tables, Figure 364 and Figure 365. Table parameter description in Table 259 and Table 260.

Figure 363. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet/cos/policy-map> show ?

Usage SHOW:
 SHOW                Show the current CoS configuration

  [OPTIONAL]
  --port             Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot             Identifies a slot. (not used for LAG)
```

Figure 364. "show" command, without arguments, output in this node context

```
/cli/interfaces/ethernet/cos/policy-map> show
+-----------------------------------+
|General Information                |
+----+---------------+---------------+
|Slot|Card Name      |Details        |
+----+---------------+---------------+
|1   |XCO-640        |               |
|3   |AMX-16GPON     |               |
|8   |AMX-48GE       |YES            |
|9   |UMX-4x10GE     |YES            |
|10  |UMX-4x10GE     |YES            |
|11  |UMX-4x10GE     |YES            |
|12  |UMX-4x10GE     |YES            |
|18  |AMX-16GPON     |               |
|20  |XCO-640        |               |
|21  |FAN            |               |
+----+---------------+---------------+
```

Table 259. "show" command, without arguments, output table

Parameter	Description
Slot	Slot number
Card Name	Name of the board inserted in a slot
Details	YES, if there are Ethernet interfaces in the board and

	detailed information the interfaces is available

Figure 365. "show" command, with arguments slot and port, output in this node context

```
/cli/interfaces/ethernet/cos/policy-map> show –port=eth.1  --slot=9
+-------------------------------------------------------------------------+
| Card 9 - UMX-4x10GE Port Eth 1: Ethernet CoS Policy map configurations  |
+--------+-----+-----------------------------------------------------------+
|Port    |TC   |Ingress Policing (Ethernet Profile)                        |
+--------+-----+-----------------------------------------------------------+
|Eth 1   |0    |--                                                         |
|        |1    |--                                                         |
|        |2    |--                                                         |
|        |3    |--                                                         |
|        |4    |--                                                         |
|        |5    |--                                                         |
|        |6    |--                                                         |
|        |7    |--                                                         |
+--------+-----+-----------------------------------------------------------+
```

Table 260. "show" command, with arguments slot and port, output table

Parameter	Description
Table Title	Card #- Card name Port #: Ethernet CoS Policy map configurations
Port	Identifies an interface on the ME4620 OLT(Card). (e.g.: pon.2; eth.3; lag.1)
TC	Identifies the Traffic Class (0 to 7)
Ingress Policing	Configured Ingress Policing (Ethernet Profile)

"showconfig" command

Table 261. "showconfig" command information

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/interfaces/ethernet/cos/policy-map/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 366. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces/ethernet/cos/policy-map> showconfig ?

Usage:
```

SHOWCONFIG	Print the command list that enforces the current configuration

"cos-queue" sub-node

This node is used to manage CoS configuration of ethernet interfaces.

"config" command

Table 262. "config" command information

Name	config
Description	Configures CoS information for Eth interfaces.
Full path	/interfaces/ethernet/cos-queue/config
Mandatory Parameters	--port --queue --slot
Screen Output	No

Figure 367. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/ethernet/cos-queue> config ?

Usage CONFIG:
  CONFIG                  Configure CoS information for Eth interfaces.

   <MANDATORY>
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --queue                Identifies a CoS Queue. (0..7)
   --slot                 Identifies a slot.

   [OPTIONAL]
   --max-bw               Configure the maximum bandwidth for the Queues (percent of link
capacity)
   --min-bw               Configure the minimum bandwidth for the Queues (percent of link
capacity)
   --queue-mgmt-type      Configure the queue management type (tail-drop|wred)
   --scheduler            Identifies the type of Scheduler (strict|weighted)
   --tdrop-maxth-dp1      Configure the maximum threshold of queue depth for drop
precedence level 1 (percent of link capacity)
   --tdrop-maxth-dp2      Configure the maximum threshold of queue depth for drop
precedence level 2 (percent of link capacity)
   --weight               Configure the Queue Weight (1..128)
   --wred-dprob-dp1       Configure the drop probability in percentage for drop precedence
level 1
   --wred-dprob-dp2       Configure the drop probability in percentage for drop precedence
level 2
   --wred-dprob-nontcp    Configure the drop probability in percentage for non-TCP traffic
   --wred-exp-weight      Configure the WRED Decay Exponent value. (0..15)
   --wred-maxth-dp1       Configure the maximum threshold of queue depth for drop
```

```
precedence level 1 (percent of link capacity)
  --wred-maxth-dp2              Configure the maximum threshold of queue depth for drop
precedence level 2 (percent of link capacity)
  --wred-maxth-nontcp           Configure the maximum threshold of queue depth for non-TCP
traffic (percent of link capacity)
  --wred-minth-dp1              Configure the minimum threshold of queue depth for drop
precedence level 1 (percent of link capacity)
  --wred-minth-dp2              Configure the minimum threshold of queue depth for drop
precedence level 2 (percent of link capacity)
   --wred-minth-nontcp              Configure the minimum threshold of queue depth for non-TCP
 traffic (percent of link capacity)
```

"show" command

This command provides information on all the equipment Ethernet interfaces CoS configuration: CoS traffic profile and scheduler policy.

Table 263. "show" command information

Name	show
Description	Shows the current CoS configuration.
Full path	/interfaces/ethernet/cos-queue/show
Mandatory Parameters	No
Screen Output	Table, Figure 369. Table parameter description in Table 264.

Figure 368. CLI on line help on "show" command usage in this node context

```
cli/interfaces/ethernet/cos-queue> show ?

Usage SHOW:
  SHOW                    Show the current CoS configuration

  [OPTIONAL]
  --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                  Identifies a slot. (not used for LAG)
```

Figure 369. “show” command, with arguments slot and port, output in this node context

```
/cli/interfaces/ethernet/cos-queue> show --slot=9 --port=eth.1
+-------------------------------------------------------------------------------------------------------------------------------------+
|Card 9 - UMX-4x10G Port Eth 1: Ethernet CoS Queues configurations                                                                    |
+---------+-----+---------+------+-----------+----------+-------------------+-------------------------+-------------------+-----------+
|         |     |         |      |Egress BW %|Queue Mgmt|WRED(Min Thr %)    |WRED/Tail-Drop(Max Thr %)|WRED(Drop Prob %)  |WRED(Decay)|
+---------+-----+---------+------+-----+-----+----------+-----+-----+-------+-------+-------+---------+-----+-----+-------+-----------+
|Port     |Queue|Scheduler|Weight|Min  |Max  |Type      |DP L1|DP L2|Non TCP|DP L1  |DP L2  |Non TCP  |DP L1|DP L2|Non TCP|Exponent   |
+---------+-----+---------+------+-----+-----+----------+-----+-----+-------+-------+-------+---------+-----+-----+-------+-----------+
|Eth 1    |0    |strict   |--    |0    |100  |tail-drop |--   |--   |--     |100    |100    |--       |--   |--   |--     |--         |
|         |1    |strict   |--    |0    |100  |tail-drop |--   |--   |--     |100    |100    |--       |--   |--   |--     |--         |
|         |2    |strict   |--    |0    |100  |tail-drop |--   |--   |--     |100    |100    |--       |--   |--   |--     |--         |
|         |3    |strict   |--    |0    |100  |tail-drop |--   |--   |--     |100    |100    |--       |--   |--   |--     |--         |
|         |4    |strict   |--    |0    |100  |tail-drop |--   |--   |--     |100    |100    |--       |--   |--   |--     |--         |
|         |5    |strict   |--    |0    |100  |tail-drop |--   |--   |--     |100    |100    |--       |--   |--   |--     |--         |
|         |6    |strict   |--    |0    |100  |tail-drop |--   |--   |--     |100    |100    |--       |--   |--   |--     |--         |
|         |7    |strict   |--    |0    |100  |tail-drop |--   |--   |--     |100    |100    |--       |--   |--   |--     |--         |
+---------+-----+---------+------+-----+-----+----------+-----+-----+-------+-------+-------+---------+-----+-----+-------+-----------+
```

Table 264. “show” command, with arguments slot and port, output table

Parameter		Description
Table Title		Card #(slot number) –name of the card inserted in that slot
Port		Ethernet port identification in the board
Queue		Class queue of Service identification (Number 0..7)
Scheduler		Identifies the type of configured Scheduler (strict|weighted)
Weight		Configured the Queue Weight (1..128)
Egress BW (%)	**Max-bw**	Configured the maximum Egress bandwidth for the Queues (% of link capacity)
	Min-bw	Configured the minimum Egress bandwidth for the Queues (% of link capacity)
Queue Mgmt type		Configured queue management type (tail-drop|wred)
WRED (Minimum Throughput %)	**DP L1**	Configured minimum threshold of queue depth for drop precedence level 1 (% of link capacity)
	DP L2	Configured minimum threshold of queue depth for drop precedence level 1 (% of link capacity)
	Non TCP	Configured minimum threshold of queue depth for non-TCP traffic (% of link capacity)
WRED/Tail-Drop (Maximum Throughput %)	**DP L1**	Configured maximum threshold of queue depth for drop precedence level 1 (% of link capacity)
	DP L2	Configured maximum threshold of queue depth for drop precedence level 1 (% of link capacity)
	Non TCP	Configured maximum threshold of queue depth for non-TCP traffic (% of link capacity)
Drop Probability(Maximum Throughput %)	**DP L1**	Configured drop probability in percentage for drop precedence level 1
	DP L2	Configured drop probability in percentage for drop precedence level 2
	Non TCP	Configured drop probability in percentage for non-TCP traffic
WRED (Decay)	**Exponent**	Configured WRED Decay Exponent value. (0..15)

"showconfig" command

Table 265. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/ethernet/cos-queue/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 370. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces/ethernet/cos-queue> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"dhcp" sub-node

"config" command

Table 266. "config" command information

Name	config
Description	Configures DHCP mode parameter for the given interfaces.
Full path	/interfaces/ethernet/dhcp/config
Mandatory Parameters	--port --slot
Screen Output	No

Figure 371. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/ethernet/dhcp> config ?

Usage CONFIG:
  CONFIG                  Configure DHCP mode parameter for the given interfaces.

   <MANDATORY>
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot                 Identifies a slot.

   [OPTIONAL]
   --is-trusted           Set the DHCP mode {default: untrusted / mode: 0 - untrusted, 1 - trusted}.
```

"show" command

This command used without arguments provides information on all the equipment Cards with detailed dhcp configuration information available. The command used with slot argument shows DHCP mode information for the specified HW slot.

Table 267. "show" command information

Name	show
Description	Shows DHCP mode information for a specific HW slot.
Full path	/interfaces/ethernet/dhcp/show
Mandatory Parameters	No
Screen Output	Tables Figure 373 and Figure 374 (with slot argument). Tables' parameters description in Table 268 and Table 269.

Figure 372. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet/dhcp> show ?

Usage SHOW:
  SHOW                    Shows DHCP mode information for a specific HW slot.

  [OPTIONAL]
  --slot                  Identifies a slot. (not used for LAG)
```

Figure 373. Output of "show" command without arguments in this node context

```
/cli/interfaces/ethernet/dhcp> show
+-------------------------------------+
|General Information                  |
+----+---------------+----------------+
|Slot|Card Name      |Details         |
+----+---------------+----------------+
|5   |AMX-48GE       |YES             |
|9   |AMX-16GPON     |                |
|11  |AMX-48GE       |YES             |
|17  |UMX-4x10GE     |                |
|20  |XCO-640        |                |
|21  |FAN            |                |
+----+---------------+----------------+
```

Table 268. "show" command without arguments output table parameters

Parameter	Description
Slot	Slot number
Card Name	Name of the board inserted in a slot

Details	YES, if there is DHCP Mode is configured in the board and detailed information is available

Figure 374. Partial view of ”show” command output, with argument slot, in this node context

```
/cli/interfaces/ethernet/dhcp> show --slot=5
+-----------------------------------------+
|Card 5 - AMX-48GE: DHCP Mode             |
+----------+---------------+--------------+
|ID        |Name           |DHCP Mode     |
+----------+---------------+--------------+
|0         |Eth 1          |untrusted     |
|1         |Eth 2          |untrusted     |
|2         |Eth 3          |untrusted     |
|3         |Eth 4          |untrusted     |
|4         |Eth 5          |untrusted     |
|5         |Eth 6          |untrusted     |
|6         |Eth 7          |untrusted     |
```

Table 269. “show” command with argument slot output table parameters

Parameter	Description
ID	Table entry identifier (number)
Name	Name of the configured Interface
DHCP Mode	Interface configured DHCP mode

“showconfig” command

Table 270. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/ethernet/dhcp/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 375. CLI on line help on “showconfig” command usage in this node context

```
/cli/interfaces/ethernet/dhcp> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG              Print the command list that enforces the current configuration
```

“mac-limit” sub-node

"config" command

Table 271. "config" command information

Name	config
Description	Configures MAC Limit parameters for the given ETH interfaces.
Full path	/interfaces/ethernet/mac-limit/config
Mandatory Parameters	--port --slot
Screen Output	No

Figure 376. CLI on line help on "config" command usage in this node context

```
cli/interfaces/ethernet/mac-limit> config ?

Usage CONFIG:
  CONFIG                  Configure MAC Limit parameters for the given ETH interfaces.

   <MANDATORY>
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot                 Identifies a slot.

   [OPTIONAL]
   --action               Specify the action to take when the maximum number of MAC addresses is
reached (none|limit)
   --admin                Administrative State. Enable/disable, in this context. (enable|disable)
   --maximum              Specify the maximum number of MAC addresses accepted on the
interface (1..131072)
      --trap              Send an SNMP trap when the maximum number of MAC addresses is
   reached. (enable|disable)
```

"show" command

Table 272. "show" command information

Name	show
Description	Shows MAC Limit information for a specific HW slot.
Full path	/interfaces/ethernet/mac-limit/show
Mandatory Parameters	No
Screen Output	Tables, Figure 378 and Figure 379 (with argument slot). Tables' parameter description in Table 273 and Table 274.

Figure 377. CLI on line help on "show" command usage in this node context

```
cli/interfaces/ethernet/mac-limit> show ?
```

```
Usage SHOW:
 SHOW                Shows MAC Limit information for a specific HW slot.

 [OPTIONAL]
   --slot            Identifies a slot. (not used for LAG)
```

Figure 378. Output of "show" command, without arguments, in this node context

```
/cli/interfaces/ethernet/mac-limit> show
+-----------------------------------+
|General Information                |
+----+---------------+--------------+
|Slot|Card Name      |Details       |
+----+---------------+--------------+
|1   |XCO-640        |              |
|3   |AMX-16GPON     |              |
|8   |AMX-48GE       |YES           |
|9   |UMX-4x10GE     |              |
|10  |UMX-4x10GE     |              |
|11  |UMX-4x10GE     |              |
|12  |UMX-4x10GE     |              |
|18  |AMX-16GPON     |              |
|20  |XCO-640        |              |
|21  |FAN            |              |
+----+---------------+--------------+
```

Table 273. "show" command without arguments output table parameters

Parameter	Description
Slot	Slot number
Card Name	Name of the board inserted in a slot
Details	YES, there are Ethernet interfaces in the board and MAC limit detailed information is available

Figure 379. Partial view of "show" command output, with argument slot, in this node context

```
/cli/interfaces/ethernet/mac-limit> show --slot=8
+-------------------------------------------------------------+
|MAC Limit Configuration on Slot 8 AMX-48GE                   |
+---------+---------+----------------+---------+-----------+
|Name     |Admin    |Maximum         |Action   |Trap       |
+---------+---------+----------------+---------+-----------+
|Eth 1    |disable  |500             |limit    |enable     |
|Eth 2    |disable  |500             |limit    |enable     |
|Eth 3    |disable  |500             |limit    |enable     |
|Eth 4    |disable  |500             |limit    |enable     |
|Eth 5    |disable  |500             |limit    |enable     |
|Eth 6    |disable  |500             |limit    |enable     |
```

```
|Eth 7     |disable   |500              |limit     |enable     |
|Eth 8     |disable   |500              |limit     |enable     |
|Eth 9     |disable   |500              |limit     |enable     |
```

Table 274. "show" command with argument slot output table parameters

Parameter	Description
Table Name	MAC Limit Configuration on Slot # Cardname
Name	Ethernet port identifier on the card
Admin	Ethernet port administrative state
Maximum	Maximum number of MAC addresses accepted on the Ethernet port (1..131072)
Action	Action to take when the maximum number of MAC addresses is reached (none|limit)
Trap	Send an SNMP trap when the maximum number of MAC addresses is reached. (enable|disable)

"showconfig" command

Table 275. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/ethernet/mac-limit/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 380. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces/ethernet/mac-limit> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG                Print the command list that enforces the current configuration
```

"status" command

Table 276. "status" command information

Name	status
Description	Shows the current MAC Limit status
Full path	/interfaces/ethernet/mac-limit/status
Mandatory Parameters	--port --slot

Screen Output	Table, Figure 382 (with argument slot). Table parameter description in Table 277.

Figure 381. CLI on line help on "status" command usage in this node context

```
/cli/interfaces/ethernet/mac-limit> status ?

Usage STATUS:
 STATUS                Show the current MAC Limit status

  <MANDATORY>
  --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
    --slot               Identifies a slot.
```

Figure 382. Output of "status" command in this node context

```
/cli/interfaces/ethernet/mac-limit> status --slot=8 --port=eth.1
+----------------------------------------+
|Slot 8 Eth 1 - MAC Limit Status         |
+------------------------+---------------+
|Parameter               |Value          |
+------------------------+---------------+
|MACs Learned            |0              |
|Status                  |Within limit   |
+------------------------+---------------+
```

Table 277. "status" command output table parameters

Parameter	Description
Table Title	Slot #(slot number) Eth.# – MAC Limit Status
Port	Ethernet port identification in the board
MACs Learned	Number of Learned MACs
Status	MAC Limit Status (inferior to defined limit or exceeding limit)

"multicast" sub-node

"config" command

Table 278. "config" command information

Name	config
Description	Configures multicast parameters for the given ETH interfaces.
Full path	/interfaces/ethernet/multicast/config
Mandatory	--port

Parameters	--slot
Screen Output	No

Figure 383. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/ethernet/multicast> config ?

Usage CONFIG:
  CONFIG                  Configure multicast parameters for the given ETH interfaces.

   <MANDATORY>
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot                 Identifies a slot.

   [OPTIONAL]
   --max-bandwidth              Set the multicast group maximum bandwidth in Kbps(unlimited or
0..100000000000)
   --max-groups           Set the maximum number of multicast groups (unlimited or 0..16384)
```

"show" command

This command used without arguments provides information on all the equipment cards with detailed multicast configuration information available. The command used with slot argument shows multicast information for the specified HW slot.

Table 279. "show" command information

Name	show
Description	Shows ETH multicast information for a specific HW slot.
Full path	/interfaces/ethernet/multicast/show
Mandatory Parameters	No
Screen Output	Tables, Figure 385 and Figure 386 (with argument slot). Tables' parameter description in Table 280 and Table 281.

Figure 384. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet/multicast> show ?

Usage SHOW:
  SHOW                   Shows ETH multicast information for a specific HW slot.

   [OPTIONAL]
   --slot                Identifies a slot. (not used for LAG)
```

Figure 385. Output of "show" command without arguments in this node context

```
/cli/interfaces/ethernet/multicast> show
+-----------------------------------+
|General Information                |
+----+--------------+---------------+
|Slot|Card Name     |Details        |
+----+--------------+---------------+
|5   |AMX-48GE      |YES            |
|9   |AMX-16GPON    |               |
|11  |AMX-48GE      |YES            |
|17  |UMX-4x10GE    |               |
|20  |XCO-640       |               |
|21  |FAN           |               |
+----+--------------+---------------+
```

Table 280. "show" command without arguments output table parameters

Parameter	Description
Slot	Slot number
Card Name	Name of the board inserted in a slot
Details	YES, multicast is configured in the board and detailed information is available

Figure 386. Partial view of "show" command output, with argument slot, in this node context

```
/cli/interfaces/ethernet/multicast> show --slot=5
+-------------------------------------------------+
|Multicast Configuration                          |
+---+----------+--------------------+--------------+
|ID |Name      |Max. Bandwidth(kbps)|Max. Nr. Groups|
+---+----------+--------------------+--------------+
|0  |Eth 1     |4000                |2             |
|1  |Eth 2     |unlimited           |unlimited     |
|2  |Eth 3     |unlimited           |unlimited     |
|3  |Eth 4     |unlimited           |unlimited     |
|4  |Eth 5     |unlimited           |unlimited     |
|5  |Eth 6     |unlimited           |unlimited     |
|6  |Eth 7     |unlimited           |unlimited     |
```

Table 281. "show" command with argument slot output table parameters

Parameter	Description
ID	Table entry identifier (number)
Name	Name of the configured Interface
Max. Bandwidth (kbips)	Configured Multicast group maximum bandwidth in Kbps(unlimited | 0..100000000000)
Max. Nr. Of Groups	Configured maximum number of multicast groups

	(unlimited | 0..16384)

"showconfig" command

Table 282. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/ethernet/multicast/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 387. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces/ethernet/multicast> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG                Print the command list that enforces the current configuration
```

"services" sub-node

"add" command

Table 283. "add" command information

Name	add
Description	Adds a client service to map one Ethernet interface to an existing network service.
Full path	/interfaces/ethernet/services/add
Mandatory Parameters	--name --port --serviceID --slot
Screen Output	No

Figure 388. CLI on line help on "add" command usage in this node context

```
/cli/interfaces/ethernet/services> add ?

Usage ADD:
  ADD                       Add a client service to map one Ethernet interface to an existing network
service.

   <MANDATORY>
   --name                    Set a name for this Client Service (STRING 65)
```

```
  --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.    1)
  --serviceID               Select an OLT service by ID.
  --slot                  Identifies a slot.

  [OPTIONAL]
  --admin                 Administrative State. Enable/disable, in this context. (enable|disable)
  --dhcp-op18               DHCP Op.18 flag
  --dhcp-op37               DHCP Op.37 flag
  --dhcp-op82               DHCP Op.82 flag
  --igmp                  IGMP (enable|disable)
  --mac-limit               Specifies the maximum number of MAC addresses allowed for a given
client service (unlimited or 1..99)
  --max-bw                  Set the multicast group maximum bandwidth in Kbps (unlimited or
0..100000000)
  --max-groups              Set the maximum number of multicast groups (unlimited or 0..16384)
  --nni-ctag              Inner VLAN ID (client) on the network-facing (Ethernet) interface.
(1..4094)
  --remoteID                Remote ID field added to DHCP packets in DHCPop.82 enabled
services. (STRING 63)
  --serviceID-client          Choose a client service by ID.
  --uni-ctag              VLAN ID delivered/received from the (Ethernet) subscriber-facing
interface at the ONU. (1..4094)
  --upstream-eth-profile-id     Choose an existing upstream Ethernet profile by ID (use 'none ' for
no profile)
  --use-global-dhcp-ops       Use DHCP options defined in the OLT global service.
```

"availableValues" command

Table 284. "availableValues" command information

Name	availableValues
Description	Shows available options for each argument.
Full path	/interfaces/ethernet/services/availableValues
Mandatory Parameters	No
Screen Output	Tables Figure 390. Tables' parameter description in Table 285 and Table 286.

Figure 389. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet/services> availableValues ?

Usage:
  AVAILABLEVALUES
```

Figure 390. Output of ”availableValues” command in this node context

```
/cli/interfaces/ethernet/services> availableValues
+-----------------------------------------------+
|Available Interfaces For Client Services       |
+-----+----------+-------------------------------+
|Slot |Card Name |Eth Interfaces                 |
+-----+----------+-------------------------------+
|5    |AMX-48GE  |All                            |
|11   |AMX-48GE  |All                            |
+-----+----------+-------------------------------+

+-----------------------------------------------------------------------------------------+
|Available Network Services To associate with Client Services                             |
+---+-------------------------------+--------+--------+--------+--------------------+
|ID |Name                           |Admin   |NNI-STAG|UNI-CTAG|Slot                |
+---+-------------------------------+--------+--------+--------+--------------------+
|1  |MBStacked#100                  |enable  |100     |100     |11 AMX-48GE         |
+---+-------------------------------+--------+--------+--------+--------------------+
|2  |MB#200                         |enable  |200     |200     |11 AMX-48GE         |
+---+-------------------------------+--------+--------+--------+--------------------+
|3  |UniStacked#300                 |enable  |300     |300     | 5 AMX-48GE         |
|   |                               |        |        |        |11 AMX-48GE         |
+---+-------------------------------+--------+--------+--------+--------------------+
|4  |Uni#400                        |enable  |400     |400     | 5 AMX-48GE         |
|   |                               |        |        |        |11 AMX-48GE         |
+---+-------------------------------+--------+--------+--------+--------------------+
|5  |MCast#600                      |enable  |500     |500     | 5 AMX-48GE         |
|   |                               |        |        |        |11 AMX-48GE         |
+---+-------------------------------+--------+--------+--------+--------------------+
|6  |MCast#700                      |enable  |700     |700     | 5 AMX-48GE         |
|   |                               |        |        |        |11 AMX-48GE         |
+---+-------------------------------+--------+--------+--------+--------------------+
|7  |MBStacked#800                  |enable  |800     |800     |11 AMX-48GE         |
+---+-------------------------------+--------+--------+--------+--------------------+
|8  |UniStacked#900                 |enable  |900     |900     | 5 AMX-48GE         |
|   |                               |        |        |        |11 AMX-48GE         |
+---+-------------------------------+--------+--------+--------+--------------------+
|9  |MBStacked#2000                 |enable  |2000    |2000    | 5 AMX-48GE         |
|   |                               |        |        |        |11 AMX-48GE         |
+---+-------------------------------+--------+--------+--------+--------------------+
|10 |MB#3000                        |enable  |3000    |3000    | 5 AMX-48GE         |
|   |                               |        |        |        |11 AMX-48GE         |
+---+-------------------------------+--------+--------+--------+--------------------+
```

Table 285. “availableValues” command output table parameters- Table “Available interfaces for client services”

Parameter	Description
Slot	Slot number
Card Name	Name of the card inserted in the slot
Ethernet interfaces	Available card ethernet interfaces

Table 286. "availableValues" command output table parameters- Table "Available network services to associate with client services"

Parameter	Description
ID	Network service identifier (number)
Name	Network service name
Admin	Network service administrative status
NNI-STAG	Outer VLAN ID (service) on the network-facing (Ethernet) interface.(1..4094)
UNI-CTAG	VLAN ID delivered/received from the (Ethernet) subscriber-facing interface at the ONU. (1..4094)
Slot	Slot where the network service is available (number)

"config" command

Table 287. "config" command information

Name	config
Description	Configures client service parameters.
Full path	/interfaces/ethernet/services/config
Mandatory Parameters	--serviceID-client
Screen Output	No

Figure 391. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/ethernet/services> config ?

Usage CONFIG:
  CONFIG                  Configure client service parameters.

   <MANDATORY>
   --serviceID-client          Choose a client service by ID.

   [OPTIONAL]
   --admin                 Administrative State. Enable/disable, in this context. (enable|disable)
   --dhcp-op18               DHCP Op.18 flag
   --dhcp-op37               DHCP Op.37 flag
   --dhcp-op82               DHCP Op.82 flag
   --igmp                  IGMP (enable|disable)
   --mac-limit               Specifies the maximum number of MAC addresses allowed for a given
client service (unlimited or 1..99)
   --max-bw                  Set the multicast group maximum bandwidth in Kbps (unlimited or
0..100000000)
   --max-groups              Set the maximum number of multicast groups (unlimited or 0..16384)
   --name                  Set a name for this Client Service (STRING 65)
   --nni-ctag              Inner VLAN ID (client) on the network-facing (Ethernet) interface.
```

```
(1..4094)
  --remoteID                Remote ID field added to DHCP packets in DHCPop.82 enabled
services. (STRING 63)
  --serviceID               Select an OLT service by ID.
  --uni-ctag                VLAN ID delivered/received from the (Ethernet) subscriber-facing
interface at the ONU. (1..4094)
  --upstream-eth-profile-id Choose an existing upstream Ethernet profile by ID (use 'none' for
no profile)
  --use-global-dhcp-ops     Use DHCP options defined in the OLT global service.
```

"remove" command

Table 288. "remove" command information

Name	remove
Description	Removes an existing service
Full path	/interfaces/ethernet/services/remove
Mandatory Parameters	--serviceID-client
Screen Output	No

Figure 392. CLI on line help on "remove" command usage in this node context

```
/cli/interfaces/ethernet/services> remove ?

Usage:
  REMOVE        Remove an existing service.

  <MANDATORY>
  --serviceID-client        Choose a client service by ID.
```

"show" command

This command used without arguments provides information on the slots and cards for which detailed information on services is available. When used with the argument slot it displays that service information for the specified slot.

Table 289. "show" command information

Name	show
Description	Shows the current ethernet Services configuration.
Full path	/interfaces/ethernet/services/show
Mandatory Parameters	No
Screen Output	Tables Figure 394 and Figure 395 (with argument slot). Table parameter description in Table 290 and Table 291.

Figure 393. CLI on line help on “show” command usage in this node context

```
/cli/interfaces/ethernet/services> show ?

Usage:
  SHOW          Show the current ethernet Services configuration

  [OPTIONAL]
  --serviceID-client        Choose a client service by ID.
  --slot                    Identifies a slot. (not used for LAG)
```

Figure 394. Output of ”show” command in this node context

```
/cli/interfaces/ethernet/services> show
+-----------------------------------+
|General Information                |
+----+--------------+---------------+
|Slot|Card Name     |Details        |
+----+--------------+---------------+
|5   |AMX-48GE      |YES            |
|9   |AMX-16GPON    |               |
|11  |AMX-48GE      |YES            |
|17  |UMX-4x10GE    |               |
|20  |XCO-640       |               |
|21  |FAN           |               |
+----+--------------+---------------+
```

Table 290. “show” command output table parameters

Parameter	Description
Slot	Slot number
Card Name	Name of the card inserted in the slot
Details	If Yes detailed information on services is available via show command with argument --slot

Figure 395. Output of "show" command used with argument slot, in this node context

```
/cli/interfaces/ethernet/services> show --slot=5
+-----------------------------------------------------------------------------------------------------------------------+
|Client Services on Slot 5 AMX-48GE                                                                                     |
+---+-------+--------+--------------------+--------------------+------------------------+--------+--------+
|ID |Port   |Admin   |Name                |OLT (ID)Service-Name|Upstream Ethernet Profile|NNI-CTAG|UNI-CTAG|
+---+-------+--------+--------------------+--------------------+------------------------+--------+--------+
|4  |Eth 1  |enable  |Id 4                |(4) Uni#400         |(0) No Profile          |--      |400     |
|6  |Eth 1  |enable  |Id 6                |(3) UniStacked#300  |(0) No Profile          |3010    |300     |
|7  |Eth 1  |enable  |Id 7                |(5) MCast#600       |(0) No Profile          |--      |500     |
|8  |Eth 1  |enable  |Id 8                |(6) MCast#700       |(0) No Profile          |--      |700     |
|11 |Eth 1  |enable  |Id 11               |(8) UniStacked#900  |(0) No Profile          |910     |900     |
|12 |Eth 1  |enable  |Id 12               |(3) UniStacked#300  |(0) No Profile          |3011    |301     |
|13 |Eth 1  |enable  |Id 13               |(3) UniStacked#300  |(0) No Profile          |3012    |302     |
|14 |Eth 1  |enable  |Id 14               |(3) UniStacked#300  |(0) No Profile          |3013    |303     |
|15 |Eth 1  |enable  |Id 15               |(3) UniStacked#300  |(0) No Profile          |3014    |304     |
|5  |Eth 47 |enable  |Id 5                |(5) MCast#600       |(0) No Profile          |--      |500     |
|9  |Eth 47 |enable  |Id 9                |(3) UniStacked#300  |(0) No Profile          |3470    |300     |
|10 |Eth 47 |enable  |Id 10               |(6) MCast#700       |(0) No Profile          |--      |700     |
|16 |Eth 47 |enable  |Id 16               |(3) UniStacked#300  |(0) No Profile          |3471    |301     |
|17 |Eth 47 |enable  |Id 17               |(3) UniStacked#300  |(0) No Profile          |3472    |302     |
|18 |Eth 47 |enable  |Id 18               |(3) UniStacked#300  |(0) No Profile          |3473    |303     |
|19 |Eth 47 |enable  |Id 19               |(3) UniStacked#300  |(0) No Profile          |3474    |304     |
+---+-------+--------+--------------------+--------------------+------------------------+--------+--------+
```

Table 291. "show" command output table parameters

Parameter	Description
ID	Client Service ID (number)
Port	Port where the Client service is available
Admin	Administrative state of the Client service
Name	Name of the client service
OLT(ID) Service-Name	Identification of the ME4620 OLT service (ID) and Name
Upstream Ethernet Profile	Upstream ethernet profile identified by ID:(number) and Profile Name.
NNI-CTAG	Inner VLAN ID (client) on the network-facing (Ethernet) interface.(1..4094)
UNI-CTAG	VLAN ID delivered/received from the (Ethernet) subscriber-facing interface at the ONU. (1..4094)

"showconfig" command

Table 292. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/ethernet/services/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 396. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces/ethernet/services> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"mcast-package" sub-node

"create" command

Table 293. "create" command information

Name	create
Description	Creates an association of a multicast channel package to a client service
Full path	/interfaces/ethernet/services/mcast-package/create
Mandatory Parameters	--pkg-id --serviceID-client
Screen Output	No

Figure 397. CLI on line help on "create" command usage in this node context

```
/cli/interfaces/ethernet/services/mcast-package> create ?

Usage CREATE:
  CREATE                Create an association of a multicast channel package to a client service.

  <MANDATORY>
  --pkg-id              Identify one Multicast channel package by ID. (1..256)
  --serviceID-client    Choose a client service by ID.
```

"remove" command

Table 294. "remove" command information

Name	remove
Description	Removes an association of a multicast channel package to a client
Full path	/interfaces/ethernet/services/mcast-package/remove
Mandatory Parameters	--pkg-id --serviceID-client
Screen Output	No

Figure 398. CLI on line help on "remove" command usage in this node context

```
/cli/interfaces/ethernet/services/mcast-package> remove ?

Usage REMOVE:
  REMOVE                  Remove an association of a multicast channel package to a client
service.

   <MANDATORY>
   --pkg-id               Identify one Multicast channel package by ID. (1..256)
   --serviceID-client     Choose a client service by ID.
```

"show" command

Table 295. "show" command information

Name	show
Description	Shows multicast channel packages associated to the specified client service.
Full path	/interfaces/ethernet/services/mcast-package/show
Mandatory Parameters	--serviceID-client
Screen Output	Table, Figure 400. Tables' parameter description Table 296.

Figure 399. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet/services/mcast-package> show ?

Usage SHOW:
  SHOW                    Show multicast channel packages associated to the specified client
service.

   <MANDATORY>
   --serviceID-client          Choose a client service by ID.
```

Figure 400. Output of "show" command in this node context"

```
/cli/interfaces/ethernet/services/mcast-package> show --serviceID-
client=1
+-----------------------------------------------------------------+
|Multicast channel packages Associations - Client Service 1       |
+------+----------------------------------------------------------+
|Pkg ID|Name                                                      |
+------+----------------------------------------------------------+
+------+----------------------------------------------------------+
```

Table 296. "show" command output table parameters

Parameter	Description
Table Name	Multicast channel packages Associations - Client Service # (selected number – serviceID-client)
Pkg ID	Identifies Multicast channel package by Package ID - number(1..256).
Name	Identifies Multicast channel package

"showconfig" command

Table 297. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/ethernet/services/ mcast-package/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 401. CLI on line help on "showconfig" command usage in this node context

```
//cli/interfaces/ethernet/services/mcast-package> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG              Print the command list that enforces the current configuration

  [OPTIONAL]
  --serviceID-client      Choose a client service by ID.
  --slot                  Identifies a slot. (not used for LAG)
```

"statistics" sub-node

This node is used to view the traffic statistics on a specified Ethernet interfaces in a specified slot.

"counters" sub-node

""availableValues" command

Table 298. "availableValues" command information

Name	availableValues
Description	Displays all client services where counters can be activated
Full path	/interfaces/ethernet/services/statistics/counters/availableValues
Mandatory	This command has no parameters

Parameters	
Screen Output	Table, Figure 403. Table parameters description in Table 299.

Figure 402. CLI on line help on "availableValues" command usage in this node context

```
/cli/interfaces/ethernet/services/statistics/counters> availableValues ?

Usage:
  AVAILABLEVALUES Display all client services where counters can be activated.
```

Figure 403. Output of "availableValues" command in this node context

```
/cli/interfaces/ethernet/services/statistics/counters> availableValues
+-----------------------------------------------------+
|Client Services Where Counters Can Be Activated      |
+-----------------------------------------------------+
|Client Service (ID) Name                             |
+-----------------------------------------------------+
|(4) Id 4                                             |
|(6) Id 6                                             |
|(7) Id 7                                             |
|(8) Id 8                                             |
|(11) Id 11                                           |
|(12) Id 12                                           |
|(13) Id 13                                           |
|(14) Id 14                                           |
|(15) Id 15                                           |
|(5) Id 5                                             |
|(9) Id 9                                             |
|(10) Id 10                                           |
|(16) Id 16                                           |
|(17) Id 17                                           |
|(18) Id 18                                           |
|(19) Id 19                                           |
+-----------------------------------------------------+
```

Table 299. "availableValues" command output table parameters

Parameter	Description
Client Service (ID) Name	Available Client Service identified by Service ID (number) and Service Name

""show" command

Table 300. "show" command information

Name	show
Description	Shows the statistics for a given client service, whose counter has

	already been activated.
Full path	/interfaces/ethernet/services/statistics/counters/show
Mandatory Parameters	--serviceID-client
Screen Output	Table, Figure 405. Table parameters description in Table 301.

Figure 404. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet/services/statistics/counters> show ?

Usage:
  SHOW              Show the statistics for a given client service, whose counter has already been
activated.

  <MANDATORY>
  --serviceID-client            Choose a client service by ID.
```

Figure 405. Output of "show" command in this node context

```
/cli/interfaces/ethernet/services/statistics/counters> show --serviceID-client=11
+-----------------------------------------------------+
|Statistics for Client Service (11) Id 11             |
+----------+--------------------+--------------------+
|          |Uplink              |Downlink            |
+----------+----------+---------+----------+---------+
|Parameter |Rx        |Tx       |Rx        |Tx       |
+----------+----------+---------+----------+---------+
|Total     |0         |0        |0         |0        |
|Unicast   |0         |0        |0         |0        |
|Multicast |0         |0        |0         |0        |
|Broadcast |0         |0        |0         |0        |
|Dropped   |0         |0        |0         |0        |
+----------+----------+---------+----------+---------+
```

Table 301. "show" command output table

Parameter	Description
Total	Total number of packets (Unicast+Multicast+Broadcast+Dropped) Uplink Rx/Tx||Downlink Rx/Tx
Unicast	Number of Unicast packets Uplink Rx/Tx||Downlink Rx/Tx
Multicast	Number of Multicast packets Uplink Rx/Tx||Downlink Rx/Tx
Broadcast	Number of Broadcast packets Uplink Rx/Tx||Downlink Rx/Tx
Dropped	Number of Dropped packets Uplink Rx/Tx||Downlink Rx/Tx

"show-active" command

Table 302. "show-active" command information

Name	Show-active
Description	Displays all active counters.
Full path	/interfaces/ethernet/services/statistics/counters/show-active
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 407. Table parameters description in Table 303.

Figure 406. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet/services/statistics/counters> show-active ?

Usage:
  SHOW-ACTIVE     Display all active counters.
```

Figure 407. Output of "show-active" command in this node context

```
/cli/interfaces/ethernet/services/statistics/counters> show-active
+-----------------------------------------------------------+
|Active Counters Gathering Client Service Statistics        |
+-----------------------------------------------------------+
|Client Service (ID) Name                                   |
+-----------------------------------------------------------+
|(11) Id 11                                                 |
+-----------------------------------------------------------+
```

Table 303. "show-active" command output table

Parameter	Description
Client Service (ID) Name	Client Service identified by Service ID (number) and Service Name with active counters gathering service statistics

""start" command

Table 304. "start" command information

Name	start
Description	Starts the statistics counter for a given client service.
Full path	/interfaces/ethernet/services/statistics/counters/start
Mandatory Parameters	--serviceID-client

Screen Output	No

Figure 408. CLI on line help on "start" command usage in this node context

```
/cli/interfaces/ethernet/services/statistics/counters> start ?

Usage:
  START         Start the statistics counter for a given client service.

   <MANDATORY>
   --serviceID-client           Choose a client service by ID.
```

""stop" command

Table 305. "stop" command information

Name	stop
Description	Stops an active statistics counter.
Full path	/interfaces/ethernet/services/statistics/counters/stop
Mandatory Parameters	--serviceID-client
Screen Output	No

Figure 409. CLI on line help on "stop" command usage in this node context

```
cli/interfaces/ethernet/services/statistics/counters> stop ?

Usage:
  STOP          Stop an active statistics counter.

   <MANDATORY>
   --serviceID-client           Choose a client service by ID.
```

"dhcp" sub-node

""show" command

Table 306. "show" command information

Name	show
Description	Shows DHCP statistics for a client service with DHCP enabled.
Full path	/interfaces/ethernet/services/statistics/dhcp/show
Mandatory Parameters	--port --serviceID-client --slot

Screen Output	Table, Figure 411. Table parameters description in Table 306.

Figure 410. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet/services> statistics/dhcp/show ?

Usage SHOW:
  SHOW                    Show DHCP statistics for a client service with DHCP enabled.

   <MANDATORY>
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --serviceID-client          Choose a client service by ID.
   --slot                 Identifies a slot.
```

Figure 411: Output of "show" command in this node context

```
/cli/interfaces/ethernet/services> statistics/dhcp/show --port=eth.1 --serviceID-client=1 --slot=5
+-------------------------------------------------------------------------------+
|DHCP Statistics for Slot 5, Eth 1, Client Service (1) 'RESTCSE'                |
+-----------------------------------------------------+-----------+-----------+
|Parameter                                            |Rx         |Tx         |
+-----------------------------------------------------+-----------+-----------+
|Valid Packets                                        |0          |0          |
|Drop                                                 |0          |--         |
+-----------------------------------------------------+-----------+-----------+
|Client Request Without Options                       |0          |--         |
|               With Option 82                        |--         |--         |
|               With Option 37                        |--         |--         |
|               With Option 18                        |--         |--         |
+-----------------------------------------------------+-----------+-----------+
|Server Replies Without Options                       |--         |0          |
|               With Option 82                        |--         |--         |
|               With Option 37                        |--         |--         |
|               With Option 18                        |--         |--         |
+-----------------------------------------------------+-----------+-----------+
|Client Packets Trusted                               |0          |--         |
|Client Packets With Opts Untrusted                   |0          |--         |
|Server Packets Untrusted                             |0          |--         |
|Server Packets Without Opts Trusted                  |0          |--         |
+-----------------------------------------------------+-----------+-----------+
```

Table 307. "show" command output table parameters

Parameter	Description
Valid Packets	Indicates the number of transmitted and received DHCP packets
Drop	Indicates the number of transmitted and received DHCP dropped packets
Client Request	Indicates the number of transmitted and received DHCP client request packets: • **Without options** • **Option 82** • **Option 37** • **Option 18**

Server Replies	Indicates the number of transmitted and received DHCP server replies packets: • **Without options** • **Option 82** • **Option 37** • **Option 18**
Client Packets Trusted	Number of dropped packets because they are client requests without options received in Trusted interfaces (Network side)
Client Packets with Opts Untrusted	Number of dropped packets because they are client requests with Options received in Untrusted interfaces (Client side)
Server Packets Untrusted	Number of dropped packets because they are server replies with options received in Untrusted interfaces (Client Side)
Server Packets without Opts Trusted	Number of dropped packets because they are server replies without options received in Trusted interfaces (Network Side)

"igmp" sub-node

""show" command

Table 308. "show" command information

Name	show
Description	Shows the IGMP statistics for a given multicast client service.
Full path	/interfaces/ethernet/services/statistics/igmp/show
Mandatory Parameters	--port --serviceID-client --slot
Screen Output	Table, Figure 413. Table parameters description in Table 309.

Figure 412. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet/services/statistics/igmp> show ?

Usage SHOW:
  SHOW                  Show the IGMP statistics for a given multicast client service.

   <MANDATORY>
   --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --serviceID-client         Choose a client service by ID.
   --slot               Identifies a slot..
```

Figure 413:"show" command output in this node context

```
/cli/interfaces/ethernet/services/statistics> igmp/show --port=eth.47 --serviceID-client=5 --slot=5
+-------------------------------------------------------------------------------------------------------------------------------+
|IGMP Statistics for Slot 5, Eth 47, Client Service (5) 'Id 5'                                                                  |
+-------------------------------+-----------------------------------------------+-----------------------------------------------+
|Parameter                      |Rx                                             |Tx                                             |
+-------------------------------+-----------------------+-----------------------+-----------------------+-----------------------+
|                               |Total                  |Partial                |Total                  |Partial                |
+-------------------------------+-----------------------+-----------------------+-----------------------+-----------------------+
|Packets Total                  |0                      |0                      |0                      |0                      |
|        Dropped                |0                      |0                      |-                      |-                      |
|        Valid                  |0                      |0                      |-                      |-                      |
|        Invalid                |0                      |0                      |-                      |-                      |
+-------------------------------+-----------------------+-----------------------+-----------------------+-----------------------+
|v2      Join                   |0                      |0                      |0                      |0                      |
|        Invalid Join           |0                      |0                      |-                      |-                      |
|        Leave                  |0                      |0                      |0                      |0                      |
+-------------------------------+-----------------------+-----------------------+-----------------------+-----------------------+
|v3      Membership Report      |0                      |0                      |0                      |0                      |
|        Invalid Membership Report|0                    |0                      |-                      |-                      |
|        To-Include             |0                      |0                      |0                      |0                      |
|        To-Exclude             |0                      |0                      |0                      |0                      |
|        Is-Include             |0                      |0                      |0                      |0                      |
|        Is-Exclude             |0                      |0                      |0                      |0                      |
|        Allow                  |0                      |0                      |0                      |0                      |
|        Block                  |0                      |0                      |0                      |0                      |
|        Invalid To-Include     |0                      |0                      |-                      |-                      |
|        Invalid To-Exclude     |0                      |0                      |-                      |-                      |
|        Invalid Is-Include     |0                      |0                      |-                      |-                      |
|        Invalid Is-Exclude     |0                      |0                      |-                      |-                      |
|        Invalid Allow          |0                      |0                      |-                      |-                      |
|        Invalid Block          |0                      |0                      |-                      |-                      |
+-------------------------------+-----------------------+-----------------------+-----------------------+-----------------------+
|Queries General                |0                      |0                      |0                      |0                      |
|        Group Specific         |0                      |0                      |0                      |0                      |
|        Group and Source Specific|0                    |0                      |0                      |0                      |
+-------------------------------+-----------------------+-----------------------+-----------------------+-----------------------+
qPress 'q' to quit or 'r' to reset
```

Table 309. "show" command output table parameters

Parameter	Description
Packets	Indicates the number of transmitted and received packets (Total and Partial counters displayed): • **Total:** sum of all packets • **Dropped:** sum of all dropped packets • **Valid:** sum of all valid (compliant with the IGMP standards) packets • **Invalid:** sum of all invalid (non-compliant with the IGMP standards) packets
V2	Indicates the number of transmitted and received IGMPv2 packets of type • **Join** • **Invalid Join** • **Leave**
V3	Number of Transmitted and Received IGMPv3 packets (Total and Partial counters displayed) of type: • **Membership Report** • **Invalid Membership Report** • **To-Include** • **To-exclude** • **Is-Include** • **Is-Exclude** • **Allow** • **Block** • **Invalid To-Include** • **Invalid To-Exclude** • **Invalid Is-Include** • **Invalid Is-Exclude** • **Invalid Allow**

	• **Invalid Block**
Queries	Number of transmitted and Received Queries (Total and Partial counters displayed) • **General:** of type General queries • **Group Specific:** of type Group specific queries • **Group and Source Specific:** of type Group and Source specific queries

"statistics" sub-node

"show" command

Table 310. "show" command information

Name	show
Description	Shows the current ethernet statistics.
Full path	/interfaces/ethernet/statistics/show
Mandatory Parameters	--port --slot
Screen Output	Figure 415. Table parameters description in Table 311.

Figure 414. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet/ statistics>show ?

Usage:
  SHOW        Show the current ethernet statistics.

   <MANDATORY>
   --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot                  Identifies a slot..
```

Figure 415. Output of ”show” command in this node context

```
/cli/interfaces/ethernet> statistics/show --port=eth.1 --slot=5
+-------------------------------------------------------------------------------------+
|Slot 5 Eth 1 - Ethernet Statistics                                                   |
+-------------------------+-------------------------------+-------------------------------+
|Parameter                |Rx                             |Tx                             |
+-------------------------+---------------+---------------+---------------+---------------+
|                         |Total          |Partial        |Total          |Partial        |
+-------------------------+---------------+---------------+---------------+---------------+
|Drop Events              |0              |0              |0              |0              |
|Octets                   |1280           |0              |17000          |0              |
|Packets                  |20             |0              |250            |0              |
|Broadcast Packets        |0              |0              |0              |0              |
|Multicast Packets        |20             |0              |250            |0              |
|CRC Align Errors         |0              |0              |0              |0              |
|Undersize Packets        |0              |0              |0              |0              |
|Oversize Packets         |0              |0              |0              |0              |
|Fragments                |0              |0              |0              |0              |
|Jabbers                  |0              |0              |0              |0              |
|Collisions               |0              |0              |0              |0              |
|Packets     64    Octets |20             |0              |0              |0              |
|Packets   65-127  Octets |0              |0              |250            |0              |
|Packets  128-255  Octets |0              |0              |0              |0              |
|Packets  256-511  Octets |0              |0              |0              |0              |
|Packets  512-1023 Octets |0              |0              |0              |0              |
|Packets   >=1024  Octets |0              |0              |0              |0              |
|Throughput (bps)         |0              |-              |0              |-              |
+-------------------------+---------------+---------------+---------------+---------------+
qPress 'q' to quit or 'r' to reset
```

Table 311. “show” command output table

Parameter	Description
Rx Total & Partial	Received total & partial counters
Tx Total & Partial	Transmitted total & partial counters
Drop Events	Number of dropped packets
Octets	Number of bytes
Packets	Number of Packets
Broadcast Packets	Number of Broadcast Packets
Multicast Packets	Number of Multicast Packets
CRC Align Errors	Number of packets with wrong FCS (Frame Check Sequence)
Undersize Packets	Number of packets with size less than 64 bytes
Oversize Packets	Number of packets with size over than 1518 bytes
Fragments	Number of packets with size less than 64 bytes and with wrong FCS (Frame Check Sequence)
Jabbers	Number of packets with size over than 1518 bytes and with wrong FCS (Frame Check Sequence)
Collisions	Number of collisions in the Ethernet Segment (only in Half Duplex)

Packets 64 Octets	Number of 64 bytes packets
Packets 65-127 Octets	Number of packets with size between 65 to 127 bytes
Packets 128-255 Octets	Number of packets with size between 128 to 255 bytes
Packets 256-511 Octets	Number of packets with size between 256 to 511 bytes
Packets 512-1023 Octets	Number of packets with size between 512 to 1023 bytes
Packets >=1024 Octets	Number of packets with size equal to or higher than 1024 bytes
Throughput (bps)	Indicates approximately the received and transmitted bit rate

"status" sub-node

This node is used to view the status of ethernet interfaces in all slots.

"show" command

Table 312. "show" command information

Name	show
Description	Shows status information for Eth interfaces
Full path	/interfaces/ethernet//status/show
Mandatory Parameters	--slot
Screen Output	Table Figure 417. Table parameters description in Table 313.

Figure 416. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet/status> show ?

Usage:
  SHOW          Show status information for Eth interfaces.

   <MANDATORY>
   --slot                       Identifies a slot.
```

Figure 417."show" command output in this node context

```
/cli/interfaces/ethernet/status> show --slot=17
+-------------------------------------------------------------------------------------------------------------------------------------------------------------+
|Slot 17 - Ethernet Interfaces Status                                                                                                                         |
+----------+-------+----------+-----------+-------------------+----------+-----------+-------------------+-------------+-------------+-----------------+-------+-----+
|          |       |          |           |                   |          |Status     |                   |Power (dbm)  |             |                 |       |     |
+----------+-------+----------+-----------+-------------------+----------+----+---+---+-------------------+-------+-------+-------------+-----------------+-------+-----+
|Interface |Admin  |High Layer|Auto Neg   |Media Type         |Collisions|Link|Tx |Rx |SFP/XFP            |Tx     |Rx     |Bias Current (mA)|Temp(C) |Laser|
+----------+-------+----------+-----------+-------------------+----------+----+---+---+-------------------+-------+-------+-------------+-----------------+-------+-----+
|Eth 1     |disable|--        |--         |--                 |--        |--  |-- |-- |--                 |--     |--     |--              |--      |--   |
|Eth 2     |disable|--        |--         |--                 |--        |--  |-- |-- |--                 |--     |--     |--              |--      |--   |
|Eth 3     |enable |none      |--         |10G BASE X         |NO        |YES |NO |NO |10GBASE-ER/EW      |0.64   |-6.18  |55.12           |27      |ON   |
|Eth 4     |disable|--        |--         |--                 |--        |--  |-- |-- |--                 |--     |--     |--              |--      |--   |
+----------+-------+----------+-----------+-------------------+----------+----+---+---+-------------------+-------+-------+-------------+-----------------+-------+-----+
```

Table 313. "show" command output table

Parameter	Description
Interface	Ethernet Interface identifier
Admin	Ethernet port Administrative State
High layer	Indicates to each LAG (in case the port is a LAG member) the port belongs to
Auto Neg	If the port is configured to Auto negotiation, indicates the Auto Negotiation State
Media Type	Link Speed by indicating the applicable standard
Collisions	Not applicable in Full Duplex interfaces
Status Link	Indicates the Link State
Status Tx	Indicates if the interface is transmitting packets
Status Rx	Indicates if the interface is receiving packets
SFP/XFP	SFP/XFP module designation
Power Tx (dBm)	Indicates the transmitted optical power in dBm
Power Rx (dBm)	Indicates the received optical power in dBm
Bias Current (mA)	Indicates the laser BIAS current in mA
Temperature (ºC)	Indicates the XFP module temperature in ºC
Laser	Indicates the Laser operational States (ON|OFF)

"SFPs" sub-node

""show" command

Table 314. "show" command information

Name	show
Description	Shows details for an SFP entry from table ethernet/status/show.
Full path	/interfaces/ethernet/status/SFPs/show
Mandatory Parameters	--port
Screen Output	Table, Figure 419.

Figure 418. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet/status/SFPs> show ?

Usage:
  SHOW        Show details for an SFP entry from table ethernet/status/show

   <MANDATORY>
   --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)

   [OPTIONAL]
   --slot                  Identifies a slot. (not used for LAG)
```

This command displays for the SFPs/XFPs inserted in the specified port, slot, the Base ID fields and the Extended ID fields' information

Figure 419. Output of ”show” command in this node context

```
/cli/interfaces/ethernet/status> SFPs/show --port=eth.3 --slot=17
+-------------------------------------------------------------------------------------------------------------------+
|XFP Info - Slot 17 Eth 3                                                                                           |
+-------------------------------+-----------------------------------------------------------------------------------+
|Parameter                      |Value                                                                              |
+-------------------------------+-----------------------------------------------------------------------------------+
|Base ID Fields                 |                                                                                   |
|   Identifier                  |XFP                                                                                |
|   Ext-Identifier:             |                                                                                   |
|                               |No CLEI code present                                                               |
|                               |TX Ref Clock Input Not Required                                                    |
|                               |Module with CDR function                                                           |
|                               |Power Level 3 Module (3.5W max. power dissipation.)                                |
|   Connector                   |LC                                                                                 |
|   Transceiver                 |2200000000000000h                                                                  |
|   Encoding                    |Reserved / Specific                                                                |
|   Min BitRate      (MBits/s)  |10000                                                                              |
|   Max BitRate      (MBits/s)  |10800                                                                              |
|   Length SFM            (Km)  |40                                                                                 |
|   Length (50um)          (m)  |0                                                                                  |
|   Length (62.5um)        (m)  |0                                                                                  |
|   Length (Copper)        (m)  |0                                                                                  |
|   Device Technology:          |                                                                                   |
|                               |Transmitter not Tunable                                                            |
|                               |PIN detector                                                                       |
|                               |Uncooled transmitter                                                               |
|                               |No wavelength control                                                              |
|                               |850 nm VCSEL                                                                       |
|   Vendor Name                 |SumitomoElectric                                                                   |
|   CDR Support:                |                                                                                   |
|                               |--                                                                                 |
|   Vendor OUI                  |00005F                                                                             |
|   Vendor Serial Number        |SXP3101EX-02                                                                       |
|   Vendor Revision             |N                                                                                  |
|   Laser Wavelength      (nm)  |1550                                                                               |
|   Laser Wave. Tolerance (nm)  |20                                                                                 |
|   Max Case Temperature   (C)  |70                                                                                 |
+-------------------------------+-----------------------------------------------------------------------------------+
|Extended ID Fields             |                                                                                   |
|   Power Supply Information:   |                                                                                   |
|                               |Max Power Dissipation                              0 (mW)                          |
|                               |Max Total Power Dissipation in Power Down Mode     0 (mW)                          |
|                               |Max current required by +5V Supply                 0 (mA)                          |
|                               |Max current required by +3.3V Supply               0 (mA)                          |
|                               |Max current required by +1.8V Supply               0 (mA)                          |
|                               |Max current required by -5.2V Supply               0 (mA)                          |
|   Vendor Serial Number        |89E657N00008                                                                       |
|   Date Code                   |09/08/07                                                                           |
|   Diagnostic Monitoring Type:|                                                                                   |
|                               |Received power measurement type = Average Power                                    |
|   Enhanced Options:           |                                                                                   |
|                               |Optional Soft TX_FAULT monitoring implemented                                      |
|                               |Optional Soft TX_DISABLE control and monitoring implemented                        |
+-------------------------------+-----------------------------------------------------------------------------------+
```

“active-channels” sub-node

“show” command

Table 315. "show" command information

Name	show

Description	Shows the active channels on a given Client Service.
Full path	/interfaces/ethernet/status/active-channels/show
Mandatory Parameters	--port --serviceID-client --slot
Screen Output	Table, Figure 421. Table parameters description in Table 315.

Figure 420. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet/status/active-channels> show ?

Usage:
  SHOW                  Show the active channels on a given Client Service.

   <MANDATORY>
   --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --serviceID-client   Choose a client service by ID.
   --slot               Identifies a slot.
```

Figure 421. Output of "show" command in this node context

```
/cli/interfaces/ethernet> status/show/active-channels/show --port=eth.1 --serviceID-client=7 --slot=5
+-------------------------------------------------------------------------+
|Active Channels on Client Service: (7) Id 7                              |
+--------------------+----------------------------------------------------+
|Source IP           |IP Address                                          |
+--------------------+----------------------------------------------------+
|0.0.0.0             |235.0.0.1                                           |
+--------------------+----------------------------------------------------+
```

Table 316. "show" command output table parameters

Parameter	Description
Source IP	Active-channel Source IP address
IP address	Active Channel IP address

"storm-control" sub-node

"config" command

Table 317. "config" command information

Name	config
Description	Configures Storm Control parameters for the given ETH interfaces.
Full path	/interfaces/ethernet/storm-control/config
Mandatory	--port

Parameters	--slot
Screen Output	No

Figure 422. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/ethernet/storm-control> config ?

Usage CONFIG:
  CONFIG                Configure Storm Control parameters for the given ETH interfaces.

   <MANDATORY>
   --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot               Identifies a slot.

   [OPTIONAL]
   --bc-control         Configure Broadcast storm control. (enable|disable)
   --bc-threshold       Specifies Broadcast threshold value. (0..100 % or 0..14880000 pps)
   --mc-control         Configure Multicast storm control. (enable|disable)
   --mc-threshold       Specifies Multicast threshold value. (0..100 %  or 0..14880000 pps)
   --threshold-unit     Specifies Storm Control threshold units (percent|pps)
   --uc-control         Configure Unknown Unicast storm control. (enable|disable)
    --uc-threshold      Specifies Unknown Unicast threshold value. (0..100 %  or
 0..14880000 pps)
```

"show" command

Table 318. "show" command information

Name	show
Description	Shows the current storm-control configuration.
Full path	/interfaces//ethernet/storm-control/show
Mandatory Parameters	No
Screen Output	Tables, Figure 424 and Figure 425 (with argument slot). Tables' parameter description in Table 319 and Table 320.

Figure 423. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet/storm-control> show ?

Usage SHOW:
  SHOW                  Shows ETH Storm Control information for a specific HW slot.

   [OPTIONAL]
    --slot              Identifies a slot. (not used for LAG)
```

Figure 424. Output of "show" command without arguments in this node context

```
/cli/interfaces/ethernet/storm-control> show
+----------------------------------+
|General Information               |
+----+---------------+-------------+
|Slot|Card Name      |Details      |
+----+---------------+-------------+
|1   |XCO-640        |             |
|3   |AMX-16GPON     |             |
|8   |AMX-48GE       |YES          |
|9   |UMX-4x10GE     |YES          |
|10  |UMX-4x10GE     |YES          |
|11  |UMX-4x10GE     |YES          |
|12  |UMX-4x10GE     |YES          |
|18  |AMX-16GPON     |             |
|20  |XCO-640        |             |
|21  |FAN            |             |
+----+---------------+-------------+
```

Table 319. "show" command without arguments output table parameters

Parameter	Description
Slot	Slot number
Card Name	Name of the board inserted in a slot
Details	YES, multicast is configured in the board and detailed information is available

Figure 425. Partial view of "show" command output, with argument slot, in this node context

```
/cli/interfaces/ethernet/storm-control> show --slot=9
+-------------------------------------------------------------------------------+
|Storm Control Configuration on Slot 9 UMX-4x10GE                               |
+----------+--------+-----------------+-----------------+-----------------+
|          |        |Unknown Unicast  |Multicast        |Broadcast        |
+----------+--------+-------+---------+-------+---------+-------+---------+
|Name      |Units   |Control|Threshold|Control|Threshold|Control|Threshold|
+----------+--------+-------+---------+-------+---------+-------+---------+
|Eth 1     |percent |disable|5        |disable|5        |disable|5        |
|Eth 2     |percent |disable|5        |disable|5        |disable|5        |
|Eth 3     |percent |disable|5        |disable|5        |disable|5        |
|Eth 4     |percent |disable|5        |disable|5        |disable|5        |
+----------+--------+-------+---------+-------+---------+-------+---------+
```

Table 320. "show" command with argument slot output table parameters

Parameter group	Parameter	Description

	Name	Ethernet interface identifier
	Units	Used units (% or pps)
Unknown Unicast	**Control**	Configured Unknown Unicast storm control. (enable|disable)
	Threshold	Unknown Unicast threshold configured value (0 to 100 % or 0 to 14880000 pps)
Multicast	**Control**	Configured Multicast storm control. (enable|disable)
	Threshold	Multicast threshold configured value (0 to 100 % or 0.to.14880000 pps)
Broadcast	**Control**	Configured Broadcast storm control. (enable|disable)
	Threshold	Broadcast threshold configured value (0.to.100 % or 0.to.14880000 pps)

"showconfig" command

Table 321. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/ethernet/storm-control/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 426. CLI on line help on "showconfig" command usage in this node context

```
cli/interfaces/ethernet/storm-control>  showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"traffic-shape" sub-node

"config" command

Table 322. "config" command information

Name	config
Description	Configures egress traffic shaper parameters for the given ETH interfaces.
Full path	/interfaces/ethernet/traffic-shape/config
Mandatory Parameters	--port --slot

Screen Output	No

Figure 427. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/ethernet/traffic-shape> config ?

Usage CONFIG:
  CONFIG                Configure egress traffic shaper parameters for the given ETH interfaces.

   <MANDATORY>
   --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot               Identifies a slot.

   [OPTIONAL]
    --max-bw            Specifies Maximum Bandwidth value. (0..100 %)
```

"show" command

Table 323. "show" command information

Name	show
Description	Shows ETH egress traffic shaper information for a specific HW slot.
Full path	/interfaces/ethernet/traffic-shape/show
Mandatory Parameters	No
Screen Output	Tables, Figure 429 and Figure 430 (with argument slot). Tables' parameter description in Table 324 and Table 325.

Figure 428. CLI on line help on "show" command usage in this node context

```
cli/interfaces/ethernet/traffic-shape> show ?

Usage SHOW:
  SHOW                  Shows ETH egress traffic shaper information for a specific HW slot.

   [OPTIONAL]
    --slot              Identifies a slot. (not used for LAG)
```

Figure 429. Output of "show" command without arguments in this node context

```
/cli/interfaces/ethernet/traffic-shape> show
+-----------------------------------+
|General Information                |
+----+---------------+--------------+
|Slot|Card Name      |Details       |
+----+---------------+--------------+
```

```
|1    |XCO-640         |                |
|3    |AMX-16GPON      |                |
|8    |AMX-48GE        |YES             |
|9    |UMX-4x10GE      |YES             |
|10   |UMX-4x10GE      |YES             |
|11   |UMX-4x10GE      |YES             |
|12   |UMX-4x10GE      |YES             |
|18   |AMX-16GPON      |                |
|20   |XCO-640         |                |
|21   |FAN             |                |
+-----+----------------+----------------+
```

Table 324. "show" command without arguments output table parameters

Parameter	Description
Slot	Slot number
Card Name	Name of the board inserted in a slot
Details	YES, multicast is configured in the board and detailed information is available

Figure 430. Partial view of "show" command output, with argument slot, in this node context

```
/cli/interfaces/ethernet/traffic-shape> show --slot=9
+-----------------------------------------------+
|Egress Traffic Shaper on Slot 9 UMX-4x10GE     |
+----------+------------------------------------+
|Port      |Maximum Bandwidth %                 |
+----------+------------------------------------+
|Eth 1     |100                                 |
|Eth 2     |100                                 |
|Eth 3     |100                                 |
|Eth 4     |100                                 |
+----------+------------------------------------+
```

Table 325. "show" command with argument slot output table parameters

Parameter	Description
Port	Ethernet interface identifier
Maximum Bandwidth %	Maximum bandwidth configured values (%)

"showconfig" command

Table 326. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/ethernet/traffic-shape/showconfig

Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 431. CLI on line help on "showconfig" command usage in this node context

```
cli/interfaces/ethernet/traffic-shape>  showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"vlan" sub-node

"config" command

Table 327. "config" command information

Name	config
Description	Configures vlan information for Eth interfaces.
Full path	/interfaces/ethernet/vlan/config
Mandatory Parameters	--port --slot
Screen Output	No

Figure 432. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/ethernet/vlan> config ?

Usage CONFIG:
  CONFIG                    Configure vlan information for Eth interfaces.

   <MANDATORY>
   --port                   Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot                   Identifies a slot.

   [OPTIONAL]
   --acceptable-frame-types          Acceptable frame types {default: all / range: 1 - all, 2 - tagged
only, 3 - untagged only}
   --default-priority            Priority applied {default: 0 / range: 0..7}
   --default-vlan-id                 VlanId applied to all income untagged frames {default: 1 / range:
1..4095}
```

"show" command

Table 328. "show" command information

Name	show
Description	Shows the current vlan configuration.
Full path	/interfaces/ethernet/vlan/show
Mandatory Parameters	No
Screen Output	Tables Figure 434. Tables parameter description in Table 329.

Figure 433. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/ethernet/vlan> show ?

Usage:
  SHOW                    Show the current vlan configuration

   [OPTIONAL]
   --slot                 Identifies a slot. (not used for LAG)
```

Figure 434. Output of "show" command in this node context- partial view

```
/cli/interfaces/ethernet/vlan> show
The card on slot 1 does not have ethernet interfaces.
The card on slot 2 does not have ethernet interfaces.
+-------------------------------------------------------------------------------------------+
|Card 5 - AMX-48GE: VLAN Configuration                                                      |
+----------+---------------+-------------------------+---------------+---------------------+
|ID        |Name           |Acceptable Frame Types   |Default VLANID |Default Priority     |
+----------+---------------+-------------------------+---------------+---------------------+
|0         |Eth 1          |all                      |1              |0                    |
|1         |Eth 2          |all                      |1              |0                    |
|2         |Eth 3          |all                      |1              |0                    |
|3         |Eth 4          |all                      |1              |0                    |
|4         |Eth 5          |all                      |1              |0                    |
|5         |Eth 6          |all                      |1              |0                    |
|6         |Eth 7          |all                      |1              |0                    |
|7         |Eth 8          |all                      |1              |0                    |
```

Table 329. "show" command output table

Parameter	Description
ID	Table entry identifier (number)
Name	Ethernet interface identifier
Acceptable Frame Types	Indicates acceptable frame type
Default VLANID	Indicates used default VLAN identifier
Default Priority	Indicates used default Priority

"showconfig" command

Table 330. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/ethernet/vlan/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 435. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces/Ethernet/vlan> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"gpon" sub-node

"config" command

Table 331. "config" command information

Name	config
Description	Configures the given PON interfaces.
Full path	/interfaces/gpon/config
Mandatory Parameters	--port --slot
Screen Output	No

Figure 436. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/gpon> config ?

Usage CONFIG:
  CONFIG                  Configure the given PON interfaces.

   <MANDATORY>
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot                 Identifies a slot.

   [OPTIONAL]
   --admin                  Administrative State. Enable/disable, in this context. (enable|disable)
   --ber                  Bit Error Rate (BER) Interval according to G.984.3. Value in seconds.
(1..3600 s)
   --esmc                 Enables sending SSM packets over ESMCChannel. (enable|disable)
   --fec-downstream             Forward Error Correction (FEC) on the Downstream side.
```

```
(enable|disable)
  --ip-source-guard          Enable/Disable IP Source Guard filtering for the specified interface.
(enable|disable)
  --mac-agging               Time it takes for a MAC address to be removed from the GPON
MAC table. Value in seconds. (120..3600 s)
  --mapping-mode             Specify the mapping mode to be applied to GPON interface.
Defaults to VLAN. (VLAN|VLAN+PBITS)
  --max-distance             Sets the maximum distance in Km for which the interface can detect
ONUs (20..60 Km)
  --min-distance             Sets the minimum distance in Km for which the interface can detect
ONUs.(0..40 Km)
  --onu-auto-discovery       New ONUs are automatically added to the discovery table for a
given PON interface. (enable|disable)
```

"show" command

Table 332. "show" command information

Name	show
Description	Shows PON information for a specific HW slot.
Full path	/interfaces/gpon/show
Mandatory Parameters	No
Screen Output	Tables Figure 438 and Figure 439 (with argument –slot).Tables parameter description in Table 333 and Table 334.

Figure 437. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/gpon> show ?

Usage:
  SHOW          Shows PON information for a specific HW slot.

   [OPTIONAL]
   --slot                    Identifies a slot. (not used for LAG)
```

Figure 438. Output of "show" command in this node context

```
/cli/interfaces/gpon> show
+-------------------------------------+
|General Information                  |
+----+---------------+---------------+
|Slot|Card Name      |Details        |
+----+---------------+---------------+
|1   |XCO-640        |               |
|2   |AMX-16GPON     |YES            |
|5   |AMX-48GE       |               |
|10  |UMX-4x10GE     |               |
|12  |UMX-4x10GE     |               |
|21  |FAN            |               |
+----+---------------+---------------+
```

Table 333. "show" command output table

Parameter	Description
Slot	Slot number
Card Name	Name of the board inserted in a slot
Details	YES, if there are GPON interfaces in the board and detailed information on the interfaces is available

This command used with arguments provides detailed information on the existing PON interfaces, in the format of a table.

Figure 439. Output of "show" command used with argument --slot, in this node context

```
/cli/interfaces/gpon> show --slot=3
+-----------------------------------------------------------------------------------------------------------------------------------------------+
|Slot 2 AMX-16GPON - GPON Configuration                                                                                                         |
+---+--------+--------+-----------+-----------+-----------+-----+-------------+-----------------+-----+--------+-----------+-------------+
|ID |Name    |Admin   |Mac Aging(s)|Max Dist.(Km)|Min Dist.(Km)|BER(s)|Downstream FEC|ONU Auto Discovery|MTU  |ESMC    |IP Src Guard|Mapping Mode|
+---+--------+--------+-----------+-----------+-----------+-----+-------------+-----------------+-----+--------+-----------+-------------+
|0  |PON 1   |enable  |240        |20         |0          |20   |disable      |enable           |2048 |disable |disable    |VLAN         |
|1  |PON 2   |disable |240        |20         |0          |20   |disable      |enable           |2048 |disable |disable    |VLAN         |
|2  |PON 3   |disable |240        |20         |0          |20   |disable      |enable           |2048 |disable |disable    |VLAN         |
|3  |PON 4   |disable |240        |20         |0          |20   |disable      |enable           |2048 |disable |disable    |VLAN         |
|4  |PON 5   |disable |240        |20         |0          |20   |disable      |enable           |2048 |disable |disable    |VLAN         |
|5  |PON 6   |disable |240        |20         |0          |20   |disable      |enable           |2048 |disable |disable    |VLAN         |
|6  |PON 7   |disable |240        |20         |0          |20   |disable      |enable           |2048 |disable |disable    |VLAN         |
|7  |PON 8   |disable |240        |20         |0          |20   |disable      |enable           |2048 |disable |disable    |VLAN         |
|8  |PON 9   |disable |240        |20         |0          |20   |disable      |enable           |2048 |disable |disable    |VLAN         |
|9  |PON 10  |disable |240        |20         |0          |20   |disable      |enable           |2048 |disable |disable    |VLAN         |
|10 |PON 11  |disable |240        |20         |0          |20   |disable      |enable           |2048 |disable |disable    |VLAN         |
|11 |PON 12  |disable |240        |20         |0          |20   |disable      |enable           |2048 |disable |disable    |VLAN         |
|12 |PON 13  |disable |240        |20         |0          |20   |disable      |enable           |2048 |disable |disable    |VLAN         |
|13 |PON 14  |disable |240        |20         |0          |20   |disable      |enable           |2048 |disable |disable    |VLAN         |
|14 |PON 15  |disable |240        |20         |0          |20   |disable      |enable           |2048 |disable |disable    |VLAN         |
|15 |PON 16  |disable |240        |20         |0          |20   |disable      |enable           |2048 |disable |disable    |VLAN         |
+---+--------+--------+-----------+-----------+-----------+-----+-------------+-----------------+-----+--------+-----------+-------------+
```

Table 334. "show" command output used with argument --slot

Parameter	Description
ID	Configuration Table entry (Line) ID (number)

Name	GPON interface name
Admin	Administrative GPON interface Status (enabled|disabled)
Mac Aging (sec)	Time it takes for a MAC address to be removed from the GPON MAC table, in the case it hasn't been received any packet with that source address in that GPON port. This value must be in the range between 120 and 3600 seconds. (Note: The MAC addresses in the GPON interface are only learnt in Unicast Unstacked Services)
Max distance (Km)	Maximum distance for which the interface can detect ONU's. The difference between the minimum and the maximum can't exceed 20km, and the maximum distance can't be higher than 60km
Min. distance (Km)	Minimum distance for which the interface can detect ONU's. The difference between the minimum and the maximum can't exceed 20km, and the maximum distance can't be higher than 60km
BER (s)	PON port Bit Error Rate in the downstream in sec
Downstream FEC	Flag; Downstream FEC enabled at this PON port if selected
ONU Auto Discovery	Flag; Auto Discovery ONUs at this PON port enabled if selected
MTU	MTU configured value
ESMC	Flag; Sending SSM packets over ESMC Channel.enabled if selected.
IP SRc. Guard	Flag; IP Source Guard enabled if selected
Mapping Mode	Used Mapping mode (VLAN | VLAN + P-bits)

"showconfig" command

Table 335. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/gpon/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 440. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces/gpon> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"arp-inspection" sub-node

This node is used to manage ARP Inspection parameters for the given PON interfaces.

"config" command

Table 336. "config" command information

Name	config
Description	Configures ARP Inspection parameters for the given PON interfaces.
Full path	/interfaces/gpon/arp-inspection/config
Mandatory Parameters	--port --slot
Screen Output	No

Figure 441. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/gpon/arp-inspection> config ?

Usage CONFIG:
 CONFIG                Configure ARP Inspection parameters for the given PON interfaces.

  <MANDATORY>
  --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot               Identifies a slot.

  [OPTIONAL]
  --burst-interval      Set the ARP Burst Interval (1..15)
  --rate-limit          Set the ARP Rate Limit (no-limit or 0..300)
  --trust-state         Set the ARP Trust State (trusted|untrusted)
```

"show" command

This command provides information on ARP Inspection configuration information for equipment PON interfaces.

Table 337. "show" command information

Name	show
Description	Shows PON ARP Inspection information for a specific HW slot
Full path	/interfaces/gpon/arp-inspection/show
Mandatory Parameters	No
Screen Output	Tables, Figure 443 and Figure 444. Tables parameters description in Table 338and Table 339.

Figure 442. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/gpon/arp-inspection> show ?
```

```
Usage SHOW:
  SHOW                  Shows PON ARP Inspection information for a specific HW slot.

  [OPTIONAL]
  --slot                Identifies a slot. (not used for LAG)
```

Figure 443. "show" command, without arguments, output in this node context

```
/cli/interfaces/gpon/arp-inspection> show
+-----------------------------------+
|General Information                |
+----+---------------+---------------+
|Slot|Card Name      |Details        |
+----+---------------+---------------+
|1   |XCO-640        |               |
|3   |AMX-16GPON     |YES            |
|8   |AMX-48GE       |               |
|9   |UMX-4x10GE     |               |
|10  |UMX-4x10GE     |               |
|11  |UMX-4x10GE     |               |
|12  |UMX-4x10GE     |               |
|18  |AMX-16GPON     |YES            |
|20  |XCO-640        |               |
|21  |FAN            |               |
+----+---------------+---------------+
```

Table 338. "show" command, without arguments, output table

Parameter	Description
Slot	Slot number
Card Name	Name of the board inserted in a slot
Details	YES, if there are PON interfaces in the board and detailed information the interfaces is available

Figure 444. "show" command, with argument slot, output in this node context

```
/cli/interfaces/gpon/arp-inspection> show --slot=3
+-------------------------------------------------------------------+
|ARP Inspection Configuration on Slot 3 AMX-16GPON                  |
+----------+--------------------+---------------+------------------+
|Name      |Trust State         |Rate Limit(pps)|Burst Interval(s) |
+----------+--------------------+---------------+------------------+
|Pon 1     |untrusted           |15             |1                 |
|Pon 2     |untrusted           |15             |1                 |
|Pon 3     |untrusted           |15             |1                 |
|Pon 4     |untrusted           |15             |1                 |
|Pon 5     |untrusted           |15             |1                 |
|Pon 6     |untrusted           |15             |1                 |
|Pon 7     |untrusted           |15             |1                 |
|Pon 8     |untrusted           |15             |1                 |
|Pon 9     |untrusted           |15             |1                 |
|Pon 10    |untrusted           |15             |1                 |
|Pon 11    |untrusted           |15             |1                 |
|Pon 12    |untrusted           |15             |1                 |
|Pon 13    |untrusted           |15             |1                 |
|Pon 14    |untrusted           |15             |1                 |
|Pon 15    |untrusted           |15             |1                 |
|Pon 16    |untrusted           |15             |1                 |
+----------+--------------------+---------------+------------------+
```

Table 339. "show" command output table

Parameter	Description
Table Title	Card #(slot number) –name of the card inserted in that slot
Name	PON port identification in the board
Trust State	ARP Trust State (trusted|untrusted)
Rate Limit	ARP Rate Limit (no-limit or 0..300)
Burst interval	ARP Burst Interval (1..15)

"showconfig" command

Table 340. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/gpon/arp-inspection/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 445. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces/ethernet/arp-inspection> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG                Print the command list that enforces the current configuration
```

"blocking-traffic" sub-node

This node is used to manage blocking traffic parameters for the given PON interfaces.

"config" command

Table 341. "config" command information

Name	config
Description	Configures Blocking traffic parameters for the given PON interfaces.
Full path	/interfaces/gpon/blocking-traffic/config
Mandatory Parameters	--port --slot
Screen Output	No

Figure 446. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/gpon/blocking-traffic> config ?

Usage CONFIG:
  CONFIG                    Configure Blocking traffic parameters for the given PON interfaces.

  <MANDATORY>
  --port                    Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                    Identifies a slot.

  [OPTIONAL]
  --block-multicast         Blocks Multicast traffic. (enable|disable)
  --block-unknown-unicast   Blocks unknown Unicast traffic. (enable|disable)
```

"show" command

This command provides information on blocking traffic configuration information for equipment PON interfaces.

Table 342. "show" command information

Name	show
Description	Shows Blocking Traffic information for a specific HW slot
Full path	/interfaces/gpon/blocking-traffic/show

Mandatory Parameters	No
Screen Output	Tables, Figure 448 and Figure 449. Tables parameters description in Table 343 and Table 344.

Figure 447. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/gpon/blocking-traffic> show ?

Usage SHOW:
 SHOW                Shows Blocking Traffic information for a specific HW slot.

  [OPTIONAL]
  --slot             Identifies a slot. (not used for LAG)
```

Figure 448. "show" command, without arguments, output in this node context

```
/cli/interfaces/gpon/blocking-traffic> show
+-----------------------------------+
|General Information                |
+----+---------------+---------------+
|Slot|Card Name      |Details        |
+----+---------------+---------------+
|1   |XCO-640        |               |
|3   |AMX-16GPON     |YES            |
|8   |AMX-48GE       |               |
|9   |UMX-4x10GE     |               |
|10  |UMX-4x10GE     |               |
|11  |UMX-4x10GE     |               |
|12  |UMX-4x10GE     |               |
|18  |AMX-16GPON     |YES            |
|20  |XCO-640        |               |
|21  |FAN            |               |
+----+---------------+---------------+
```

Table 343. "show" command, without arguments, output table

Parameter	Description
Slot	Slot number
Card Name	Name of the board inserted in a slot
Details	YES, if there are PON interfaces in the board and detailed information the interfaces is available

Figure 449. "show" command, with argument slot, output in this node context

```
/cli/interfaces/gpon/blocking-traffic> show --slot=3
+------------------------------------------------------------+
|Blocking Traffic Configuration on Slot 3 AMX-16GPON         |
+----------+-------------------------+-----------------------+
|Name      |Block Unknown Unicast    |Block Multicast        |
+----------+-------------------------+-----------------------+
|Pon 1     |disable                  |disable                |
|Pon 2     |disable                  |disable                |
|Pon 3     |disable                  |disable                |
|Pon 4     |disable                  |disable                |
|Pon 5     |disable                  |disable                |
|Pon 6     |disable                  |disable                |
|Pon 7     |disable                  |disable                |
|Pon 8     |disable                  |disable                |
|Pon 9     |disable                  |disable                |
|Pon 10    |disable                  |disable                |
|Pon 11    |disable                  |disable                |
|Pon 12    |disable                  |disable                |
|Pon 13    |disable                  |disable                |
|Pon 14    |disable                  |disable                |
|Pon 15    |disable                  |disable                |
|Pon 16    |disable                  |disable                |
+----------+-------------------------+-----------------------+
```

Table 344. "show" command output table

Parameter	Description
Table Title	Card #(slot number) –name of the card inserted in that slot
Name	PON port identification in the board
Block unknown unicast	Blocks unknown Unicast traffic. (enable|disable)
Block multicast	Blocks Multicast traffic. (enable|disable)

"showconfig" command

Table 345. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/gpon/blocking-traffic/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 450. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces/gpon/arp-inspection> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG              Print the command list that enforces the current configuration
```

"cos" sub-node

This sub-node is used to manage CoS configuration of PON interfaces in all slots.

"config" command

Table 346. "config" command information

Name	config
Description	Configure CoS information for PON interfaces.
Full path	/interfaces/gpon/cos/config
Mandatory Parameters	--port --slot
Screen Output	No

Figure 451. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/gpon/cos> config ?

Usage CONFIG:
  CONFIG                  Configure cos parameters for the given PON interfaces.

  <MANDATORY>
  --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                  Identifies a slot.

  [OPTIONAL]
  --class-map             View available Class Map profile IDs in /class-map.
  --trust-mode            Identifies the Trust Mode. (untrusted|p-bits|ip-dscp|ip-prec)
```

"show" command

This command used without arguments provides information on all the equipment PON interfaces CoS configuration. When used with the argument slot it displays that information only for the specific slot.

Table 347. "show" command information

Name	show

Description	Shows CoS information for a specific HW slot.
Full path	/interfaces/gpon/cos/show
Mandatory Parameters	No
Screen Output	Tables, Figure 453 and Figure 454 . Table parameters description in Table 348 and Table 349.

Figure 452. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/gpon/cos> show ?

Usage SHOW:
 SHOW                  Shows cos information for a specific HW slot.

  [OPTIONAL]
  --slot               Identifies a slot. (not used for LAG)
```

Figure 453. Output of "show" command, without arguments, in this node context

```
/cli/interfaces/gpon/cos> show
+-----------------------------------+
|General Information                |
+----+---------------+---------------+
|Slot|Card Name      |Details        |
+----+---------------+---------------+
|1   |XCO-640        |               |
|3   |AMX-16GPON     |YES            |
|8   |AMX-48GE       |               |
|9   |UMX-4x10GE     |               |
|10  |UMX-4x10GE     |               |
|11  |UMX-4x10GE     |               |
|12  |UMX-4x10GE     |               |
|18  |AMX-16GPON     |YES            |
|20  |XCO-640        |               |
|21  |FAN            |               |
+----+---------------+---------------+
```

Table 348. "show" command, without arguments, output table

Parameter	Description
Slot	Slot number
Card Name	Name of the board inserted in a slot
Details	YES, if there are PON interfaces in the board and detailed information the interfaces is available

Figure 454. Output of "show" command, without arguments, in this node context

```
/cli/interfaces/gpon/cos> show --slot=3
+-------------------------------------------------------------+
|Ingress Class Map on Slot 3 AMX-16GPON                       |
+----------+----------+-------------------------------------+
|Port      |Trust Mode|Class Map                            |
+----------+----------+-------------------------------------+
|Pon 1     |p-bits    |(1) default-p-bits-to-tc             |
|Pon 2     |p-bits    |(1) default-p-bits-to-tc             |
|Pon 3     |p-bits    |(1) default-p-bits-to-tc             |
|Pon 4     |p-bits    |(1) default-p-bits-to-tc             |
|Pon 5     |p-bits    |(1) default-p-bits-to-tc             |
|Pon 6     |p-bits    |(1) default-p-bits-to-tc             |
|Pon 7     |p-bits    |(1) default-p-bits-to-tc             |
|Pon 8     |p-bits    |(1) default-p-bits-to-tc             |
|Pon 9     |p-bits    |(1) default-p-bits-to-tc             |
|Pon 10    |p-bits    |(1) default-p-bits-to-tc             |
|Pon 11    |p-bits    |(1) default-p-bits-to-tc             |
|Pon 12    |p-bits    |(1) default-p-bits-to-tc             |
|Pon 13    |p-bits    |(1) default-p-bits-to-tc             |
|Pon 14    |p-bits    |(1) default-p-bits-to-tc             |
|Pon 15    |p-bits    |(1) default-p-bits-to-tc             |
|Pon 16    |p-bits    |(1) default-p-bits-to-tc             |
+----------+----------+-------------------------------------+
```

Table 349. "show" command output table parameters

Parameter	Description
Port	PON port identification in the board
Trust Mode	Identifies the configured Trust Mode. (untrusted|p-bits|ip-dscp|ip-prec)
Class Map	Identifies configured Class Map profile (ID) in class(class name)-mapping

This command used with arguments provides detailed information on the existing PON interfaces, in the format of a table.

"showconfig" command

Table 350. "showconfig" command information

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/interfaces/gpon/cos/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the

	current configuration.

Figure 455. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces/gpon/cos> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"policy-map" sub-node

This node is used to manage CoS policy map information for PON interfaces.

"config" command

Table 351. "config" command information

Name	config
Description	Configures CoS policy map information for Eth interfaces.
Full path	/interfaces/gpon/cos/policy-map/config
Mandatory Parameters	--port --profile-id --slot --traffic-class
Screen Output	No

Figure 456. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/gpon/cos/policy-map> config ?

Usage CONFIG:
  CONFIG                  Configure CoS policy map information for PON interfaces.

   <MANDATORY>
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --profile-id             Identifies an ethernet profile by ID (use 'none' for no profile).
   --slot                 Identifies a slot.
   --traffic-class          Specify the Traffic Class value (0..7)
```

"show" command

Table 352. "show" command information

Name	show
Description	Shows the current CoS configuration.

Full path	/interfaces/gpon/cos/policy-map/show
Mandatory Parameters	No
Screen Output	Tables, Figure 458 and Figure 459. Table parameter description in Table 353 and Table 354.

Figure 457. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/gpon/cos/policy-map> show ?

Usage SHOW:
 SHOW                  Show the current configuration

  [OPTIONAL]
  --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot               Identifies a slot. (not used for LAG)
```

Figure 458. "show" command, without arguments, output in this node context

```
/cli/interfaces/gpon/cos/policy-map> show
+-----------------------------------+
|General Information                |
+----+---------------+---------------+
|Slot|Card Name      |Details        |
+----+---------------+---------------+
|1   |XCO-640        |               |
|3   |AMX-16GPON     |YES            |
|8   |AMX-48GE       |               |
|9   |UMX-4x10GE     |               |
|10  |UMX-4x10GE     |               |
|11  |UMX-4x10GE     |               |
|12  |UMX-4x10GE     |               |
|18  |AMX-16GPON     |YES            |
|20  |XCO-640        |               |
|21  |FAN            |               |
+----+---------------+---------------+
```

Table 353. "show" command, without arguments, output table

Parameter	Description
Slot	Slot number
Card Name	Name of the board inserted in a slot
Details	YES, if there are PON interfaces in the board and detailed information the interfaces is available

Figure 459. "show" command, with argument slot, output in this node context –partial view

```
/cli/interfaces/gpon/cos/policy-map> show --slot=3
+-------------------------------------------------------------------+
|Card 3 - AMX-16GPON: PON CoS Policy map configurations             |
+--------+-----+-----------------------------------------------------+
|Port    |TC   |Ingress Policing (Ethernet Profile)                  |
+--------+-----+-----------------------------------------------------+
|Pon 1   |0    |--                                                   |
|        |1    |--                                                   |
|        |2    |--                                                   |
|        |3    |--                                                   |
|        |4    |--                                                   |
|        |5    |--                                                   |
|        |6    |--                                                   |
|        |7    |--                                                   |
+--------+-----+-----------------------------------------------------+
|Pon 2   |0    |--                                                   |
|        |1    |--                                                   |
|        |2    |--                                                   |
|        |3    |--                                                   |
|        |4    |--                                                   |
|        |5    |--                                                   |
|        |6    |--                                                   |
|        |7    |--                                                   |
+--------+-----+-----------------------------------------------------+
```

Table 354. "show" command, with arguments slot and port, output table

Parameter	Description
Table Title	Card #- Card name Port #: PON CoS Policy map configurations
Port	Identifies an interface on the OLT(Card). (e.g.: pon.2; eth.3; lag.1)
TC	Identifies the Traffic Class of Service (0 to 7)
Ingress Policing (Ethernet Profile)	Configured Ingress Policing (Ethernet Profile); if __ no profile is configured

"showconfig" command

Table 355. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/gpon/cos/policy-map/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the

	current configuration.

Figure 460. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces/gpon/cos/policy-map> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG              Print the command list that enforces the current configuration
```

"cos-queue" sub-node

This node is used to manage CoS configuration of GPON interfaces.

"config" command

Table 356. "config" command information

Name	config
Description	Configures CoS information for PON interfaces.
Full path	/interfaces/gpon/cos-queue/config
Mandatory Parameters	--port --queue --slot
Screen Output	No

Figure 461. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/gpon/cos-queue> config ?

Usage CONFIG:
  CONFIG                  Configure CoS information for PON interfaces.

   <MANDATORY>
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --queue                Identifies a CoS Queue. (0..7)
   --slot                 Identifies a slot.

   [OPTIONAL]
   --max-bw               Configure the maximum bandwidth for the Queues (percent of link
capacity)
   --min-bw               Configure the minimum bandwidth for the Queues (percent of link
capacity)
   --queue-mgmt-type      Configure the queue management type (tail-drop|wred)
   --scheduler            Identifies the type of Scheduler (strict|weighted)
   --tdrop-maxth-dp1      Configure the maximum threshold of queue depth for drop
precedence level 1 (percent of link capacity)
   --tdrop-maxth-dp2      Configure the maximum threshold of queue depth for drop
precedence level 2 (percent of link capacity)
```

```
  --weight                Configure the Queue Weight (1..128)
  --wred-dprob-dp1        Configure the drop probability in percentage for drop precedence
level 1
  --wred-dprob-dp2        Configure the drop probability in percentage for drop precedence
level 2
  --wred-dprob-nontcp     Configure the drop probability in percentage for non-TCP traffic
  --wred-exp-weight       Configure the WRED Decay Exponent value. (0..15)
  --wred-maxth-dp1        Configure the maximum threshold of queue depth for drop
precedence level 1 (percent of link capacity)
  --wred-maxth-dp2        Configure the maximum threshold of queue depth for drop
precedence level 2 (percent of link capacity)
  --wred-maxth-nontcp     Configure the maximum threshold of queue depth for non-TCP
traffic (percent of link capacity)
  --wred-minth-dp1        Configure the minimum threshold of queue depth for drop
precedence level 1 (percent of link capacity)
  --wred-minth-dp2        Configure the minimum threshold of queue depth for drop
precedence level 2 (percent of link capacity)
  --wred-minth-nontcp     Configure the minimum threshold of queue depth for non-TCP
traffic (percent of link capacity)
```

"show" command

This command provides information on all the equipment GPON interfaces CoS configuration: CoS traffic profile and scheduler policy.

Table 357. "show" command information

Name	show
Description	Shows the current CoS configuration.
Full path	/interfaces/gpon/cos-queue/show
Mandatory Parameters	No
Screen Output	Table, Figure 463. Table parameter description in Table 358.

Figure 462. CLI on line help on "show" command usage in this node context

```
cli/interfaces/ethernet/cos-queue> show ?

Usage SHOW:
  SHOW                  Show the current CoS configuration

  [OPTIONAL]
  --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                Identifies a slot. (not used for LAG)
```

Figure 463. "show" command, with arguments slot and port, output in this node context

```
/cli/interfaces/gpon/cos-queue> show --slot=3 --port=pon.1
+-------------------------------------------------------------------------------------------------------------------------------------+
|Card 3 - AMX-16GPON Port PON 1: PON CoS Queues configurations                                                                        |
+--------+-----+---------+------+-----------+----------+-------------------+-------------------+-------------------+-----------+
|        |     |         |      |Egress BW %|Queue Mgmt|WRED(Min Thr %)    |WRED/Tail-Drop(Max Thr %)|WRED(Drop Prob %)  |WRED(Decay)|
+--------+-----+---------+------+-----+-----+----------+-----+-----+-------+-------+-------+---------+-----+-----+-------+-----------+
|Port    |Queue|Scheduler|Weight|Min  |Max  |Type      |DP L1|DP L2|Non TCP|DP L1  |DP L2  |Non TCP  |DP L1|DP L2|Non TCP|Exponent   |
+--------+-----+---------+------+-----+-----+----------+-----+-----+-------+-------+-------+---------+-----+-----+-------+-----------+
|PON 1   |0    |strict   |--    |0    |100  |tail-drop |--   |--   |--     |100    |100    |--       |--   |--   |--     |--         |
|        |1    |strict   |--    |0    |100  |tail-drop |--   |--   |--     |100    |100    |--       |--   |--   |--     |--         |
|        |2    |strict   |--    |0    |100  |tail-drop |--   |--   |--     |100    |100    |--       |--   |--   |--     |--         |
|        |3    |strict   |--    |0    |100  |tail-drop |--   |--   |--     |100    |100    |--       |--   |--   |--     |--         |
|        |4    |strict   |--    |0    |100  |tail-drop |--   |--   |--     |100    |100    |--       |--   |--   |--     |--         |
|        |5    |strict   |--    |0    |100  |tail-drop |--   |--   |--     |100    |100    |--       |--   |--   |--     |--         |
|        |6    |strict   |--    |0    |100  |tail-drop |--   |--   |--     |100    |100    |--       |--   |--   |--     |--         |
|        |7    |strict   |--    |0    |100  |tail-drop |--   |--   |--     |100    |100    |--       |--   |--   |--     |--         |
+--------+-----+---------+------+-----+-----+----------+-----+-----+-------+-------+-------+---------+-----+-----+-------+-----------+
```

Table 358. "show" command, with arguments slot and port, output table

Parameter		Description
Table Title		Card #(slot number) –name of the card inserted in that slot
Port		PON port identification in the board
Queue		Class of Service Queue identification (Number 0..7)
Scheduler		Identifies the type of configured Scheduler (strict|weighted)
Weight		Configured the Queue Weight (1..128)
Egress BW (%)	**Max-bw**	Configured the maximum Egress bandwidth for the Queues (% of link capacity)
	Min-bw	Configured the minimum Egress bandwidth for the Queues (% of link capacity)
Queue Mgmt type		Configured queue management type (tail-drop|wred)
WRED (Minimum Throughput %)	**DP L1**	Configured minimum threshold of queue depth for drop precedence level 1 (% of link capacity)
	DP L2	Configured minimum threshold of queue depth for drop precedence level 1 (% of link capacity)
	Non TCP	Configured minimum threshold of queue depth for non-TCP traffic (% of link capacity)
WRED/Tail-Drop (Maximum Throughput %)	**DP L1**	Configured maximum threshold of queue depth for drop precedence level 1 (% of link capacity)
	DP L2	Configured maximum threshold of queue depth for drop precedence level 1 (% of link capacity)
	Non TCP	Configured maximum threshold of queue depth for non-TCP traffic (% of link capacity)
Drop Probability(Maximum Throughput %)	**DP L1**	Configured drop probability in percentage for drop precedence level 1
	DP L2	Configured drop probability in percentage for drop precedence level 2
	Non TCP	Configured drop probability in percentage for non-TCP traffic
WRED (Decay)	**Exponent**	Configured WRED Decay Exponent value. (0..15)

"showconfig" command

Table 359. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/gpon/cos-queue/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 464. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces/ethernet/cos-queue> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"dhcp" sub-node

"config" command

Table 360. "config" command information

Name	config
Description	Configure DHCP mode parameter for the given interfaces.
Full path	/interfaces/gpon/dhcp/config
Mandatory Parameters	--port --slot
Screen Output	No

Figure 465. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/gpon> dhcp/config ?

Usage CONFIG:
  CONFIG                  Configure DHCP mode parameter for the given interfaces.

   <MANDATORY>
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot                 Identifies a slot.

   [OPTIONAL]
   --is-trusted                  Set the DHCP mode {default: untrusted / mode: 0 - untrusted, 1 -
trusted}.
```

"show" command

This command used without arguments provides information on all the equipment PON interfaces with DHCP configuration.. When used with the argument slot it displays that information only for the specific slot.

Table 361. "show" command information

Name	show
Description	Shows DHCP mode information for a specific HW slot.
Full path	/interfaces/gpon/dhcp/show
Mandatory Parameters	No
Screen Output	Tables, Figure 467 and Figure 468. Tables' parameters description in Table 362 and Table 363.

Figure 466. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/gpon> dhcp/show ?

Usage SHOW:
 SHOW                  Shows DHCP mode information for a specific HW slot.

  [OPTIONAL]
  --slot               Identifies a slot. (not used for LAG)
```

Figure 467."show" command output, without arguments, in this node context

```
/cli/interfaces/gpon> dhcp/show
+-----------------------------------+
|General Information                |
+----+---------------+--------------+
|Slot|Card Name      |Details       |
+----+---------------+--------------+
|5   |AMX-48GE       |              |
|9   |AMX-16GPON     |YES           |
|11  |AMX-48GE       |              |
|17  |UMX-4x10GE     |              |
|20  |XCO-640        |              |
|21  |FAN            |              |
+----+---------------+--------------+
```

Table 362. "show" command output table

Parameter	Description
Slot	Slot number
Card Name	Name of the board inserted in a slot
Details	YES, if there are GPON interfaces in the board and detailed information on the interfaces is available

Figure 468."show" command output, with argument slot, in this node context

```
/cli/interfaces/gpon> dhcp/show --slot=9
+-----------------------------------------+
|Card 9 - AMX-16GPON: DHCP Mode           |
+----------+---------------+--------------+
|ID        |Name           |DHCP Mode     |
+----------+---------------+--------------+
|0         |PON 1          |untrusted     |
|1         |PON 2          |untrusted     |
|2         |PON 3          |untrusted     |
|3         |PON 4          |untrusted     |
|4         |PON 5          |untrusted     |
|5         |PON 6          |untrusted     |
|6         |PON 7          |untrusted     |
|7         |PON 8          |untrusted     |
|8         |PON 9          |untrusted     |
|9         |PON 10         |untrusted     |
|10        |PON 11         |untrusted     |
|11        |PON 12         |untrusted     |
|12        |PON 13         |untrusted     |
|13        |PON 14         |untrusted     |
|14        |PON 15         |untrusted     |
|15        |PON 16         |untrusted     |
+----------+---------------+--------------+
```

Table 363. "show" command output, with argument slot, table parameters

Parameter	Description
ID	Table entry ID (number)
Name	PON port Identification in the board
DHCP Mode	PON port configured DHCP mode (trusted|untrusted)

"showconfig" command

Table 364. "showconfig" command information

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/interfaces/gpon/dhcp/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 469. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces/gpon/dhcp> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"mac-limit" sub-node

"config" command

Table 365. "config" command information

Name	config
Description	Configures MAC Limit parameters for the given PON interfaces.
Full path	/interfaces/gpon/mac-limit/config
Mandatory Parameters	--port --slot
Screen Output	No

Figure 470. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/gpon/mac-limit> config ?

Usage CONFIG:
  CONFIG                  Configure MAC Limit parameters for the given PON interfaces.

   <MANDATORY>
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot                 Identifies a slot.

   [OPTIONAL]
   --action               Specify the action to take when the maximum number of MAC addresses is
reached (none|limit)
   --admin                Administrative State. Enable/disable, in this context. (enable|disable)
   --maximum              Specify the maximum number of MAC addresses accepted on the
interface (1..131072)
     --trap               Send an SNMP trap when the maximum number of MAC addresses is
   reached. (enable|disable)
```

"show" command

Table 366. "show" command information

Name	show
Description	Shows PON MAC Limit information for a specific HW slot.

Full path	/interfaces/gpon/mac-limit/show
Mandatory Parameters	No
Screen Output	Tables, Figure 472 and Figure 473 (with argument slot). Tables' parameter description in Table 367 and Table 368.

Figure 471. CLI on line help on "show" command usage in this node context

```
cli/interfaces/gpon/mac-limit> show ?

Usage SHOW:
 SHOW                  Shows PON MAC Limit information for a specific HW slot.

  [OPTIONAL]
    --slot             Identifies a slot. (not used for LAG)
```

Figure 472. Output of "show" command, without arguments, in this node context

```
/cli/interfaces/gpon/mac-limit> show
+-----------------------------------+
|General Information                |
+----+---------------+---------------+
|Slot|Card Name      |Details        |
+----+---------------+---------------+
|1   |XCO-640        |               |
|3   |AMX-16GPON     |YES            |
|8   |AMX-48GE       |               |
|9   |UMX-4x10GE     |               |
|10  |UMX-4x10GE     |               |
|11  |UMX-4x10GE     |               |
|12  |UMX-4x10GE     |               |
|18  |AMX-16GPON     |YES            |
|20  |XCO-640        |               |
|21  |FAN            |               |
+----+---------------+---------------+
```

Table 367. "show" command without arguments output table parameters

Parameter	Description
Slot	Slot number
Card Name	Name of the board inserted in a slot
Details	YES, if there are GPON interfaces in the board and detailed information the interfaces is available

Figure 473. Partial view of "show" command output, with argument slot, in this node context

```
/cli/interfaces/gpon/mac-limit> show --slot=3
+-------------------------------------------------------------+
|MAC Limit Configuration on Slot 3 AMX-16GPON                 |
+----------+----------+-----------------+----------+----------+
|Name      |Admin     |Maximum          |Action    |Trap      |
+----------+----------+-----------------+----------+----------+
|Pon 1     |disable   |500              |limit     |enable    |
|Pon 2     |disable   |500              |limit     |enable    |
|Pon 3     |disable   |500              |limit     |enable    |
|Pon 4     |disable   |500              |limit     |enable    |
|Pon 5     |disable   |500              |limit     |enable    |
|Pon 6     |disable   |500              |limit     |enable    |
|Pon 7     |disable   |500              |limit     |enable    |
|Pon 8     |disable   |500              |limit     |enable    |
|Pon 9     |disable   |500              |limit     |enable    |
|Pon 10    |disable   |500              |limit     |enable    |
|Pon 11    |disable   |500              |limit     |enable    |
|Pon 12    |disable   |500              |limit     |enable    |
|Pon 13    |disable   |500              |limit     |enable    |
|Pon 14    |disable   |500              |limit     |enable    |
|Pon 15    |disable   |500              |limit     |enable    |
|Pon 16    |disable   |500              |limit     |enable    |
+----------+----------+-----------------+----------+----------+
```

Table 368. "show" command with argument slot output table parameters

Parameter	Description
Table Name	MAC Limit Configuration on Slot # Cardname
Name	PON port identifier on the card
Admin	PON port administrative state
Maximum	Maximum number of MAC addresses accepted on the PON port (1..131072)
Action	Action to take when the maximum number of MAC addresses is reached (none|limit)
Trap	Send an SNMP trap when the maximum number of MAC addresses is reached. (enable|disable)

"showconfig" command

Table 369. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/gpon/mac-limit/showconfig
Mandatory Parameters	This command has no parameters

Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 474. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces/gpon/multicast> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG                Print the command list that enforces the current configuration
```

"status" command

Table 370. "status" command information

Name	status
Description	Shows the current MAC Limit status
Full path	/interfaces/gpon/mac-limit/status
Mandatory Parameters	--port --slot
Screen Output	Table, Figure 476. Table parameter description in Table 371.

Figure 475. CLI on line help on "status" command usage in this node context

```
/cli/interfaces/gpon/mac-limit> status ?

Usage STATUS:
  STATUS                  Show the current MAC Limit status

  <MANDATORY>
  --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
    --slot                  Identifies a slot.
```

Figure 476. Output of "status" command in this node context

```
/cli/interfaces/gpon/mac-limit> status --slot=3 --port=pon.1
+----------------------------------------+
|Slot 3 intEth 1 - MAC Limit Status      |
+------------------------+---------------+
|Parameter               |Value          |
+------------------------+---------------+
|MACs Learned            |0              |
|Status                  |Within limit   |
+------------------------+---------------+
```

Table 371. "status" command output table parameters

Parameter	Description
Table Title	Slot #(slot number) intEth.# – MAC Limit Status
MACs Learned	Number of Learned MACs
Status	MAC Limit Status (inferior to defined limit or exceeding limit)

"multicast" sub-node

"config" command

Table 372. "config" command information

Name	config
Description	Configures multicast parameters for the given PON interfaces.
Full path	/interfaces/gpon/multicast/config
Mandatory Parameters	--port --slot
Screen Output	No

Figure 477. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/gpon/multicast> config ?

Usage CONFIG:
  CONFIG                  Configure multicast parameters for the given PON interfaces.

   <MANDATORY>
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot                 Identifies a slot.

   [OPTIONAL]
   --max-bandwidth              Set the multicast group maximum bandwidth in Kbps (unlimited or
0..100000000000)
   --max-groups            Set the maximum number of multicast groups (unlimited or 0..16384)
```

"show" command

This command used without arguments provides information on all the equipment PON interfaces with multicast parameters configuration.. When used with the argument slot it displays that information only for the specific slot.

Table 373. "show" command information

Name	show
Description	Shows PON multicast information for a specific HW slot.

Full path	/interfaces/gpon/multicast/show
Mandatory Parameters	No
Screen Output	Tables, Figure 479 and Figure 480. Tables' parameters description in Table 374 and Table 375.

Figure 478. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/gpon/multicast> show ?

Usage SHOW:
  SHOW                  Shows PON multicast information for a specific HW slot.

  [OPTIONAL]
  --slot                Identifies a slot. (not used for LAG)
```

Figure 479."show" command output, without arguments, in this node context

```
/cli/interfaces/gpon/multicast> show
+-----------------------------------+
|General Information                |
+----+---------------+---------------+
|Slot|Card Name      |Details        |
+----+---------------+---------------+
|5   |AMX-48GE       |               |
|9   |AMX-16GPON     |YES            |
|11  |AMX-48GE       |               |
|17  |UMX-4x10GE     |               |
|20  |XCO-640        |               |
|21  |FAN            |               |
+----+---------------+---------------+
```

Table 374. "show" command output table

Parameter	Description
Slot	Slot number
Card Name	Name of the board inserted in a slot
Details	YES, if there are GPON interfaces in the board and detailed information on the interfaces is available

Figure 480."show" command output, with argument slot, in this node context

```
/cli/interfaces/gpon/multicast> show --slot=9
+-------------------------------------------------------------------------+
|Multicast Configuration                                                  |
+---+----------+-------------------------+-------------------------+
|ID |Name      |Maximum Bandwidth (kbps) |Maximum Number of Groups |
+---+----------+-------------------------+-------------------------+
|0  |PON 1     |unlimited                |unlimited                |
|1  |PON 2     |unlimited                |unlimited                |
|2  |PON 3     |unlimited                |unlimited                |
|3  |PON 4     |unlimited                |unlimited                |
|4  |PON 5     |unlimited                |unlimited                |
|5  |PON 6     |unlimited                |unlimited                |
|6  |PON 7     |unlimited                |unlimited                |
|7  |PON 8     |unlimited                |unlimited                |
|8  |PON 9     |unlimited                |unlimited                |
|9  |PON 10    |unlimited                |unlimited                |
|10 |PON 11    |unlimited                |unlimited                |
|11 |PON 12    |unlimited                |unlimited                |
|12 |PON 13    |unlimited                |unlimited                |
|13 |PON 14    |unlimited                |unlimited                |
|14 |PON 15    |unlimited                |unlimited                |
|15 |PON 16    |unlimited                |unlimited                |
+---+----------+-------------------------+-------------------------+
```

Table 375. "show" command output, with argument slot, table parameters

Parameter	Description
ID	Table entry ID (number)
Name	PON port Identification in the board
Maximum Bandwidth (kbps)	PON port maximum configured bandwidth (unlimited|limited)
Maximum Number of Groups	PON port maximum configured number of groups (unlimited|limited)

"showconfig" command

Table 376. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/gpon/multicast/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 481. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces/gpon/multicast> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"statistics" sub-node

This node is used to view traffic statistics for GPON interfaces in all slots. On a GPON interface there are three types of statistics gathered: errors, gpon, and ethernet.

"errors" sub-node

"show" command

Table 377. "show" command information

Name	show
Description	Shows Error Statistics for a given GPON Interface
Full path	/interfaces/gpon/statistics/errors/show
Mandatory Parameters	--port --slot
Screen Output	Tables Figure 483. Table parameter description in Table 378

Figure 482. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/gpon/statistics/errors> show ?

Usage:
  SHOW          Show Error Statistics for a given Gpon Interface

   <MANDATORY>
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot                 Identifies a slot.
```

Figure 483. Output of "show" command in this node context

```
/cli/interfaces/gpon/statistics> errors/show --slot=9 --port=pon.1
+-------------------------------------------------------------------------------+
|Slot 9 PON 1 - Gpon Errors Statistics                                          |
+----------+-------------------------------+-------------------------------+
|ONU ID    |BIP8                           |REI                            |
+----------+---------------+---------------+---------------+---------------+
|          |Total          |Partial        |Total          |Partial        |
+----------+---------------+---------------+---------------+---------------+
|1         |0              |0              |0              |0              |
+----------+---------------+---------------+---------------+---------------+
qPress 'q' to quit or 'r' to reset
```

Table 378. "show" command output table parameters

Parameter	Description
ONT ID	ONT identifier (number)
BIP8 (total/partial)	Errors received by the OLT for each of the ONT's(upstream direction); total and partial counter values displayed
REI (total/partial)	Errors received by each of the ONTs(downstream direction); total and partial counter values displayed

"ethernet" sub-node

"show" command

Table 379. "show" command information

Name	show
Description	Show Ethernet Statistics for a given Gpon Interface
Full path	/interfaces/gpon/statistics/ethernet/show
Mandatory Parameters	--port --slot
Screen Output	Tables Figure 485.Table parameter description in Table 380

Figure 484. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/gpon/statistics/ethernet> show ?

Usage:
  SHOW          Show Ethernet Statistics for a given Gpon Interface

   <MANDATORY>
   --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot               Identifies a slot.
```

Figure 485. Output of "show" command in this node context

```
/cli/interfaces/gpon/statistics> ethernet/show --slot=9 --port=pon.1
+-------------------------------------------------------------------------------------------+
|Slot 9 PON 1 - Gpon Ethernet Statistics                                                    |
+-------------------------+-------------------------------+-------------------------------+
|Parameter                |Rx                             |Tx                             |
+-------------------------+---------------+---------------+---------------+---------------+
|                         |Total          |Partial        |Total          |Partial        |
+-------------------------+---------------+---------------+---------------+---------------+
|Drop Events              |0              |0              |0              |0              |
|Octets                   |0              |0              |123420         |0              |
|Packets                  |0              |0              |1815           |0              |
|Broadcast Packets        |0              |0              |0              |0              |
|Multicast Packets        |0              |0              |1815           |0              |
|CRC Align Errors         |0              |0              |0              |0              |
|Undersize Packets        |0              |0              |0              |0              |
|Oversize Packets         |0              |0              |0              |0              |
|Fragments                |0              |0              |0              |0              |
|Jabbers                  |0              |0              |0              |0              |
|Collisions               |0              |0              |0              |0              |
|Packets     64    Octets |0              |0              |0              |0              |
|Packets   65-127  Octets |0              |0              |1815           |0              |
|Packets  128-255  Octets |0              |0              |0              |0              |
|Packets  256-511  Octets |0              |0              |0              |0              |
|Packets  512-1023 Octets |0              |0              |0              |0              |
|Packets   >=1024  Octets |0              |0              |0              |0              |
|Throughput (bps)         |0              |-              |0              |-              |
+-------------------------+---------------+---------------+---------------+---------------+
qPress 'q' to quit or 'r' to reset
```

Table 380. "show" command output table parameters

Parameter	Description
Rx Total & Partial	Received total & partial counters
Tx Total & Partial	Transmitted total & partial counters
Drop Events	Number of dropped packets
Octets	Number of bytes
Packets	Number of Packets
Broadcast Packets	Number of Broadcast Packets
Multicast Packets	Number of Multicast Packets
CRC Align Errors	Number of packets with wrong FCS (Frame Check Sequence)
Undersize Packets	Number of packets with size less than 64 bytes
Oversize Packets	Number of packets with size over than 1518 bytes
Fragments	Number of packets with size less than 64 bytes and with wrong FCS (Frame Check Sequence)
Jabbers	Number of packets with size over than 1518 bytes and with wrong FCS (Frame Check Sequence)

Collisions	Number of collisions in the Ethernet Segment (only in Half Duplex)
Packets 64 Octets	Number of 64 bytes packets
Packets 65-127 Octets	Number of packets with size between 65 to 127 bytes
Packets 128-255 Octets	Number of packets with size between 128 to 255 bytes
Packets 256-511 Octets	Number of packets with size between 256 to 511 bytes
Packets 512-1023 Octets	Number of packets with size between 512 to 1023 bytes
Packets >=1024 Octets	Number of packets with size equal to or higher than 1024 bytes
Throughput (bps)	Indicates approximately the received and transmitted bit rate

"gpon" sub-node

"show" command

Table 381. "show" command information

Name	show
Description	Shows the current CoS configuration.
Full path	/interfaces/gpon/statistics/gpon/show
Mandatory Parameters	--port --slot
Screen Output	Tables Figure 487. Table parameter description in Table 382

Figure 486. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/gpon/statistics/gpon> show ?

Usage:
  SHOW        Show Error Statistics for a given Gpon Interface

   <MANDATORY>
   --port              Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot              Identifies a slot.
```

Figure 487. Output of ”show” command in this node context

```
/cli/interfaces/gpon/statistics> gpon/show --slot=9 --port=pon.1
+-------------------------------------------------------------------------------------------------------------------+
|Slot 9 PON 1 - GPON Statistics                                                                                     |
+-------------------------+-----------------------------------------+-----------------------------------------+
|Parameter                |Rx                                       |Tx                                       |
+-------------------------+--------------------+--------------------+--------------------+--------------------+
|                         |Total               |Partial             |Total               |Partial             |
+-------------------------+--------------------+--------------------+--------------------+--------------------+
||Network Packets Valid    |1815                |0                   |0                   |0
|                 Error   |0                   |0                   |-                   |-                   |
|                 Dropped |1211                |0                   |-                   |-                   |
+-------------------------+--------------------+--------------------+--------------------+--------------------+
|PON Packets      Valid   |0                   |0                   |604                 |0                   |
|                 Error   |0                   |0                   |-                   |-                   |
|                 Dropped |0                   |0                   |-                   |-                   |
+-------------------------+--------------------+--------------------+--------------------+--------------------+
|PLOAM            Valid   |4425                |0                   |47990               |6                   |
|                 Error   |1                   |0                   |-                   |-                   |
|                 Dropped |0                   |0                   |-                   |-                   |
+-------------------------+--------------------+--------------------+--------------------+--------------------+
Press 'q' to quit or 'r' to reset
```

Table 382. “show” command output table parameters

Parameter	Description
Network Packets	In this parameter is possible to check the GPON valid/error/dropped received/transmitted packets from/to the network
PON Packets	In this parameter is possible to check the GPON valid/error/dropped received/transmitted packets from/to the GPON
PLOAM	In this parameter is possible to check the GPON valid/error/dropped received/transmitted PLOAM packets from/to the network

“status” sub-node

“show” command

Table 383. "show" command information

Name	show
Description	Show status information for PON interfaces
Full path	/interfaces/gpon/status/show
Mandatory Parameters	No
Screen Output	Tables, Figure 489 and Figure 490. Table parameters description in Table 384 and Table 385.

Figure 488. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/gpon> status/show ?

Usage SHOW:
 SHOW                    Show status information for PON interfaces.

  [OPTIONAL]
  --slot                 Identifies a slot. (not used for LAG)
```

Figure 489."show" command output, without arguments, in this node context

```
/cli/interfaces/gpon> status/show
+-----------------------------------+
|General Information                |
+----+--------------+---------------+
|Slot|Card Name     |Details        |
+----+--------------+---------------+
|5   |AMX-48GE      |               |
|9   |AMX-16GPON    |YES            |
|11  |AMX-48GE      |               |
|17  |UMX-4x10GE    |               |
|20  |XCO-640       |               |
|21  |FAN           |               |
+----+--------------+---------------+
```

Table 384. "show" command, without arguments, output table

Parameter	Description
Slot	Slot number
Card Name	Name of the board inserted in a slot
Details	YES, if there are GPON interfaces in the board and detailed information on the interfaces is available

Figure 490. Output of ”show” command, with argument slot, output in this node context

```
/cli/interfaces/gpon> status/show --slot=9
+-------------------------------------------------------------------------------------------------------------------------------------------------------+
|Slot 9 - PON Interfaces Status                                                                                                                         |
+---------+-------+---------------+---------------+---------------+---------------+-------------------+--------+--------+-----------------+--------+------+------+
|Interface|Admin  |Fixed (Kbps)   |Assured (Kbps) |Maximum (Kbps) |CBR (Kbps)     |SFP                |Tx (dBm)|Rx Info.|Bias Current (mA)|Temp(C) |Laser|Alarms|
+---------+-------+---------------+---------------+---------------+---------------+-------------------+--------+--------+-----------------+--------+------+------+
|PON 1    |enable |8192           |0              |8192           |8192           |GPON B+ I Temp.    |3.0     |YES     |12.5             |41      |ON    |OK    |
|PON 2    |enable |0              |0              |0              |0              |GPON B+ I Temp.    |3.3     |YES     |14.7             |41      |ON    |OK    |
|PON 3    |disable|0              |0              |0              |0              | --                | --     | --     | --              | --     | --   | --   |
|PON 4    |disable|0              |0              |0              |0              | --                | --     | --     | --              | --     | --   | --   |
|PON 5    |disable|0              |0              |0              |0              | --                | --     | --     | --              | --     | --   | --   |
|PON 6    |disable|0              |0              |0              |0              | --                | --     | --     | --              | --     | --   | --   |
|PON 7    |disable|0              |0              |0              |0              | --                | --     | --     | --              | --     | --   | --   |
|PON 8    |disable|0              |0              |0              |0              | --                | --     | --     | --              | --     | --   | --   |
|PON 9    |disable|0              |0              |0              |0              | --                | --     | --     | --              | --     | --   | --   |
|PON 10   |disable|0              |0              |0              |0              | --                | --     | --     | --              | --     | --   | --   |
|PON 11   |disable|0              |0              |0              |0              | --                | --     | --     | --              | --     | --   | --   |
|PON 12   |disable|0              |0              |0              |0              | --                | --     | --     | --              | --     | --   | --   |
|PON 13   |disable|0              |0              |0              |0              | --                | --     | --     | --              | --     | --   | --   |
|PON 14   |disable|0              |0              |0              |0              | --                | --     | --     | --              | --     | --   | --   |
|PON 15   |disable|0              |0              |0              |0              | --                | --     | --     | --              | --     | --   | --   |
|PON 16   |disable|0              |0              |0              |0              | --                | --     | --     | --              | --     | --   | --   |
+---------+-------+---------------+---------------+---------------+---------------+-------------------+--------+--------+-----------------+--------+------+------+
```

Table 385. “show” command, with argument slot, output table parameters

Parameter	Description
Interfaces	GPON interface identifier
Admin	GPON interface administrative state
Fixed (Kbps)	Fixed Bandwidth (must be less than 1,2Gb/s)
Assured(Kbps)	Assured Bandwidth (must be less than 1,2Gb/s)
Maximum(Kbps)	Maximum Bandwidth
CBR(Kbps)	CBR Fixed Bandwidth (must be less than 480Mb/s)
SFP	SFP Module
Tx (dBm)	Indicates the transmitted optical power
Rx(dBm)	Indicates the received optical power
Bias Current(mA)	Indicates the laser BIAS current
Temp.(ºC)	Indicates the SFP module temperature
Laser	Indicates the Laser operational States
Alarms	Indicates the SFP Alarms

“SFPs” sub-node

“show” command

Table 386. "show" command information

Name	show
Description	Show details for an SFP entry from table gpon/status/show
Full path	/interfaces/gpon/status/SFPs/show
Mandatory Parameters	--port --slot
Screen Output	Table, Figure 492.

Figure 491. CLI on line help on “show” command usage in this node context

```
/cli/interfaces/gpon/ status/SFPs>show ?

Usage:
  SHOW        Show details for an SFP entry from table gpon/status/show

   <MANDATORY>
   --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot                  Identifies a slot.
```

This command displays for the SFPs/XFPs inserted in the specified port, slot, the Base ID fields and the Extended ID fields’ information

Figure 492. Output of ”show” command in this node context

```
/cli/interfaces/gpon> status/SFPs/show --slot=9 --port=pon.1
+-------------------------------------------------------------------------------------------------------------------+
|SFP Info - Slot 9 'PON 1'                                                                                          |
+-------------------------------+-----------------------------------------------------------------------------------+
|Parameter                      |Value                                                                              |
+-------------------------------+-----------------------------------------------------------------------------------+
|Base ID Fields                 |                                                                                   |
|   Identifier                  |SFP                                                                                |
|   Connector                   |SC                                                                                 |
|   Transceiver                 |000A000000000000h                                                                  |
|   Encoding                    |NRZ                                                                                |
|   Nominal BitRate  (MBits/s)  |2500                                                                               |
|   Length (9um)           (Km) |20                                                                                 |
|   Length (9um)            (m) |20000                                                                              |
|   Length (50um)           (m) |0                                                                                  |
|   Length (62,5um)         (m) |0                                                                                  |
|   Length (Copper)         (m) |0                                                                                  |
|   Vendor Name                 |Ligent                                                                             |
|   Vendor OUI                  |001A95                                                                             |
|   Vendor Serial Number        |LTE3680M-BH                                                                        |
|   Vendor Revision             |1.7                                                                                |
|   Laser Wavelength       (nm) |1490                                                                               |
+-------------------------------+-----------------------------------------------------------------------------------+
|Extended ID Fields             |                                                                                   |
|   Options Implemented:        |                                                                                   |
|                               |Loss of Signal Implemented, signal as defined in SFP MSA                           |
|                               |TX_FAULT signal implemented                                                        |
|                               |TX_DISABLE signal implemented                                                      |
|   Max Baudrate            (%) |20                                                                                 |
|   Min Baudrate            (%) |20                                                                                 |
|   Vendor Serial Number        |ZTV09C00034                                                                        |
|   Date Code                   |09/12/16                                                                           |
|   Lot  Code                   |                                                                                   |
|   Diagnostic Monitoring Type:|                                                                                   |
|                               |Received power measurement type = Average Power                                    |
|                               |Internally Calibrated                                                              |
|                               |Digital diagnostic monitoring implemented                                          |
|   Enhanced Options:           |                                                                                   |
|                               |Optional Soft RX_LOS monitoring implemented                                        |
|                               |Optional Soft TX_FAULT monitoring implemented                                      |
|                               |Optional Alarm/Warning flags implemented for all monitored quantities              |
|   SFF-8472 Compliance         |SFF-8472 Rev 9.3                                                                   |
+-------------------------------+-----------------------------------------------------------------------------------+
|AD Status Bits                 |                                                                                   |
|   Temperature             (C) |41.1                                                                               |
|   Voltage                 (V) |3.291                                                                              |
|   Tx Bias                (mA) |12.42                                                                              |
|   Tx Power               (mW) |2.005                                                                              |
|   Rx Power               (mW) |0.000000                                                                           |
|   Op Status                   |12h                                                                                |
+-------------------------------+-----------------------------------------------------------------------------------+
```

“rx-power” sub-node

“read-all” command

This command reads all rx-power entries for all ONUs on the selected GPON interface specified by slot and port arguments and updates the database fields used to fill the rx-power table displayed as output of the show command, executed in this sub-node.

This command does not return displayed information on the terminal.

This command must be executed before the "/interfaces/gpon/status/rx-power/show" command otherwise the output of the show command will be either outdated data information or an empty table.

Table 387. "read-all" command information

Name	read-all
Description	Read rx-power entries for all ONUs on the selected interface.
Full path	/interfaces/gpon/status/rx-power/read-all
Mandatory Parameters	--port --slot
Screen Output	No

Figure 493. CLI on line help on "read-all" command usage in this node context

```
/cli/interfaces/gpon> status/rx-power/read-all ?

Usage:
  READ-ALL      Read rx-power entries for all ONUs on the selected interface.

  <MANDATORY>
  --port                    Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                    Identifies a slot.
```

"show" command

This command displays detailed rx-power information for an SFP on a GPON interface specified by slot and port arguments. In order to have updated values of the received optical power in the PON interface the "read-all" command must be executed before the "show" command

Table 388. "show" command information

Name	show
Description	Show details for a 'Rx-Info.' entry from table gpon/status/show
Full path	/cli/interfaces/gpon/status/rx-power/show
Mandatory Parameters	--port --slot
Screen Output	Table, Figure 495.Table parameters description in Table 389

Figure 494. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/gpon/status/rx-power> show ?

Usage:
  SHOW          Show details for a 'Rx-Info.' entry from table gpon/status/show

  <MANDATORY>
  --port                    Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                    Identifies a slot.
```

Figure 495. Output of "show" command in this node context

```
/cli/interfaces/gpon> status/rx-power/show --slot=9 --port=pon.1
+-------------------------------------------------------+
|RX-Power in Slot 9 PON 1                               |
+--------------------+----------------------------------+
|                    |Last Read                         |
+------+-------------+----------+----------+----------+
|ONU ID|Presence     |Power (dBm)|Date      |Time      |
+------+-------------+----------+----------+----------+
|1     |connected    |-24.7      |01/01/2000|22:43:55  |
+------+-------------+----------+----------+----------+
```

Table 389. "show" command output table parameters

Parameter	Description
ONU ID	ONU identifier
Presence	Indicates if the ONU identified by ONU ID is present (Connected|Disconnected)
Power (dBm)	Optical power received at the specified PON port from each ONU at Date dd/mm/yyy, Time hh:mm:ss
Date	Date of last "read-all" command received Rx-Power from ONU reading; format dd/mm/yyy
Time	Time of last "read-all" command received Rx-Power from ONU reading; format hh:mm:ss

"storm-control" sub-node

"config" command

Table 390. "config" command information

Name	config
Description	Configures Storm Control parameters for the given GPON interfaces.
Full path	/interfaces/gpon/storm-control/config
Mandatory Parameters	--port --slot
Screen Output	No

Figure 496. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/gpon/storm-control> config ?

Usage CONFIG:
  CONFIG                Configure Storm Control parameters for the given PON interfaces.
```

```
<MANDATORY>
--port              Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
--slot              Identifies a slot.

[OPTIONAL]
--bc-control        Configure Broadcast storm control. (enable|disable)
--bc-threshold      Specifies Broadcast threshold value. (0..100 % or 0..14880000 pps)
--mc-control        Configure Multicast storm control. (enable|disable)
--mc-threshold      Specifies Multicast threshold value. (0..100 % or 0..14880000 pps)
--threshold-unit    Specifies Storm Control threshold units (percent|pps)
--uc-control        Configure Unknown Unicast storm control. (enable|disable)
 --uc-threshold     Specifies Unknown Unicast threshold value. (0..100 % or
0..14880000 pps)
```

"show" command

Table 391. "show" command information

Name	show
Description	Shows PON Storm Control information for a specific HW slot.
Full path	/interfaces//gpon/storm-control/show
Mandatory Parameters	No
Screen Output	Tables, Figure 498 and Figure 499 (with argument slot). Tables' parameter description in Table 392 and Table 393.

Figure 497. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/gpon/storm-control> show ?

Usage SHOW:
 SHOW               Shows PON Storm Control information for a specific HW slot.

 [OPTIONAL]
  --slot            Identifies a slot. (not used for LAG)
```

Figure 498. Output of "show" command without arguments in this node context

```
/cli/interfaces/gpon/storm-control> show
+-----------------------------------+
|General Information                |
+----+---------------+---------------+
|Slot|Card Name      |Details        |
+----+---------------+---------------+
|1   |XCO-640        |               |
|3   |AMX-16GPON     |YES            |
|8   |AMX-48GE       |               |
|9   |UMX-4x10GE     |               |
|10  |UMX-4x10GE     |               |
|11  |UMX-4x10GE     |               |
|12  |UMX-4x10GE     |               |
|18  |AMX-16GPON     |YES            |
|20  |XCO-640        |               |
|21  |FAN            |               |
+----+---------------+---------------+
```

Table 392. "show" command without arguments output table parameters

Parameter	Description
Slot	Slot number
Card Name	Name of the board inserted in a slot
Details	YES, storm control is configured in the board and detailed information is available

Figure 499."show" command output, with argument slot, in this node context

```
/cli/interfaces/gpon/storm-control> show --slot=3
+-------------------------------------------------------------------------+
|Storm Control Configuration on Slot 3 AMX-16GPON                         |
+----------+--------+-----------------+-----------------+-----------------+
|          |        |Unknown Unicast  |Multicast        |Broadcast        |
+----------+--------+-------+---------+-------+---------+-------+---------+
|Name      |Units   |Control|Threshold|Control|Threshold|Control|Threshold|
+----------+--------+-------+---------+-------+---------+-------+---------+
|Pon 1     |percent |disable|5        |disable|5        |disable|5        |
|Pon 2     |percent |disable|5        |disable|5        |disable|5        |
|Pon 3     |percent |disable|5        |disable|5        |disable|5        |
|Pon 4     |percent |disable|5        |disable|5        |disable|5        |
|Pon 5     |percent |disable|5        |disable|5        |disable|5        |
|Pon 6     |percent |disable|5        |disable|5        |disable|5        |
|Pon 7     |percent |disable|5        |disable|5        |disable|5        |
|Pon 8     |percent |disable|5        |disable|5        |disable|5        |
|Pon 9     |percent |disable|5        |disable|5        |disable|5        |
|Pon 10    |percent |disable|5        |disable|5        |disable|5        |
|Pon 11    |percent |disable|5        |disable|5        |disable|5        |
|Pon 12    |percent |disable|5        |disable|5        |disable|5        |
|Pon 13    |percent |disable|5        |disable|5        |disable|5        |
|Pon 14    |percent |disable|5        |disable|5        |disable|5        |
|Pon 15    |percent |disable|5        |disable|5        |disable|5        |
|Pon 16    |percent |disable|5        |disable|5        |disable|5        |
+----------+--------+-------+---------+-------+---------+-------+---------+
```

Table 393. "show" command with argument slot output table parameters

Parameter group	Parameter	Description
	Name	PON interface identifier
	Units	Used units (% or pps)
Unknown Unicast	**Control**	Configured Unknown Unicast storm control. (enable|disable)
	Threshold	Unknown Unicast threshold configured value (0 to 100 % or 0 to 14880000 pps)
Multicast	**Control**	Configured Multicast storm control. (enable|disable)
	Threshold	Multicast threshold configured value (0 to 100 % or 0.to.14880000 pps)
Broadcast	**Control**	Configured Broadcast storm control. (enable|disable)
	Threshold	Broadcast threshold configured value (0.to.100 % or 0.to.14880000 pps)

"showconfig" command

Table 394. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/gpon/storm-control/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 500. CLI on line help on "showconfig" command usage in this node context

```
cli/interfaces/gpon/storm-control>  showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"traffic-shape" sub-node

"config" command

Table 395. "config" command information

Name	config
Description	Configures egress traffic shaper parameters for the given PON interfaces.
Full path	/interfaces/gpon/traffic-shape/config
Mandatory Parameters	--port --slot
Screen Output	No

Figure 501. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/gpon/traffic-shape> config ?

Usage CONFIG:
  CONFIG                  Configure egress traffic shaper parameters for the given PON interfaces.

   <MANDATORY>
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot                 Identifies a slot.

   [OPTIONAL]
    --max-bw              Specifies Maximum Bandwidth value. (0..100 %)
```

"show" command

Table 396. "show" command information

Name	show
Description	Shows PON egress traffic shaper information for a specific HW slot.
Full path	/interfaces/gpon/traffic-shape/show
Mandatory Parameters	No
Screen Output	Tables, Figure 503 and Figure 504 (with argument slot). Tables' parameter description in Table 397 and Table 398.

Figure 502. CLI on line help on "show" command usage in this node context

```
cli/interfaces/ethernet/traffic-shape> show ?

Usage SHOW:
  SHOW                  Shows ETH egress traffic shaper information for a specific HW slot.

  [OPTIONAL]
    --slot              Identifies a slot. (not used for LAG)
```

Figure 503. Output of "show" command without arguments in this node context

```
/cli/interfaces/gpon/traffic-shape> show
+-----------------------------------+
|General Information                |
+----+---------------+---------------+
|Slot|Card Name      |Details        |
+----+---------------+---------------+
|1   |XCO-640        |               |
|3   |AMX-16GPON     |YES            |
|8   |AMX-48GE       |               |
|9   |UMX-4x10GE     |               |
|10  |UMX-4x10GE     |               |
|11  |UMX-4x10GE     |               |
|12  |UMX-4x10GE     |               |
|18  |AMX-16GPON     |YES            |
|20  |XCO-640        |               |
|21  |FAN            |               |
+----+---------------+---------------+
```

Table 397. "show" command without arguments output table parameters

Parameter	Description
Slot	Slot number
Card Name	Name of the board inserted in a slot

Details	YES, traffic-shape is configured in the board and detailed information is available

Figure 504. Partial view of "show" command output, with argument slot, in this node context

```
/cli/interfaces/gpon/traffic-shape> show --slot=3
+----------------------------------------+
|Egress Traffic Shaper on Slot 3 AMX-16GPON  |
+----------+-----------------------------------+
|Port      |Maximum Bandwidth %                |
+----------+-----------------------------------+
|Pon 1     |100                                |
|Pon 2     |100                                |
|Pon 3     |100                                |
|Pon 4     |100                                |
|Pon 5     |100                                |
|Pon 6     |100                                |
|Pon 7     |100                                |
|Pon 8     |100                                |
|Pon 9     |100                                |
|Pon 10    |100                                |
|Pon 11    |100                                |
|Pon 12    |100                                |
|Pon 13    |100                                |
|Pon 14    |100                                |
|Pon 15    |100                                |
|Pon 16    |100                                |
+----------+-----------------------------------+
```

Table 398. "show" command with argument slot output table parameters

Parameter	Description
Port	PON interface identifier
Maximum Bandwidth %	Maximum bandwidth configured values (%)

"showconfig" command

Table 399. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/Ethernet/traffic-shape/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 505. CLI on line help on "showconfig" command usage in this node context

```
cli/interfaces/gpon/storm-control>  showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"lag" sub-node

"config" command

Table 400. "config" command information

Name	config
Description	Configures a given LAG interface.
Full path	/interfaces/lag/config
Mandatory Parameters	--lag-id
Screen Output	No

Figure 506. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/lag> config ?

Usage:
  CONFIG        Configure a given LAG interface.

   <MANDATORY>
   --lag-id             Identifies a LAG by ID. (1..15)

   [OPTIONAL]
   --admin              Administrative State. Enable/disable, in this context. (enable|disable)
   --balance            Traffic Load Balancing of the LAG interface. (SA|DA|SDA)
   --static             Indicates if the LAG is Static (doesn't transmit neither processes LACPDU
                        packets) (enable|disable)
```

"create" command

Table 401. "create" command information

Name	create
Description	Creates a new LAG entity.
Full path	/interfaces/lag/create
Mandatory Parameters	This command has no parameters

Screen Output	No

Figure 507. CLI on line help on "create" command usage in this node context

```
/cli/interfaces/lag> create ?

Usage CREATE:
 CREATE                  Create a new LAG entity.

  [OPTIONAL]
  --lag-id               Identifies a LAG by ID. (1..15)
```

"remove" command

Table 402. "remove" command information

Name	remove
Description	Removes an existing LAG.
Full path	/interfaces/lag/remove
Mandatory Parameters	--lag-id
Screen Output	No

Figure 508. CLI on line help on "remove" command usage in this node context

```
/cli/interfaces/lag> remove ?

Usage:
 REMOVE        Remove an existing LAG.

  <MANDATORY>
  --lag-id              Identifies a LAG by ID. (1..15)
```

"show" command

Table 403. "show" command information

Name	show
Description	Shows the current LAGs configured. If a LAG ID is given shows information for that LAG only.
Full path	/interfaces/lag/show
Mandatory Parameters	No
Screen Output	Tables, Figure 510 and Figure 511. Tables' parameter description Table 404.

Figure 509. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/lag> show ?

Usage:
  SHOW          Shows the current LAGs configured. If a LAG ID is given shows information for
that LAG only.

  [OPTIONAL]
  --lag-id              Identifies a LAG by ID. (1..15)
```

Figure 510. Output of "show" command in this node context"

```
/cli/interfaces/lag> show
+-------------------------------------------------------------------------------------------+
|Configured LAGs Information
+---+----------+----------+----------+---------------+---------------------------------+
|ID |Name      |Admin     |Static    |Balance        |Attached Interfaces (Slot/Name)
+---+----------+----------+----------+---------------+---------------------------------+
|1  |LAG 1     |enable    |disable   |Destination MAC|(10/Eth 4), (12/Eth 4)
+---+----------+----------+----------+---------------+---------------------------------+
```

Figure 511. Output of "show" command with argument –lag-id in this node context"

```
/cli/interfaces/lag> show --lag-id=1
+-------------------------------------------------------------------------------------------+
|LAG 1 Information                                                                          |
+---+----------+----------+----------+---------------+---------------------------------+
|ID |Name      |Admin     |Static    |Balance        |Attached Interfaces (Slot/Name)    |
+---+----------+----------+----------+---------------+---------------------------------+
|1  |LAG 1     |enable    |disable   |Destination MAC|10/Eth 4                           |
|   |          |          |          |Destination MAC|12/Eth 4                           |
+---+----------+----------+----------+---------------+---------------------------------+
```

Table 404. "show" command output table parameters

Parameter	Description
ID	Table entry Identifier(number)
Name	LAG Interface name
Admin	LAG administrative State (enable|disable)
Static	Indicates if the LAG is Static (enable|disable)
Balance	Indicates type of traffic Load Balancing of the LAG interface (Source MAC | Destination MAC | Source and Destination MAC)
Attached Interfaces (Slot/Name)	Indicates the Ports that belong to the LAG identified by slot/port pair

"showconfig" command

Table 405. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/lag/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 512. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces/lag> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"arp-inspection" sub-node

This node is used to manage ARP Inspection parameters for the given LAG interfaces.

"config" command

Table 406. "config" command information

Name	config
Description	Configures ARP Inspection parameters for LAG interfaces.
Full path	/interfaces/lag/arp-inspection/config
Mandatory Parameters	--lag-id
Screen Output	No

Figure 513. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/lag/arp-inspection> config ?

Usage CONFIG:
  CONFIG                  Configure ARP Inspection information for LAG interfaces.

  <MANDATORY>
  --lag-id                Identifies a LAG by ID. (1..15)

  [OPTIONAL]
  --burst-interval          Set the ARP Burst Interval (1..15)
  --rate-limit            Set the ARP Rate Limit (no-limit or 0..300)
```

--trust-state	Set the ARP Trust State (trusted|untrusted)

"show" command

This command provides information on ARP Inspection information for equipment LAG interfaces.

Table 407. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/interfaces/lag/arp-inspection/show
Mandatory Parameters	No
Screen Output	Table, Figure 515. Table parameters description in Table 408.

Figure 514. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/lag/arp-inspection> show ?

Usage SHOW:
  SHOW                  Show the current configuration

   [OPTIONAL]
   --lag-id             Identifies a LAG by ID. (1..15)
```

Figure 515. "show" command output in this node context

```
/cli/interfaces/lag/cos> /interfaces/lag/arp-inspection/show
+-------------------------------------------------------------------+
|ARP Inspection Configuration for LAGs                              |
+----------+--------------------+---------------+------------------+
|Name      |Trust State         |Rate Limit(pps)|Burst Interval(s) |
+----------+--------------------+---------------+------------------+
|Lag 1     |trusted             |no limit       |--                |
+----------+--------------------+---------------+------------------+
```

Table 408. "show" command output table

Parameter	Description
Name	LAG port identification
Trust State	ARP Trust State (trusted|untrusted)
Rate Limit	ARP Rate Limit (no-limit or 0..300)
Burst interval	ARP Burst Interval (1..15)

"showconfig" command

Table 409. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/lag/arp-inspection/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 516. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces/lag/arp-inspection> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG                Print the command list that enforces the current configuration
```

"cos" sub-node

This node is used to manage CoS configuration for each LAG.

"config" command

Table 410. "config" command information

Name	config
Description	Configures CoS information for LAG interfaces.
Full path	/interfaces/lag/cos/config
Mandatory Parameters	--port
Screen Output	No

Figure 517. CLI on line help on "config" command usage in this node context

```
/ cli/interfaces/lag/cos> config ?

Usage CONFIG:
  CONFIG                  Configure Class Map parameters for the given ETH interfaces.

  <MANDATORY>
  --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)

  [OPTIONAL]
  --class-map             View available Class Map profile IDs in /class-map.
  --trust-mode            Identifies the Trust Mode. (untrusted|p-bits|ip-dscp|ip-prec
```

"show" command

This command used without arguments provides information on all the equipment LAG interfaces CoS configuration:. When used with the argument lag-id it displays that information only for the specific lag.

Table 411. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/interfaces/lag/cos/show
Mandatory Parameters	No
Screen Output	Table Figure 519. Table parameter description in Table 412.

Figure 518. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/lag/cos> show ?

Usage:
  SHOW          Show the current configuration
```

Figure 519. Output of "show" command in this node context

```
/cli/interfaces/lag/cos> show
+-------------------------------------------------------------------+
|Ingress Class Map                                                  |
+----------+----------+-----------------------------------------+
|Port      |Trust Mode|Class Map                                |
+----------+----------+-----------------------------------------+
|Lag 1     |ip-dscp   |(1) default-ip-dscp-to-tc                |
|Lag 2     |p-bits    |(1) default-p-bits-to-tc                 |
+----------+----------+-----------------------------------------+
```

Table 412. "show" command output table parameters

Parameter	Description
Name	LAG interface identifier
Trust Mode	Identifies the configured Trust Mode. (untrusted|p-bits|ip-dscp|ip-prec)
Class Map	Identifies configured Class Map profile (ID) in class(class name)-mapping

"showconfig" command

Table 413. "showconfig" command information

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/interfaces/lag/cos/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 520. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces/lag/cos> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"policy-map" sub-node

This node is used to manage CoS policy map information for LAG interfaces.

"config" command

Table 414. "config" command information

Name	config
Description	Configures CoS policy map information for LAG interfaces.
Full path	/interfaces/lag/cos/policy-map/config
Mandatory Parameters	--port --profile-id --traffic-class
Screen Output	No

Figure 521. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/lag/cos/policy-map> config ?

Usage CONFIG:
  CONFIG                  Configure CoS policy map information for LAG interfaces.

   <MANDATORY>
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --profile-id             Identifies an ethernet profile by ID (use 'none' for no profile).
   --traffic-class          Specify the Traffic Class value (0..7)
```

"show" command

Table 415. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/interfaces/lag/cos/policy-map/show
Mandatory Parameters	No
Screen Output	Table, Figure 523. Table parameter description in Table 416.

Figure 522. CLI on line help on "show" command usage in this node context

```
cli/interfaces/lag/cos/policy-map> show ?

Usage SHOW:
  SHOW                    Show the current configuration
```

Figure 523. "show" command output in this node context

```
/cli/interfaces/lag/cos/policy-map> show
+-------------------------------------------------------------------+
|LAG CoS Policy map configurations                                  |
+--------+-----+-----------------------------------------------------+
|Port    |TC   |Ingress Policing (Ethernet Profile)                  |
+--------+-----+-----------------------------------------------------+
|Lag 1   |0    |--                                                   |
|        |1    |--                                                   |
|        |2    |--                                                   |
|        |3    |--                                                   |
|        |4    |--                                                   |
|        |5    |--                                                   |
|        |6    |--                                                   |
|        |7    |--                                                   |
+--------+-----+-----------------------------------------------------+
```

Table 416. "show" command, with arguments slot and port, output table

Parameter	Description
Port	LAG interface identifier
TC	Identifies the Traffic Class (0 to 7)
Ingress Policing (Ethernet Profile)	Identifies the used ethernet profile by ID (if' __' no profile is configured)

"showconfig" command

Table 417. "showconfig" command information

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/interfaces/lag/cos/policy-map/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 524. CLI on line help on "showconfig" command usage in this node context

```
cli/interfaces/lag/cos/policy-map> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG                Print the command list that enforces the current configuration
```

"cos-queue" sub-node

This node is used to manage CoS configuration of LAG interfaces.

"config" command

Table 418. "config" command information

Name	config
Description	Configures CoS information for LAG interfaces.
Full path	/interfaces/lag/cos-queue/config
Mandatory Parameters	--port --queue
Screen Output	No

Figure 525. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/lag/cos-queue> config ?

Usage CONFIG:
  CONFIG                    Configure CoS information for LAG interfaces.

   <MANDATORY>
   --port                   Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --queue                  Identifies a CoS Queue. (0..7)

   [OPTIONAL]
   --max-bw                 Configure the maximum bandwidth for the Queues (percent of link
capacity)
   --min-bw                 Configure the minimum bandwidth for the Queues (percent of link
capacity)
```

```
  --queue-mgmt-type          Configure the queue management type (tail-drop|wred)
  --scheduler                Identifies the type of Scheduler (strict|weighted)
  --tdrop-maxth-dp1          Configure the maximum threshold of queue depth for drop
precedence level 1 (percent of link capacity)
  --tdrop-maxth-dp2          Configure the maximum threshold of queue depth for drop
precedence level 2 (percent of link capacity)
  --weight                   Configure the Queue Weight (1..128)
  --wred-dprob-dp1           Configure the drop probability in percentage for drop precedence
level 1
  --wred-dprob-dp2           Configure the drop probability in percentage for drop precedence
level 2
  --wred-dprob-nontcp        Configure the drop probability in percentage for non-TCP traffic
  --wred-exp-weight          Configure the WRED Decay Exponent value. (0..15)
  --wred-maxth-dp1           Configure the maximum threshold of queue depth for drop
precedence level 1 (percent of link capacity)
  --wred-maxth-dp2           Configure the maximum threshold of queue depth for drop
precedence level 2 (percent of link capacity)
  --wred-maxth-nontcp        Configure the maximum threshold of queue depth for non-TCP
traffic (percent of link capacity)
  --wred-minth-dp1           Configure the minimum threshold of queue depth for drop
precedence level 1 (percent of link capacity)
  --wred-minth-dp2           Configure the minimum threshold of queue depth for drop
precedence level 2 (percent of link capacity)
  --wred-minth-nontcp        Configure the minimum threshold of queue depth for non-TCP
traffic (percent of link capacity)
```

"show" command

This command provides information on all the equipment LAG interfaces CoS configuration.

Table 419. "show" command information

Name	show
Description	Shows the current CoS configuration.
Full path	/interfaces/ethernet/cos-queue/show
Mandatory Parameters	No
Screen Output	Table, Figure 527. Table parameter description in Table 420.

Figure 526. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/lag/cos-queue> show ?

Usage SHOW:
  SHOW                       Show the current configuration

  [OPTIONAL]
  --port                     Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --queue                    Identifies a CoS Queue. (0..7)
```

Figure 527. "show" command, with arguments slot and port, output in this node context

```
/cli/interfaces/lag/cos-queue> show
+-------------------------------------------------------------------------------------------------------------------------------------------+
|LAG CoS Queues configurations                                                                                                              |
+--------+-----+---------+------+-----------+----------+------------------+-----------------------+------------------+-----------+
|        |     |         |      |Egress BW %|Queue Mgmt|WRED(Min Thr %)   |WRED/Tail-Drop(Max Thr %)|WRED(Drop Prob %) |WRED(Decay)|
+--------+-----+---------+------+-----+-----+----------+-----+-----+------+-------+-------+---------+-----+-----+------+-----------+
|Port    |Queue|Scheduler|Weight|Min  |Max  |Type      |DP L1|DP L2|Non TCP|DP L1  |DP L2  |Non TCP  |DP L1|DP L2|Non TCP|Exponent   |
+--------+-----+---------+------+-----+-----+----------+-----+-----+------+-------+-------+---------+-----+-----+------+-----------+
|Lag 1   |0    |strict   |--    |0    |100  |tail-drop |--   |--   |--    |100    |100    |--       |--   |--   |--    |--         |
|        |1    |strict   |--    |0    |100  |tail-drop |--   |--   |--    |100    |100    |--       |--   |--   |--    |--         |
|        |2    |strict   |--    |0    |100  |tail-drop |--   |--   |--    |100    |100    |--       |--   |--   |--    |--         |
|        |3    |strict   |--    |0    |100  |tail-drop |--   |--   |--    |100    |100    |--       |--   |--   |--    |--         |
|        |4    |strict   |--    |0    |100  |tail-drop |--   |--   |--    |100    |100    |--       |--   |--   |--    |--         |
|        |5    |strict   |--    |0    |100  |tail-drop |--   |--   |--    |100    |100    |--       |--   |--   |--    |--         |
|        |6    |strict   |--    |0    |100  |tail-drop |--   |--   |--    |100    |100    |--       |--   |--   |--    |--         |
|        |7    |strict   |--    |0    |100  |tail-drop |--   |--   |--    |100    |100    |--       |--   |--   |--    |--         |
+--------+-----+---------+------+-----+-----+----------+-----+-----+------+-------+-------+---------+-----+-----+------+-----------+
```

Figure 528. "show" command, with arguments –port and –queue, output in this node context

```
/cli/interfaces/lag/cos-queue> show --queue=7 --port=lag.1
+-------------------------------------------------------------------------------+
|CoS Settings                                                                   |
+-----------------------------------------------+-------------------------------+
|Parameter                                      |Value                          |
+-----------------------------------------------+-------------------------------+
|Scheduler                                      |strict                         |
|Weight                                         |--                             |
|Maximum Bandwidth %                            |100                            |
|Minimum Bandwidth %                            |0                              |
|Queue Management Type                          |tail-drop                      |
+-----------------------------------------------+-------------------------------+
|Tail-Drop Queue parameters                     |                               |
|   Max. Threshold for DP Level 1 (%)           |100                            |
|   Max. Threshold for DP Level 2 (%)           |100                            |
|   Max. Threshold for DP Level 3 (%)           |0                              |
+-----------------------------------------------+-------------------------------+
|WRED Queue parameters                          |                               |
|   Decay Exponent value                        |--                             |
|   Min. Threshold for DP Level 1 (%)           |--                             |
|   Min. Threshold for DP Level 2 (%)           |--                             |
|   Min. Threshold for DP Level 3 (%)           |--                             |
|   Min. Threshold for non TCP traffic          |--                             |
|   Max. Threshold for DP Level 1 (%)           |--                             |
|   Max. Threshold for DP Level 2 (%)           |--                             |
|   Max. Threshold for DP Level 3 (%)           |--                             |
|   Max. Threshold for non TCP traffic          |--                             |
|   Drop probability for DP Level 1 (%)         |--                             |
|   Drop probability for DP Level 2 (%)         |--                             |
|   Drop probability for DP Level 3 (%)         |--                             |
|   Drop probability for non TCP traffic        |--                             |
  +-----------------------------------------------+-------------------------------+
```

Table 420. "show" command, with arguments slot and port, output table

Parameter		Description
Port		LAG interface identifier.
Queue		Class of Service Queue identification (Number 0..7)
Scheduler		Identifies the type of configured Scheduler (strict|weighted)
Weight		Configured the Queue Weight (1..128)
Egress BW (%)	**Max-bw**	Configured the maximum Egress bandwidth for the Queues (% of link capacity)
	Min-bw	Configured the minimum Egress bandwidth for the Queues (% of link capacity)
Queue Mgmt type		Configured queue management type (tail-drop|wred)
WRED (Minimum Throughput %)	**DP L1**	Configured minimum threshold of queue depth for drop precedence level 1 (% of link capacity)
	DP L2	Configured minimum threshold of queue depth for drop precedence level 1 (% of link capacity)
	Non TCP	Configured minimum threshold of queue depth for non-TCP traffic (% of link capacity)
WRED/Tail-Drop (Maximum Throughput %)	**DP L1**	Configured maximum threshold of queue depth for drop precedence level 1 (% of link capacity)
	DP L2	Configured maximum threshold of queue depth for drop precedence level 1 (% of link capacity)
	Non TCP	Configured maximum threshold of queue depth for non-TCP traffic (% of link capacity)
Drop Probability(Maximum Throughput %)	**DP L1**	Configured drop probability in percentage for drop precedence level 1
	DP L2	Configured drop probability in percentage for drop precedence level 2
	Non TCP	Configured drop probability in percentage for non-TCP traffic
WRED (Decay)	**Exponent**	Configured WRED Decay Exponent value. (0..15)

"showconfig" command

Table 421. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/lag/cos-queue/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 529. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces/ethernet/cos-queue> showconfig ?
```

```
Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"mac-limit" sub-node

"config" command

Table 422. "config" command information

Name	config
Description	Configures MAC Limit parameters for the given LAG interfaces.
Full path	/interfaces/lag/mac-limit/config
Mandatory Parameters	--port
Screen Output	No

Figure 530. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/lag/mac-limit> config ?

Usage CONFIG:
  CONFIG                  Configure MAC Limit information for LAG interfaces.

   <MANDATORY>
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)

   [OPTIONAL]
   --action               Specify the action to take when the maximum number of MAC addresses
is reached (none|limit)
   --admin                Administrative State. Enable/disable, in this context. (enable|disable)
   --maximum              Specify the maximum number of MAC addresses accepted on the
interface (1..131072)
     --trap               Send an SNMP trap when the maximum number of MAC addresses is
  reached. (enable|disable)
```

"show" command

Table 423. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/interfaces/lag/mac-limit/show
Mandatory Parameters	No
Screen Output	Table, Figure 532. Table parameters description in Table 424.

Figure 531. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/lag/mac-limit> show ?

Usage SHOW:
 SHOW                  Show the current configuration

  [OPTIONAL]
    --port             Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 532."show" command output in this node context

```
/cli/interfaces/lag/mac-limit> show
+-------------------------------------------------------------+
|MAC Limit Configuration for LAGs                             |
+----------+----------+-----------------+----------+----------+
|Name      |Admin     |Maximum          |Action    |Trap      |
+----------+----------+-----------------+----------+----------+
|Lag 1     |disable   |500              |none      |disable   |
|Lag 2     |disable   |500              |none      |disable   |
+----------+----------+-----------------+----------+----------+
```

Table 424. "show" command with output table parameters

Parameter	Description
Table Name	MAC Limit Configuration for LAGs
Name	LAG interface identifier on the card
Admin	LAG interface administrative state
Maximum	Maximum number of MAC addresses accepted on the Ethernet port (1..131072)
Action	Action to take when the maximum number of MAC addresses is reached (none|limit)
Trap	Send an SNMP trap when the maximum number of MAC addresses is reached. (enable|disable)

"showconfig" command

Table 425. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/lag/mac-limit/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 533. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces/lag/mac-limit> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG                Print the command list that enforces the current configuration
```

"status" command

Table 426. "status" command information

Name	status
Description	Shows the current MAC Limit status
Full path	/interfaces/lag/mac-limit/status
Mandatory Parameters	--port
Screen Output	Table, Figure 535.Table parameters description in Table 427.

Figure 534. CLI on line help on "status" command usage in this node context

```
/cli/interfaces/lag/mac-limit> status ?

Usage STATUS:
  STATUS                Show the current MAC Limit status

  <MANDATORY>
  --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 535. Output of "status" command in this node context

```
/cli/interfaces/lag/mac-limit> status --port=lag.1
+---------------------------------------+
|Lag 1 - MAC Limit Status               |
+-------------------------+-------------+
|Parameter                |Value        |
+-------------------------+-------------+
|MACs Learned             |0            |
|Status                   |Within limit |
+-------------------------+-------------+
```

Table 427. "status" command output table parameters

Parameter	Description
Table Title	Lag #(lag interface identifier: number) – MAC Limit Status

MACs Learned	Number of Learned MACs
Status	MAC Limit Status (inferior to defined limit or exceeding limit)

"mapping" sub-node

This node is used to manage the interfaces that belong to each LAG.

"attach" command

Table 428. "attach" command information

Name	attach
Description	Adds the specified interface by 'slot, port' to the given LAG ID.
Full path	/interfaces/lag/mapping/attach
Mandatory Parameters	--lag-id --port --slot
Screen Output	No

Figure 536. CLI on line help on "attach" command usage in this node context

```
/cli/interfaces/lag/mapping> attach ?

Usage:
  ATTACH        Add the specified interface by 'slot, port' to the given LAG ID.

   <MANDATORY>
   --lag-id             Identifies a LAG by ID. (1..14)
   --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot               Identifies a slot.
```

"availableValues" command

Table 429. "availableValues" command information

Name	availableValues
Description	Displays the interfaces that can be used to attach/detach.
Full path	/interfaces/lag/mapping/availableValues
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 538 . Table parameters description in Table 430.

Figure 537. CLI on line help on “availableValues” command usage in this node context

```
/cli/interfaces/lag/mapping> availableValues ?

Usage:
  AVAILABLEVALUES    Display the interfaces that can be used to attach/detach
```

Figure 538.”availableValues” command output partial view in this node context

```
/cli/interfaces/lag/mapping> availableValues
+---------------------------------------+
|Available interfaces for Attach        |
+-----+---------------------------------+
|Slot |Interface                        |
+-----+---------------------------------+
|5    |Eth 1                            |
|5    |Eth 2                            |
|5    |Eth 3                            |
|5    |Eth 4                            |
|5    |Eth 5                            |
|5    |Eth 6                            |
|5    |Eth 7                            |
|5    |Eth 8                            |
```

Table 430. “availableValues” command output table parameters

Parameter	Description
Slot	Slot identifier
Interface	Ethernet interface Identifier

“detach” command

Table 431. "detach" command information

Name	detach
Description	Removes the specified interface by 'slot, port' from the given LAG ID.
Full path	/interfaces/lag/mapping/detach
Mandatory Parameters	--lag-id --port --slot
Screen Output	No

Figure 539. CLI on line help on “detach” command usage in this node context

```
/cli/interfaces/lag/mapping> detach ?
```

```
Usage:
  DETACH        Remove the specified interface by 'slot, port' from the given LAG ID.

  <MANDATORY>
  --lag-id              Identifies a LAG by ID. (1..15)
  --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                Identifies a slot.
```

"statistics" sub-node

"show" command

Table 432. "show" command information

Name	show
Description	Shows the statistics information for LAG ports.
Full path	/interfaces/lag/statistics/show
Mandatory Parameters	This command has no parameters.
Screen Output	Table, Figure 541. Table parameters description in Table 433 .

Figure 540. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/lag/statistics> show ?

Usage:
  SHOW          Show
```

Figure 541. Output of "show" command in this node context

```
/cli/interfaces/lag> statistics/show
+-------------------------------------------------------------------------------------------------------+
|LAG Statistics                                                                                         |
+--------------------+-----------------------------------------+-----------------------------------------+
|LAG ID Slot / Port  |Rx                                       |Tx                                       |
+--------------------+--------------------+--------------------+--------------------+--------------------+
|                    |Total               |Partial             |Total               |Partial             |
+--------------------+--------------------+--------------------+--------------------+--------------------+
|LAG 1   10 / Eth 4  |0                   |0                   |0                   |0                   |
|LAG 1   12 / Eth 4  |0                   |0                   |0                   |0                   |
+--------------------+--------------------+--------------------+--------------------+--------------------+
qPress 'q' to quit or 'r' to reset
```

Table 433. "show" command output table parameters

Parameter	Description
LAG	Indicates the LAG Identifier

Slot	Identifies the slot to where the card to which the Ethernet Port belongs is inserted
Port	Indicates the Ethernet Ports that belong to the LAG.
Rx (Total/Partial)	Indicates the (Total/Partial) number of LACPDUs received
Tx (Total/Partial)	Indicates the (Total/Partial) number of LACPDUs transmitted

"status" sub-node

"show" command

Table 434. "show" command information

Name	show
Description	Show the status information for the LAG interfaces.
Full path	/interfaces/lag/status/show
Mandatory Parameters	This command has no parameters.
Screen Output	Table, Figure 543. Table parameters description in Table 435.

Figure 542. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/lag/status> show ?

Usage:
  SHOW          Show status information for LAG interfaces.
```

Figure 543. Output of "show" command in this node context

```
/cli/interfaces/lag> status/show
+-------------------------------------------------------------------------------+
|LAG Status                                                                     |
+-----------------------------------------------------+-------------------------+
|                                                     |Underlying Interfaces    |
+---+----------+----------+-----------+-----------+---------------+----------+
|ID |Name      |Admin     |Link Status|Channel Type|Slot/Port     |Status    |
+---+----------+----------+-----------+-----------+---------------+----------+
|1  |LAG 1     |enable    |Down       |Dynamic     |10/Eth 4      |Inactive  |
|   |          |          |           |            |12/Eth 4      |Inactive  |
+---+----------+----------+-----------+-----------+---------------+----------+
```

Table 435. "show" command output table parameters

Parameter Group	Parameter	Description

	ID	Indicates the LAG Identifier (number)
	Name	Indicates the LAG Name
	Admin	Indicates the LAG Administrative State.
	Link Status	If at least one of the LAG members is up, the status is Up, otherwise is Down
	Channel Type	Indicates if the LAG is Static, in this case it doesn't process or send LACPDUs, or it's Dynamic, in this case it processes and send's LACPDUs
Underlying Interfaces	**Slot/port**	Indicates the Ethernet Ports (identified by the pair slot/port) that belong to the LAG
	Status	Indicates if the status of the ports in the LAG (Active | Inactive)

"traffic-shape" sub-node

"config" command

Table 436. "config" command information

Name	config
Description	Configures egress traffic shaper parameters for the given LAG interfaces.
Full path	/interfaces/lag/traffic-shape/config
Mandatory Parameters	--port
Screen Output	No

Figure 544. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/lag/traffic-shape> config ?

Usage CONFIG:
 CONFIG                Configure egress traffic shaper parameters for the given LAG interfaces.

  <MANDATORY>
  --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)

  [OPTIONAL]
   --max-bw            Specifies Maximum Bandwidth value. (0..100 %)
```

"show" command

Table 437. "show" command information

Name	show
Description	Shows LAG egress traffic shaper information
Full path	/interfaces/lag/traffic-shape/show

Mandatory Parameters	No
Screen Output	Table, Figure 546. Tables parameters description in Table 438.

Figure 545. CLI on line help on "show" command usage in this node context

```
/cli/interfaces/lag/traffic-shape> show ?

Usage SHOW:
  SHOW                  Shows LAG egress traffic shaper information.
```

Figure 546."show" command output in this node context

```
/cli/interfaces/lag/traffic-shape> show
+-----------------------------------+
|Egress Traffic Shaper for LAGs     |
+----------+------------------------+
|Port      |Maximum Bandwidth %     |
+----------+------------------------+
|Lag 1     |100                     |
|Lag 2     |100                     |
+----------+------------------------+
```

Table 438. "show" command output table parameters

Parameter	Description
Port	LAG interface identifier
Maximum Bandwidth %	Maximum bandwidth configured values (%)

"showconfig" command

Table 439. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/lag/traffic-shape/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 547. CLI on line help on "showconfig" command usage in this node context

```
/cli/interfaces/gpon/traffic-shape> showconfig ?

Usage SHOWCONFIG:
```

SHOWCONFIG	Print the command list that enforces the current configuration

"vlan" sub-node

"config" command

Table 440. "config" command information

Name	config
Description	Configures vlan information for LAG interfaces.
Full path	/interfaces/lag/vlan/config
Mandatory Parameters	--port
Screen Output	No

Figure 548. CLI on line help on "config" command usage in this node context

```
/cli/interfaces/lag/vlan> config ?

Usage CONFIG:
  CONFIG                    Configure vlan information for LAG interfaces.

   <MANDATORY>
   --port                   Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)

   [OPTIONAL]
   --acceptable-frame-types        Acceptable frame types {default: all / range: 1 - all, 2 - tagged
only, 3 - untagged only}
   --default-priority              Priority applied {default: 0 / range: 0..7}
   --default-vlan-id               VlanId applied to all income untagged frames {default: 1 / range:
1..4095}
```

"show" command

Table 441. "show" command information

Name	show
Description	Shows the current vlan configuration.
Full path	/interfaces/lag/vlan/show
Mandatory Parameters	No
Screen Output	Table, Figure 550. Table parameters description in Table 442.

Figure 549. CLI on line help on “show” command usage in this node context

```
/cli/interfaces/lag/vlan> show ?

Usage:
  SHOW                  Show the current vlan configuration
```

Figure 550. Output of ”show” command in this node context

```
/cli/interfaces/lag/vlan> show
+-------------------------------------------------------------------------------+
|VLAN Configuration                                                             |
+---------------+-------------------------+---------------+---------------------+
|Port           |Acceptable Frame Types   |Default VLANID |Default Priority     |
+---------------+-------------------------+---------------+---------------------+
|Lag 1          |all                      |1              |0                    |
|Lag 2          |all                      |1              |0                    |
+---------------+-------------------------+---------------+---------------------+
```

Table 442. “show” command output table

Parameter	Description
Name	LAG interface identifier
Acceptable Frame Types	Indicates acceptable frame type
Default VLANID	Indicates used default VLAN identifier
Default Priority	Indicates used default Priority

“showconfig” command

Table 443. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/interfaces/lag/vlan/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 551. CLI on line help on “showconfig” command usage in this node context

```
/cli/interfaces/lag/vlan> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

“ip” node

Figure 552.ip node tree

```
/cli/ip> tree
+ ip[@apply, @save]
  + interfaces[]
    + inband[@config, @show, @showconfig]
    + ip[@config, @show, @showconfig]
  + networking[@config, @show, @showconfig]
  + route[@create, @remove, @show, @showconfig]
```

“apply” command

Table 444. "apply" command information

Name	apply
Description	Will apply to the HW the last saved IP configuration.
Full path	/ip/apply
Mandatory Parameters	This command has no parameters.
Screen Output	No

Figure 553. CLI on line help on “apply” command usage in this node context

```
/cli/ip> apply ?

Usage:
  APPLY                 Will apply to the HW the last saved IP configuration.
```

“save” command

Table 445. "save" command information

Name	save
Description	Saves the current IP configuration to the system startup configuration.
Full path	/ip/save
Mandatory Parameters	This command has no parameters.
Screen Output	No

Figure 554. CLI on line help on “save” command usage in this node context

```
/cli/ip> save ?
```

```
Usage:
  SAVE                  Save the current IP configuration to the system startup configuration.
```

"interfaces" sub-node

"inband" sub-node

"config" command

Table 446. "config" command information

Name	config
Description	Configures an Inband interface.
Full path	/ip/interfaces/inband/config
Mandatory Parameters	--slot --set-InBand
Screen Output	No

Figure 555. CLI on line help on "config" command usage in this node context

```
/cli/ip/interfaces/inband> config ?

Usage:
  CONFIG        Configure

  <MANDATORY>
  --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --set-InBand          Set the given interface for inBand mgmt or not. (true/false)

  [OPTIONAL]
  --slot                Identifies a slot. (not used for LAG)
```

"show" command

This command displays general information on the system configuration, indicating the interfaces available in the system for inBand configuration and showing current InBand configuration.

Table 447. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/ip/interfaces/inband/show
Mandatory Parameters	This command has no parameters
Screen Output	Tables Figure 557. Table parameters description in Table 448

Figure 556. CLI on line help on "show" command usage in this node context

```
/cli/ip/interfaces/inband> show ?

Usage:
  SHOW          Show the current configuration
```

Figure 557. Output of "show" command in this node context

```
/cli/ip/interfaces/inband> show
+---------------------------------+
|InBand Interfaces                |
+-----+---------------+----------+
|Slot |Port           |InBand    |
+-----+---------------+----------+
|17   |Eth 1          |--        |
|17   |Eth 2          |--        |
|17   |Eth 3          |--        |
|17   |Eth 4          |--        |
+-----+---------------+----------+
```

Table 448. "show" command output table parameters

Parameter	Description
Slot	Slot number of the uplink interface (not applicable for LAG)
Port	Interface (or LAG)
InBand	Indicates if the interface is used or not to manage the system; YES if in use.

"showconfig" command

Table 449. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/ip/interfaces/inband/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 558. CLI on line help on "showconfig" command usage in this node context

```
/cli//ip/interfaces/inband > showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"ip" sub-node

"config" command

This command configures the ethernet and inBand management interfaces

Table 450. "config" command information

Name	config
Description	Configures IP connectivity parameters.
Full path	/ip/interfaces/ip/config
Mandatory Parameters	--ID
Screen Output	No

Figure 559. CLI on line help on "config" command usage in this node context

```
/cli/ip/interfaces/ip> config ?

Usage CONFIG:
  CONFIG                Configure IP connectivity parameters.

  <MANDATORY>
  --ID                  Identifies a table entry by ID, in this context.

  [OPTIONAL]
  --admin               Administrative State. Enable/disable, in this context. (enable|disable)
  --ip-address          IPv4 address
  --mask-bits           IPv4 Subnet Mask bits (0..32)
  --vlan                Choose a VLAN ID.
```

"show" command

This command displays general information on the system configuration, indicating the interfaces available in the system for inBand configuration and showing current InBand configuration.

Table 451. "show" command information

Name	show

Description	Shows the current configuration.
Full path	/ip/interfaces/ip/show
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 561. Table parameters description in Table 452

Figure 560. CLI on line help on "show" command usage in this node context

```
/cli/ip/interfaces/ip> show ?

Usage:
  SHOW          Show the current configuration
```

Figure 561. Output of "show" command in this node context

```
/cli/ip/interfaces/ip> show
+-------------------------------------------------------------------------------------------+
|IP Interfaces                                                                              |
+---+------------------------------+----------+--------------------+----------+-----------+
|ID |Name                          |Admin     |Address             |Mask Bits |Mgmt VLAN  |
+---+------------------------------+----------+--------------------+----------+-----------+
|0  |eth1                          |enable    |0.0.0.0             |24        |--         |
|1  |InBand                        |disable   |0.0.0.0             |24        |0          |
+---+------------------------------+----------+--------------------+----------+-----------+
```

Table 452. "show" command output table parameters

Parameter	Description
ID	Interface identifier (number)
Name	Interface name
Admin	Administrative state of the interface
Address	IP address of the interface
Mask Bits	Network mask of the Interface
Mgmt Vlan	VLAN identifier used in the inBand interface

"showconfig" command

Table 453. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/ip/interfaces/ip/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the

	current configuration.

Figure 562. CLI on line help on "showconfig" command usage in this node context

```
/cli//ip/interfaces/inband > showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"networking" sub-node

"config" command

This command configures the ethernet and inBand management interfaces

Table 454. "config" command information

Name	config
Description	Configures the current management interface.
Full path	/ip/networking/config
Mandatory Parameters	No
Screen Output	No

Figure 563. CLI on line help on "config" command usage in this node context

```
/cli/ip/networking> config ?

Usage:
  CONFIG        Configure

   [OPTIONAL]
   --mgmt-interface             Choose the management interface to use.
```

"show" command

This command displays general information on the system configuration, indicating the interfaces available in the system for inBand configuration and showing current InBand configuration.

Table 455. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/ip/networking/show
Mandatory	This command has no parameters

Parameters	
Screen Output	Table Figure 565. Table parameters description in Table 456

Figure 564. CLI on line help on “show” command usage in this node context

```
/cli/ip/interfaces/ip> show ?

Usage:
  SHOW          Show the current configuration
```

Figure 565. Output of ”show” command in this node context

```
/cli/ip/networking> show
+-------------------------------------------------+
|Networking                                       |
+--------------------+----------------------------+
|Parameter           |Value                       |
+--------------------+----------------------------+
|mgmt-interface      |eth1                        |
+--------------------+----------------------------+
```

Table 456. “show” command output table parameters

Parameter	Description
Parameter	Identification of the networking parameter, e.g. management interface (mgmt-interface)
Value	Parameter value, e.g. eth1 for the current management interface

“showconfig” command

Table 457. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/ip/networking/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 566. CLI on line help on “showconfig” command usage in this node context

```
/cli//ip/networking> showconfig ?
```

```
Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

“route” sub-node

This sub-node allows the creation and configure of an IP route to reach the manager entity, if necessary.

“create” command

This command creates an IP route. There can only be one IP route.

Table 458. "create" command information

Name	create
Description	Creates an IP route
Full path	/ip/route/create
Mandatory Parameters	No
Screen Output	No

Figure 567. CLI on line help on “create” command usage in this node context

```
/cli/ip/route> create ?

Usage CREATE:
  CREATE                  Create

  [OPTIONAL]
  --ID                  Identifies a table entry by ID, in this context.
  --gw-device             Interface to use for the configured network (eth1|InBand)
  --gw-ip               Gateway to the configured network
  --ip-address            IPv4 address
  --ip-mask               IPv4 Subnet Mask
```

“remove” command

This command deletes the IP route. There can only be one IP route.

Table 459. "remove" command information

Name	remove
Description	Deletes the current IP route.
Full path	/ip/route/remove
Mandatory Parameters	--ID
Screen Output	No

Figure 568. CLI on line help on “remove” command usage in this node context

```
/cli/ip/route> remove ?

Usage REMOVE:
  REMOVE                  Remove

   <MANDATORY>
   --ID                   Identifies a table entry by ID, in this context.
```

“show” command

This command displays general information on the system configuration, indicating the interfaces available in the system for inBand configuration and showing current InBand configuration.

Table 460. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/ip/route/show
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 570. Table parameters description in Table 461

Figure 569. CLI on line help on “show” command usage in this node context

```
/cli/ip/route> show ?

Usage:
  SHOW          Show the current configuration
```

Figure 570. Output of ”show” command in this node context

```
/cli/ip/route> show
+-------------------------------------------------------------------------+
|IP Route                                                                 |
+----+--------------------+--------------------+--------------------+
|ID  |Destination Address |Destination Mask    |Gateway/Device      |
+----+--------------------+--------------------+--------------------+
|1   |0.0.0.0             |0.0.0.0             |192.168.122.254     |
+----+--------------------+--------------------+--------------------+
```

Table 461. “show” command output table parameters

Parameter	Description
Destination Address	IPv4 network destination address
Destination Mask	IPv4 network destination mask
Gateway	IPv4 network destination gateway

“showconfig” command

Table 462. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/ip/route/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 571. CLI on line help on “showconfig” command usage in this node context

```
/cli//ip/route> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

“ip-source-guard” node

Figure 572. ip-source-guard node tree

```
/cli/ip-source-guard> tree
+ ip-source-guard[@config, @create, @remove, @show, @showconfig]
```

“config” command

Table 463. "config" command information

Name	config
Description	Configures IP Source Guard parameters.
Full path	/ip-source-guard/config
Mandatory Parameters	--ID
Screen Output	No

Figure 573. CLI on line help on "config" command usage in this node context

```
/cli/ip-source-guard> config ?

Usage CONFIG:
  CONFIG                Configure IP Source Guard parameters.

  <MANDATORY>
  --ID                  Identifies a table entry by ID, in this context.

  [OPTIONAL]
  --admin               Administrative State. Enable/disable, in this context. (enable|disable)
  --ip-address          IPv4/IPv6 address
  --mac                 Identify/Set a MAC entry, in this context.
  --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --serviceID           Select an OLT service by ID.
  --slot                Identifies a slot. (not used for LAG)
```

"create" command

Table 464. "create" command information

Name	create
Description	Creates a new IP Source Guard entry.
Full path	/ip-source-guard/create
Mandatory Parameters	No
Screen Output	No

Figure 574. CLI on line help on "create" command usage in this node context

```
/cli/ip-source-guard> create ?

Usage CREATE:
  CREATE                Create a new IP Source Guard entry.

  [OPTIONAL]
  --ID                  Identifies a table entry by ID, in this context.
  --admin               Administrative State. Enable/disable, in this context. (enable|disable)
  --ip-address          IPv4/IPv6 address
  --mac                 Identify/Set a MAC entry, in this context.
  --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --serviceID           Select an OLT service by ID.
  --slot                Identifies a slot. (not used for LAG)
```

“remove” command

Table 465. "remove" command information

Name	remove
Description	Removes an existing IP Source Guard entry.
Full path	/ip-source-guard/remove
Mandatory Parameters	--ID
Screen Output	No

Figure 575. CLI on line help on “remove” command usage in this node context

```
/cli/ip-source-guard> remove ?

Usage REMOVE:
  REMOVE                  Remove an existing IP Source Guard entry.

   <MANDATORY>
   --ID                   Identifies a table entry by ID, in this context.
```

“show” command

Table 466. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/ip-source-guard/show
Mandatory Parameters	No
Screen Output	Table Figure 577. Table parameters description in Table 467.

Figure 576. CLI on line help on “show” command usage in this node context

```
/cli/ip-source-guard> show ?

Usage SHOW:
  SHOW                    Show the current configuration

   [OPTIONAL]
   --ID                   Identifies a table entry by ID, in this context.
```

Figure 577. Output of ”show” command in this node context

```
/cli/ip-source-guard> show
+-------------------------------------------------------------------------------------------------------------------------------+
|IP Source Guard List                                                                                                           |
+---+--------+-------------------------------------+----+-------+---------------------------------------+--------------------+
|ID |Admin   |Service (ID) Name                    |Slot|Port   |IP Address                             |MAC Address         |
+---+--------+-------------------------------------+----+-------+---------------------------------------+--------------------+
|1  |enable  |(01) MBStacked#100                   |9   |PON 1  |192.0.0.1                              |00:00:11:22:33:44   |
|2  |enable  |(02) MB#200                          |9   |PON 1  |192.0.0.2                              |00:00:22:33:44:55   |
|3  |disable |(07) MBStacked#800                   |9   |PON 1  |192.0.0.3                              |00:11:22:33:44:55   |
|4  |disable |(08) UniStacked#900                  |11  |Eth 1  |192.130.0.1                            |00:00:65:05:01:02   |
|5  |disable |(08) UniStacked#900                  |11  |Eth 1  |192.130.0.2                            |00:00:65:05:01:02   |
|6  |disable |(03) UniStacked#300                  |5   |Eth 47 |192.130.0.3                            |00:00:65:05:01:02   |
+---+--------+-------------------------------------+----+-------+---------------------------------------+--------------------+
```

Table 467. “show” command output table parameters

Parameter	Description
ID	Table entry Identifier (number)
Admin	IPsource Guard Filter administrative state
Service (ID) Name	Service identifier (number) and Name
Slot	Slot Identifier
Port	Port identifier on the card in the slot
IP Address	IPv4/IPv6 address
MAC Address	MAC address

“showconfig” command

Table 468. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/ip-source-guard/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 578. CLI on line help on “showconfig” command usage in this node context

```
/cli//ip-source-guard> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

“logs” node

This node is used to view logs for all the system events.

Figure 579. logs node tree

```
/cli/logs> tree
+ logs[]
  + alarms[@clear, @show]
```

"alarms" sub-node

"clear" command

Table 469. "clear" command information

Name	clear
Description	Clears all alarms for a given slot or all alarms for all slots.
Full path	/ip/logs/alarms/clear
Mandatory Parameters	No
Screen Output	No

Figure 580. CLI on line help on "clear" command usage in this node context

```
/cli/logs/alarms> clear ?

Usage:
 CLEAR        Clear all alarms for a given slot or all alarms for all slots.

  [OPTIONAL]
  --slot                    Identifies a slot. (not used for LAG)
```

"show" command

This command displays the registered alarms: global alarms if the command is used without arguments or slot specific alarms if the command is used with argument slot.

Table 470. "show" command information

Name	show
Description	Shows registered alarms (Global or slot specific).
Full path	/ip/logs/alarms/show
Mandatory Parameters	No
Screen Output	Tables Figure 582 and Figure 583. Tables parameters description in Table 471

Figure 581. CLI on line help on “show” command usage in this node context

```
/cli/logs/alarms> show ?

Usage:
  SHOW          Show registered alarms (Global or slot specific).

   [OPTIONAL]
   --slot                  Identifies a slot. (not used for LAG)
```

Figure 582. Output of ”show” command used with no argument in this node context – Global alarm list

```
/cli/logs/alarms> show
+-----------------------------------------------------------------------------------------------------
|Alarms List  -- Page (1)
+----------+----------+----------+----------+----------+-----------------------------------------
|Equipment |Index     |Date      |Hour      |Code      |Description
+----------+----------+----------+----------+----------+-----------------------------------------
|OLT       | --       |2014/11/25 |10:06:16  |16        |The system was rebooted.
|OLT       |Source A  |2014/11/25 |10:08:12  |12        |Begin Power failure
|OLT       |Source B  |2014/11/25 |10:08:12  |12        |Begin Power failure
|OLT       | --       |2014/11/25 |10:08:39  |99902     |Begin Fan module absent
|OLT       | --       |2014/11/25 |10:08:39  |99902     |End Fan module absent
|OLT       | --       |2014/11/25 |10:08:39  |110030    |Module insertion FAN in slot 21.
|OLT       | --       |2014/11/25 |10:08:52  |110030    |Module insertion UMX-4x10GE  in slot 17.
|OLT       | --       |2014/11/25 |10:09:05  |110030    |Module insertion AMX-48GE in slot 11.
|OLT       | --       |2014/11/25 |10:10:18  |110031    |Module Removed AMX-48GE in slot 5.
|OLT       | --       |2014/11/25 |10:10:18  |110031    |Module Removed AMX-48GE in slot 11.
|OLT       | --       |2014/11/25 |10:11:07  |110030    |Module insertion AMX-48GE in slot 11.
|OLT       | --       |2014/11/25 |10:11:30  |110031    |Module Removed AMX-48GE in slot 11.
|OLT       | --       |2014/11/25 |10:11:44  |110030    |Module insertion AMX-48GE in slot 11.
|OLT       | --       |2014/11/25 |10:12:10  |110030    |Module insertion AMX-48GE in slot 5.
|OLT       | --       |2014/11/25 |10:14:49  |110030    |Module insertion AMX-16GPON in slot 9.
+----------+----------+----------+----------+----------+-----------------------------------------
```

Figure 583. Partial view of ”show” command with argument –slot output in this node context

```
/cli> logs/alarms/show --slot=9

+-----------------------------------------------------------------------------------------------------------------------------------------------------------
|Alarms List  -- Page (5)
+---------+--------+----------+---------+--------+-----------------------------------------------------------------------------------------------------------
|Equipment |Index     |Date      |Hour      |Code      |Description
+---------+--------+----------+---------+--------+-----------------------------------------------------------------------------------------------------------
|OLT       |PON.2     |2014/11/25 |23:09:02  |110002    |Detected 'new equipment' with S/N:5054494E393A997F
|OLT       |PON.2     |2014/11/25 |23:50:03  |110002    |The equipment in the 'new equipment' state with S/N:5054494E393A997F has been disconnected.
|OLT       |PON 2     |2014/11/25 |23:50:03  |18        |Begin Loss of signal
|OLT       |PON 2     |2014/11/25 |23:50:42  |18        |End Loss of signal
|OLT       |PON.2     |2014/11/25 |23:50:53  |110002    |Detected 'new equipment' with S/N:5054494E393A997F
|OLT       |PON.2     |2014/11/25 |00:31:54  |110002    |The equipment in the 'new equipment' state with S/N:5054494E393A997F has been disconnected.
|OLT       |PON 2     |2014/11/25 |00:31:54  |18        |Begin Loss of signal
|OLT       |PON 2     |2014/11/25 |00:32:32  |18        |End Loss of signal
|OLT       |PON.2     |2014/11/25 |00:32:42  |110002    |Detected 'new equipment' with S/N:5054494E393A997F
+---------+--------+----------+---------+--------+-----------------------------------------------------------------------------------------------------------
```

Table 471. “show” command output table parameters

Parameter	Description
Table Title	Alarms List – Page (#) page number if more than one page with registered alarms to display
Equipment	Alarm or event source (equipment)

Index	Alarm or event source (port if applicable)
Date and hour	Date and hour when the alarm or event occurred
Code	Alarm Code
Description	Alarm or event description

“mac-table” node

Figure 584.”mac-table” node tree

```
/cli/mac-table> tree
+ mac-table[@config, @show, @showconfig]
  + status[]
    + gpon[@remove, @show]
    + switch[@remove, @show]
```

“config” command

Table 472. "config" command information

Name	config
Description	Configures the mac-table switch parameters.
Full path	/mac-table/config
Mandatory Parameters	--mac-aging
Screen Output	No

Figure 585. CLI on line help on “config” command usage in this node context

```
/cli/mac-table> config ?

Usage:
 CONFIG        Configure

  <MANDATORY>
  --mac-aging                Define the MAC aging time in seconds (10..1000000)
```

“show” command

This command displays the Aging Time which defines the maximum time each MAC address can be at the MAC table when no packet with that MAC address arrives to the system..

Table 473. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/mac-table/show
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 587. Table parameters description in Table 474

Figure 586. CLI on line help on "show" command usage in this node context

```
/cli/mac-table> show ?

Usage:
  SHOW          Show the current configuration
```

Figure 587. Output of "show" command in this node context

```
/cli/mac-table> show
+------------------------------+
|Global MAC Aging (seconds)    |
+------------------------------+
|300                           |
+------------------------------+
```

Table 474. "show" command output table parameters

Parameter	Description
Global Mac Aging (seconds)	Currently configured value for the maximum time each MAC address can be at the MAC table when no packet with that MAC address arrives to the system

"showconfig" command

Table 475. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/mac-aging/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 588. CLI on line help on “showconfig” command usage in this node context

```
/cli//ip/networking> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

“status” sub-node

“gpon” sub-node

“remove” command

Table 476. "remove" command information

Name	remove
Description	Removes one GPON MAC entry from the Table.
Full path	/mac-table/status/gpon/remove
Mandatory Parameters	--mac --onuID --port --slot
Screen Output	No

Figure 589. CLI on line help on “remove” command usage in this node context

```
/cli> mac-table/status/gpon/remove ?

Usage REMOVE:
  REMOVE                  Remove one GPON MAC entry from the Table.

   <MANDATORY>
   --mac                  Identify/Set a MAC entry, in this context.
   --onuID                 Identifies an ONU by ID, in this context (0..127 or none).
   --port                 the value from column 'Port' from the show table. (e.g.: pon.2; eth.3;
lag.1, SF)
   --slot                 Identifies a slot.

   [OPTIONAL]
   --serviceID             Select an OLT service by ID.
```

"show" command

Table 477. "show" command information

Name	show
Description	Shows the GPON MAC Table.
Full path	/mac-table/status/gpon/show
Mandatory Parameters	No
Screen Output	Table Figure 591. Table parameters description in Table 478

Figure 590. CLI on line help on "show" command usage in this node context

```
/cli/mac-table/status/gpon> show ?

Usage:
  SHOW          Show the GPON MAC Table.

  [OPTIONAL]
  --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                Identifies a slot. (not used for LAG)
```

Figure 591. Output of "show" command in this node context

```
/cli/mac-table/status> gpon/show
+-------------------------------------------------------------------------------+
|GPON MAC Table                                                                 |
+-----+-------+------+-----------------------------------------+-----------------+
|Slot |Port   |ONU ID|(ID) OLT Service                         |MAC              |
+-----+-------+------+-----------------------------------------+-----------------+
+-----+-------+------+-----------------------------------------+-----------------+
Total Number of MAC entries: 0
```

Table 478. "show" command output table parameters

Parameter	Description
Slot	Indicates the Slot
Port	Indicates the Port
ONU ID	Indicates the ONU identifier
(ID) OLT Service	Indicates the service identifier (ID) and name
MAC	Indicates the learned MAC address

“switch” sub-node

“remove” command

Table 479. "remove" command information

Name	remove
Description	Removes one Switch MAC entry from the Table. All parameters are mandatory except when shown "--".
Full path	/mac-table/status/switch/remove
Mandatory Parameters	--mac
Screen Output	No

Figure 592. CLI on line help on “remove” command usage in this node context

```
/cli/mac-table/status> switch/remove ?

Usage REMOVE:
 REMOVE                    Remove one Switch MAC entry from the Table. All parameters are
mandatory except when shown "--".

  <MANDATORY>
  --mac                    Identify/Set a MAC entry, in this context.

  [OPTIONAL]
  --port                   Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --serviceID                 Select an OLT service by ID.
  --slot                   Identifies a slot. (not used for LAG)
  --vlan                   Choose a VLAN ID.
```

“show” command

Table 480. "show" command information

Name	show
Description	Shows the Switch MAC Table.
Full path	/mac-table/status/switch/show
Mandatory Parameters	--slot
Screen Output	Table Figure 594. Table parameters description in Table 481

Figure 593. CLI on line help on “show” command usage in this node context

```
/cli/mac-table/status> switch/show ?

Usage SHOW:
```

```
SHOW                    Show the Switch MAC Table. If no slot is provided, the MACs will be
read on the active switch fabric slot.

[OPTIONAL]
--mac                   Identify/Set a MAC entry, in this context.
--port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
--serviceID             Select an OLT service by ID.
--slot                  Identifies a slot. (not used for LAG)
--vlan                  Choose a VLAN ID.
```

Figure 594. Output of ”show” command in this node context

```
/cli/mac-table/status> switch/show
+-------------------------------------------------------------------------------------------+
|Slot 1 XCO-640 - Switch MAC Table                                                          |
+-----+---------+------+-----------------------------------------+-----+-----------------+
|Slot |Port     |ONU ID|(ID) OLT Service                         |VLAN |MAC              |
+-----+---------+------+-----------------------------------------+-----+-----------------+
+-----+---------+------+-----------------------------------------+-----+-----------------+
Total Number of MAC entries: 0
```

Table 481. “show” command output table parameters

Parameter	Description
Slot	Indicates the Slot
Port	Indicates the Port
(ID) OLT Service	Indicates the service identifier (ID) and name
VLAN	Indicates the used VLAN
MAC	Indicates the learned MAC address

“multicast” node

Figure 595. “multicast” node tree

```
/cli/multicast> tree
+ multicast[]
  + active-groups[@status]
  + group-list[@config, @create, @remove, @show, @showconfig]
  + igmp[]
    + global[@config, @show, @showconfig]
    + proxy[@config, @show, @showconfig]
    + querier[@config, @show, @showconfig]
  + packages[@config, @create, @remove, @show, @showconfig]
    + association[@attach, @detach, @show, @showconfig]
  + probes[@config, @create, @remove, @show, @showconfig]
```

```
+ statistics[@show]
```

“active-groups” sub-node

“status” command

Table 482. "status" command information

Name	status
Description	When no arguments are provided, the Active Channels list is returned. Otherwise, the users list is returned.
Full path	/multicast/active-groups/status
Mandatory Parameters	No
Screen Output	Tables Figure 597 and Figure 598. Tables’ parameter description Table 483 and Table 484.

Figure 596. CLI on line help on “status” command usage in this node context

```
/cli/multicast> active-groups/status ?

Usage STATUS:
  STATUS                  When no arguments are provided, the Active Channels list is returned.
Otherwise, the users list is returned.

   [OPTIONAL]
   --ip-address           IPv4 address
   --serviceID            Select an OLT service by ID.
   --src-ip-address        IPv4 source address
   --static-group         Search for a static or dynamic group (enable|disable)
```

Figure 597. Output of ”status” command with no arguments in this node context

```
/cli/multicast> active-groups/status
+-------------------------------------------------------------------------------+
|Active Channels List                                                           |
+-----------------------------------+----------+----------------+---------------+
|(ID) Service                       |Static    |Source IP       |IP Address     |
+-----------------------------------+----------+----------------+---------------+
|(5)MCast#600                       |disable   |--              |235.0.0.1      |
|(6)MCast#700                       |disable   |--              |236.0.0.1      |
+-----------------------------------+----------+----------------+---------------+
```

This command used with arguments shows the users list for the selected channel, Figure 598.

Table 483. “status” command output table parameters

Parameter	Description
(ID) Service	Indicates the service identifier (ID) and name
Static	Indicates if the channel is Static
IP	Indicates the IPv4 multicast address
Source	Indicates the multicast Source

Figure 598. Output of ”status” command, with arguments ip-address and serviceID, in this node context

```
/cli/multicast> active-groups/status --ip-address=235.0.0.1 --serviceID=5
+----------------------------------------+
|Active Users List: (6)MCast#700 - 235.0.0.1|
+-----+----------+------+-----------------+
|Slot |Interface |ONU ID|Client Service ID|
+-----+----------+------+-----------------+
|5    |Eth 1     | --   |12               |
+-----+----------+------+-----------------+
```

Table 484. “status” command, with arguments ip-address and serviceID, output table parameters

Parameter	Description
Slot	Indicates the Slot
Interface	Indicates the interface
ONU ID	Indicates the ONU
Client Service ID	Indicates the Client Service ID

“group-list” sub-node

“config” command

Table 485. "config" command information

Name	config
Description	Configures an existing multicast group.
Full path	/multicast/group-list/config
Mandatory Parameters	--ID
Screen Output	No

Figure 599. CLI on line help on “config” command usage in this node context

```
/cli/multicast/group-list> config ?

Usage CONFIG:
 CONFIG                 Configure an existing multicast group.

  <MANDATORY>
  --ID                  Identifies a table entry by ID, in this context.

  [OPTIONAL]
  --admin               Administrative State. Enable/disable, in this context. (enable|disable)
  --bandwidth             Specify the multicast group bandwidth in units of Kbps
  --group-mask            Group IPv4 address mask (0 | 22..32)
  --ip-address          IPv4 address
  --name                Set a name for the specified multicast group. (STRING 31)
  --serviceID            Select an OLT service by ID.
  --src-ipv4-addr         Specify the source IPv4 address or 'any' to specify any IP
  --static-group         Configure the multicast group as dynamic(default) or as static
```

“create” command

Table 486. "create" command information

Name	create
Description	Creates a new multicast group
Full path	/multicast/group-list/create
Mandatory Parameters	--ip-address --name --serviceID
Screen Output	No

Figure 600. CLI on line help on "create" command usage in this node context

```
/cli/multicast/group-list> create ?

Usage CREATE:
  CREATE                  Create a new multicast group

  <MANDATORY>
  --ip-address            IPv4 address
  --name                  Set a name for the specified multicast group. (STRING 31)
  --serviceID             Select an OLT service by ID.

  [OPTIONAL]
  --admin                 Administrative State. Enable/disable, in this context. (enable|disable)
  --bandwidth             Specify the multicast group bandwidth in units of Kbps
  --group-mask            Group IPv4 address mask (0 | 22..32)
  --src-ipv4-addr         Specify the source IPv4 address or 'any' to specify any IP
  --static-group          Configure the multicast group as dynamic(default) or as static
```

"remove" command

Table 487. "remove" command information

Name	remove
Description	Removes an existing multicast group
Full path	/multicast/group-list/remove
Mandatory Parameters	--ID
Screen Output	No

Figure 601. CLI on line help on "remove" command usage in this node context

```
/cli/multicast/group-list> remove ?

Usage:
  REMOVE        Remove an existing multicast group

  <MANDATORY>
  --ID                  Identifies a table entry by ID, in this context.
```

"show" command

Table 488. "show" command information

Name	show
Description	Shows the current configured multicast groups

Full path	/multicast/group-list/show
Mandatory Parameters	This command has no parameters
Screen Output	Tables Figure 603.Tables parameter description Table 489

Figure 602. CLI on line help on "show" command usage in this node context

```
/cli/multicast/group-list> show ?

Usage:
  SHOW          Show the current configured multicast groups
```

Figure 603.Partial view of "show" command output in this node context"

```
/cli/multicast/group-list> show
+-------------------------------------------------------------------------------------------------------------------------------------------------------------+
|Group List                                                                                                                                                   |
+---+--------+--------------------------------+-----------------------------------+--------+----------------+----------+----------------+---------------+
|ID |Admin   |Name                            |Service                            |Static  |Group IP Address|Group Mask|Src IP Address  |Bandwidth(Kbps)|
+---+--------+--------------------------------+-----------------------------------+--------+----------------+----------+----------------+---------------+
|1  |disabled|234.0.0.1                       |(06) MCast#700                     |disabled|234.0.0.1       |32        |any             |1              |
|2  |disabled|234.0.0.2                       |(05) MCast#600                     |disabled|234.0.0.2       |32        |any             |0              |
|3  |enabled |235.0.0.0/24 (SD)               |(05) MCast#600                     |disabled|235.0.0.0       |24        |any             |1000           |
|4  |enabled |236.0.0.1/24 (HD)               |(06) MCast#700                     |disabled|236.0.0.0       |24        |192.168.0.1     |2000           |
|5  |enabled |235.0.0.1/32(SD)                |(05) MCast#600                     |disabled|235.0.0.1       |32        |any             |1000           |
|6  |enabled |236.0.0.1/32(HD)                |(06) MCast#700                     |disabled|236.0.0.1       |32        |any             |2000           |
+---+--------+--------------------------------+-----------------------------------+--------+----------------+----------+----------------+---------------+
```

Table 489. "show" command output table parameters

Parameter	Description
ID	Indicates the group ID
Admin	Indicates the group Administrative State
Name	Indicates the group Name
Service	Identifies service, by (ID) and Name
Static	Indicates if the Multicast group is Static (enabled|disabled)
Group IP address	Indicates IPv4 group address
Group Mask	Indicates the group mask
Src IP address	Indicates IPv4 source address
Bandwidth (Kbps)	Indicates Group Bandwidth

"showconfig" command

Table 490. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/multicast/group-list/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the

	current configuration.

Figure 604. CLI on line help on "showconfig" command usage in this node context

```
/cli/ multicast/group-list> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"igmp" sub-node

"global" sub-node

"config" command

Table 491. "config" command information

Name	config
Description	Configures global IGMP options.
Full path	/multicast/igmp/global/config
Mandatory Parameters	No
Screen Output	No

Figure 605. CLI on line help on "config" command usage in this node context

```
/cli/multicast/igmp> global/config ?

Usage CONFIG:
  CONFIG                  Configure global IGMP options.

   [OPTIONAL]
   --bandwidth-ctrl       Enable or disable bandwidth control. (enable|disable)
   --group-endpoint       Specify the multicast group endpoint. (uni|nni)
   --group-limit-ctrl     Enable or disable group limit control. (enable|disable)
```

"show" command

Table 492. "show" command information

Name	show
Description	Shows the current configuration
Full path	/multicast/igmp/global/show
Mandatory Parameters	This command has no parameters

Screen Output	Table, Figure 477. Table parameter description Table 493

Figure 606. CLI on line help on "show" command usage in this node context

```
/cli/multicast/igmp/global> show ?

Usage:
  SHOW          Show the current configuration
```

Figure 607.Partial view of "show" command output in this node context"

```
/cli/multicast/igmp> global/show
+-------------------------------------------------------------------+
|IGMP Global                                                        |
+------------------------+------------------+--------------------+
|Static Group Endpoint   |Bandwidth control |Group Limit control |
+------------------------+------------------+--------------------+
|uni                     |disable           |disable             |
+------------------------+------------------+--------------------+
```

Table 493. "show" command output table parameters

Parameter	Description
Static Group Endpoint	Identifies the configured Static Group Endpoint (uni|nni)
Bandwidth Control	Indicates if Bandwidth control is enabled
Group Limit Control	Indicates if Group Limit Control is enabled

"showconfig" command

Table 494. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/multicast/igmp/global/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 608. CLI on line help on "showconfig" command usage in this node context

```
/cli/ multicast/igmp/global> showconfig ?

Usage:
```

SHOWCONFIG	Print the command list that enforces the current configuration

"proxy" sub-node

"config" command

Table 495. "config" command information

Name	config
Description	Configures the IGMP proxy information.
Full path	/multicast/igmp/proxy/config
Mandatory Parameters	No
Screen Output	No

Figure 609. CLI on line help on "config" command usage in this node context

```
/cli/multicast/igmp> proxy/config ?

Usage CONFIG:
  CONFIG                    Configure the IGMP proxy.

   [OPTIONAL]
   --admin                  Administrative State. Enable/disable, in this context. (enable|disable)
   --client-version         Maximum allowed version for the OLT client side. [2,3]
   --max-records-per-report Maximum number of group-records that can be included in the
same membership report. [1..64]
   --network-version        Maximum allowed version for the OLT network side. [2,3]
   --priority               Priority used in the IGMP packets.
   --robustness             Number of retransmissions sent. Should be adjusted for the expected
packet loss on the network. [1..7]
   --unsolicited-report-interval  Time interval between repetitions of a host's initial group
membership report. [1..10]
```

"show" command

Table 496. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/multicast/igmp/proxy/show
Mandatory Parameters	This command has no parameters
Screen Output	Tables Figure 611.Table parameters description Table 497

Figure 610. CLI on line help on "show" command usage in this node context

```
/cli/multicast/ proxy/igmp-proxy > show ?

Usage:
  SHOW          Show the current configuration.
```

Figure 611.Output of "show" command in this node context"

```
/cli/multicast/igmp> proxy/show
+-------------------------------------------------------------------------------------------------------------------------+
|IGMP Proxy                                                                                                               |
+-------+---------+----------------+---------------+-----------+----------------------------+-----------------------+
|Admin  |Priority |Network Version |Client Version |Robustness |Unsolicited Report Interval |Max Records per Report |
+-------+---------+----------------+---------------+-----------+----------------------------+-----------------------+
|enable |5        |2               |2              |3          |2                           |64                     |
+-------+---------+----------------+---------------+-----------+----------------------------+-----------------------+
```

Table 497. "show" command output table parameters

Parameter	Description
Admin	IGMP Proxy Administrative State
Priority	pbit value in the IGMP packets (0<=n<=7)
Network version	IGMP version used in the Network interfaces (2|3)
Client version	IGMP version used in the Client interfaces (2|3)
Robustness	Specifies the number of retransmissions sent. Should be adjusted for the expected packet loss on the network.
Unsolicited Report Interval	Time interval between repetitions of a host's initial group membership report.
Max Records per Report	Maximum number of group-records that can be included in the same membership report.

"showconfig" command

Table 498. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/multicast/igmp/proxy/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 612. CLI on line help on "showconfig" command usage in this node context

```
/cli/ multicast/igmp/proxy > showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"querier" sub-node

"config" command

Table 499. "config" command information

Name	config
Description	Configures the IGMP querier information
Full path	/multicast/igmp/querier/config
Mandatory Parameters	No
Screen Output	No

Figure 613. CLI on line help on "config" command usage in this node context

```
/cli/multicast/igmp> querier/config ?

Usage CONFIG:
  CONFIG                    Configure the IGMP querier information.

   [OPTIONAL]
   --last-member-query-count          Number of Group-Specific Queries sent before assuming a
specific group has no more local members.
   --last-member-query-interval       The Max Response Time inserted into Group-Specific queries
sent in response to Leave Group messages.
   --querier-ip               Querier IP Address
   --query-interval           Interval between General Queries. [2..3175]
   --query-response-interval          The Max Response Time inserted into the periodic General
Queries. [1..31744]
   --startup-query-count          Number of retransmissions of general queries sent on startup.
   --startup-query-interval       Interval between retransmissions of general queries sent on startup.
```

"show" command

Table 500. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/multicast/igmp/querier/show

Mandatory Parameters	This command has no parameters
Screen Output	Tables Figure 615.Table parameters description Table 501

Figure 614. CLI on line help on "show" command usage in this node context

```
/cli/multicast/igmp/querier > show ?

Usage:
  SHOW          Show the current configuration.
```

Figure 615.Output of "show" command in this node context"

```
/cli/multicast/igmp> querier/show
+-------------------------------------------------------------------------------------------------------------------------------------------------------------+
|Querier                                                                                                                                                      |
+---------------+----------------+---------------------+--------------------+-----------------+-------------------------+-----------------------+
|Querier IP     |Query Interval  |Query Response Interval|Startup Query Interval|Startup Query Count|Last Member Query Interval|Last Member Query Count|
+---------------+----------------+---------------------+--------------------+-----------------+-------------------------+-----------------------+
|10.0.0.10      |30              |10                   |15                  |4                |20                       |3                      |
+---------------+----------------+---------------------+--------------------+-----------------+-------------------------+-----------------------+
```

Table 501. "show" command output table parameters

Parameter	Description
Querier IP	Querier IP Address
Query Interval	Time Interval (in seconds) between the transmissions of each General Querier to the clients. The value must be in the range 30 to 1800.
Query Response Interval	Interval between retransmissions of general queries sent to the clients.
Startup Querier Interval	Interval between retransmissions of general queries sent by the proxy on startup.
Startup Querier Count	Number of general queries sent by the proxy on startup. Should be adjusted for the expected packet loss on the network.
Last Member Querier Interval	Max Response Time used to calculate the Max Resp Code inserted into Group-Specific queries sent in response to Leave Group messages.
Last Member Querier Count	Number of Group-Specific Queries sent before the router assumes there are no local members.

"showconfig" command

Table 502. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/multicast/igmp/querier/showconfig

Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 616. CLI on line help on "showconfig" command usage in this node context

```
/cli/ multicast/igmp/querier> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"packages" sub-node

"config" command

Table 503. "config" command information

Name	config
Description	Configures parameters for an existing Multicast channel package entry.
Full path	/multicast/packages/config
Mandatory Parameters	--pkg-id
Screen Output	No

Figure 617. CLI on line help on "config" command usage in this node context

```
/cli/multicast/packages> config ?

Usage CONFIG:
  CONFIG                Configure parameters for an existing Multicast channel package entry.

  <MANDATORY>
  --pkg-id              Identify one Multicast channel package by ID. (1..256)

  [OPTIONAL]
  --name                Set a name for the specified multicast channel package. (STRING 32)
```

"create" command

Table 504. "create" command information

Name	create
Description	Creates a new Multicast channel package entry
Full path	/multicast/packages/create

Mandatory Parameters	--name
Screen Output	No

Figure 618. CLI on line help on "create" command usage in this node context

```
/cli/multicast/packages> create ?

Usage CREATE:
 CREATE                Create a new Multicast channel package entry.

  <MANDATORY>
  --name               Set a name for the specified multicast channel package. (STRING 32)

  [OPTIONAL]
  --pkg-id             Identify one Multicast channel package by ID. (1..256)
```

"remove" command

Table 505. "remove" command information

Name	remove
Description	Removes an existing Multicast channel package entry
Full path	/multicast/packages/remove
Mandatory Parameters	No
Screen Output	No

Figure 619. CLI on line help on "remove" command usage in this node context

```
cli/multicast/packages> remove ?

Usage REMOVE:
 REMOVE                Remove an existing Multicast channel package entry.

  [OPTIONAL]
  --name               Set a name for the specified multicast channel package. (STRING 32)
  --pkg-id             Identify one Multicast channel package by ID. (1..256).
```

"show" command

Table 506. "show" command information

Name	show
Description	Shows the current Multicast channel package configured.

Full path	/multicast/packages/show
Mandatory Parameters	This command has no parameters
Screen Output	Tables Figure 621.Table parameters description Table 507.

Figure 620. CLI on line help on "show" command usage in this node context

```
/cli/multicast/packages> show ?

Usage SHOW:
  SHOW                    Show the current Multicast channel package configured.
```

Figure 621.Output of "show" command in this node context"

```
/cli/multicast/packages> show
+-------------------------------------+
|Multicast channel Package List       |
+------+------------------------------+
|Pkg ID|Name                          |
+------+------------------------------+
|1     |Toons                         |
|2     |Anime                         |
+------+------------------------------+
```

Table 507. "show" command output table parameters

Parameter	Description
Pkg ID	Multicast channel package identifier - Name (STRING 32)
Name	Multicast channel package identifier -Number (1…256)

"showconfig" command

Table 508. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/multicast/packages/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 622. CLI on line help on "showconfig" command usage in this node context

```
/cli/multicast/packages> showconfig ?
```

```
Usage SHOWCONFIG:
  SHOWCONFIG                Print the command list that enforces the current configuration
```

"association" node

"attach" command

Table 509. "attach" command information

Name	attach
Description	Attaches multicast channels to the specified package.
Full path	/multicast/packages/association/attach
Mandatory Parameters	--pkg-id
Screen Output	No

Figure 623. CLI on line help on "attach" command usage in this node context

```
/cli/multicast/packages/association> attach ?

Usage ATTACH:
  ATTACH                    Attach multicast channels to the specified package.

  <MANDATORY>
  --pkg-id                  Identify one Multicast channel package by ID. (1..256)

  [OPTIONAL]
  --mcast-channel-id        Identify one Multicast channel by ID. (1..16384)
  --mcast-channel-name      Identify one Multicast channel by Name. (STRING 31)
```

"detach" command

Table 510. "detach" command information

Name	detach
Description	Detaches multicast channels from the specified package.
Full path	/multicast/packages/association/detach
Mandatory Parameters	--pkg-id
Screen Output	No

Figure 624. CLI on line help on "detach" command usage in this node context

```
/cli/multicast/packages/association> detach ?
```

```
Usage DETACH:
 DETACH                 Detach multicast channels from the specified package.

  <MANDATORY>
  --pkg-id              Identify one Multicast channel package by ID. (1..256)

  [OPTIONAL]
  --mcast-channel-id          Identify one Multicast channel by ID. (1..16384)
  --mcast-channel-name        Identify one Multicast channel by Name. (STRING 31)
```

"show" command

Table 511. "show" command information

Name	show
Description	Shows the current configuration
Full path	/multicast/packages/association/show
Mandatory Parameters	--pkg-id
Screen Output	Table, Figure 626. Table parameters description in Table 433 .

Figure 625. CLI on line help on "show" command usage in this node context

```
/cli/multicast/packages/association> show ?

Usage SHOW:
 SHOW                   Show the current configuration

  <MANDATORY>
  --pkg-id              Identify one Multicast channel package by ID. (1..256)
```

Figure 626.Output of "show" command in this node context"

```
/cli/multicast/packages> association/show --pkg-id=1
+-----------------------------------------------------------------+
|Multicast Channel Package (1) 'Toons'                            |
+--------------------+--------------------------------------------+
|Channel ID          |Name                                        |
+--------------------+--------------------------------------------+
|1                   |234.1.1.x                                   |
+--------------------+--------------------------------------------+
```

Table 512. "show" command output table parameters

Parameter	Description

Table title	Multicast Channel Package (# - Package table entry ID) 'Channel package name'
Channel ID	Multicast channel identifier - Number
Name	Multicast channel Name

"showconfig" command

Table 513. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/multicast/packages/association/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 627. CLI on line help on "showconfig" command usage in this node context

```
/cli/multicast/packages/association> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG              Print the command list that enforces the current configuration

  [OPTIONAL]
  --pkg-id                Identify one Multicast channel package by ID. (1..256)
```

"probes" sub-node

"config" command

Table 514. "config" command information

Name	config
Description	Modifies parameters for an existing probe.
Full path	/multicast/probes/config
Mandatory Parameters	--ID
Screen Output	No

Figure 628. CLI on line help on "config" command usage in this node context

```
/cli/multicast/probes> config ?
```

```
Usage:
 CONFIG        Modify parameters for an existing probe.

 <MANDATORY>
 --ID          Identifies a table entry by ID, in this context.

 [OPTIONAL]
 --admin       Administrative State. Enable/disable, in this context. (enable|disable)
 --ip-mcast    IPv4 multicast address
 --port        Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
 --serviceID   Select an OLT service by ID.
 --slot        Identifies a slot. (not used for LAG)
```

"create" command

Table 515. "create" command information

Name	create
Description	Creates a Probe for a multicast service uplink interface
Full path	/multicast/probes/create
Mandatory Parameters	--ip-mcast[=STRING] --port --serviceID
Screen Output	No

Figure 629. CLI on line help on "create" command usage in this node context

```
/cli/multicast/probes> create ?

Usage:
 CREATE        Create a Probe for a multicast service uplink interface.

 <MANDATORY>
 --ip-mcast[=STRING]   IPv4 multicast address
 --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
 --serviceID           Select an OLT service by ID.

 [OPTIONAL]
 --admin               Administrative State. Enable/disable, in this context.
                       (enable|disable)
 --slot                Identifies a slot. (not used for LAG)
```

“remove” command

Table 516. "remove" command information

Name	remove
Description	Removes an existing Probe.
Full path	/multicast/probes/remove
Mandatory Parameters	--ID
Screen Output	No

Figure 630. CLI on line help on “remove” command usage in this node context

```
/cli/multicast/probes> remove ?

Usage:
  REMOVE        Remove an existing Probe.

   <MANDATORY>
   --ID                 Identifies a table entry by ID, in this context.
```

“show” command

Table 517. "show" command information

Name	show
Description	Shows the current multicast probes configuration.
Full path	/multicast/probes/show
Mandatory Parameters	This command has no parameters
Screen Output	Tables Figure 632.Table parameters description Table 518

Figure 631. CLI on line help on “show” command usage in this node context

```
/cli/multicast/probes> show ?

Usage:
  SHOW          Show the current multicast probes configuration.
```

Figure 632.Output of ”show” command in this node context”

```
/cli/multicast/probes> show
+-------------------------------------------------------------------------------+
|Multicast Probes                                                               |
+---+--------+----+-------+--------------------------------------+---------------+
|ID |Admin   |Slot|Port   |Service (ID) Name                     |Multicast IP   |
+---+--------+----+-------+--------------------------------------+---------------+
|1  |enable  |8   |Eth 3  |(03) iptv spirent 1                   |232.1.1.10     |
+---+--------+----+-------+--------------------------------------+---------------+
```

Table 518. “show” command output table parameters

Parameter	Description
ID	Indicates the multicast probe ID
Admin	Indicates the Administrative State
Slot	Indicates the Slot the multicast probe is applied to
Port	Indicates the Port the multicast probe is applied to
Service (ID) name	Identifies service, to which the probe belongs to, by ID and Name
Multicast IP	Indicates IPv4 Multicast address

“showconfig” command

Table 519. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/multicast/probes/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 633. CLI on line help on “showconfig” command usage in this node context

```
/cli/ multicast/probes > showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

“statistics” sub-node

“show” command

Table 520. "show" command information

Name	show
Description	Shows the statistics information for the selected probe by ID.
Full path	/multicast/probes/statistics/show
Mandatory Parameters	--ID
Screen Output	Tables Figure 635.Table parameters description Table 521

Figure 634. CLI on line help on “show” command usage in this node context

```
/cli/multicast/probes/statistics> show ?

Usage:
  SHOW          Show

  <MANDATORY>
  --ID                  Identifies a table entry by ID, in this context.

  [OPTIONAL]
  --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                Identifies a slot. (not used for LAG)
```

Figure 635.Output of ”show” command in this node context”

```
/cli/multicast/probes> statistics/show --ID=1
+-------------------------------------------------------------------------------+
|Probe ID 1 Counters                                                            |
+---------------+-------------------------------+-------------------------------+
|               |Upstream                       |Downstream                     |
+---------------+---------------+---------------+---------------+---------------+
|               |Total          |Partial        |Total          |Partial        |
+---------------+---------------+---------------+---------------+---------------+
|Total          |-              |-              |285            |0              |
|Unicast        |-              |-              |192            |0              |
|Multicast      |-              |-              |0              |0              |
|Broadcast      |-              |-              |93             |0              |
|Dropped        |-              |-              |590            |0              |
+---------------+---------------+---------------+---------------+---------------+
qPress 'q' to quit or 'r' to reset
```

Table 521. “show” command output table parameters

Upstream&downstream (Total & Partial) counters	
Parameter	**Description**

Total	Number (all types) of packets
Unicast	Number of Unicast packets
Multicast	Number of Multicast packets
Broadcast	Number of Broadcast packets
Dropped	Number of Dropped packets

“profiles” node

Figure 636.”profiles” node tree

```
/cli/profiles> tree
+ profiles[]
  + dscp-to-pbits[@config, @create, @remove, @show, @showconfig]
  + ethernet[@config, @create, @remove, @show, @showconfig]
  + onu[@config, @create, @remove, @show, @showconfig]
  + pbits-to-pq[@config, @create, @remove, @show, @showconfig]
  + upstream-dba[@config, @create, @remove, @show, @showconfig]
  + voip[]
    + server[@availableValues, @config, @create, @remove, @show, @showconfig]
    + specific[@config, @create, @remove, @show, @showconfig]
```

“dscp-to-pbits” sub-node

“config” command

Table 522. "config" command information

Name	config
Description	Configures/activates an existing profile.
Full path	/profiles/dscp-to-pbits/config
Mandatory Parameters	--ID
Screen Output	No

Figure 637. CLI on line help on “config” command usage in this node context

```
/cli/profiles/dscp-to-pbits> config ?

Usage CONFIG:
 CONFIG                 Configure/activate an existing profile.

  <MANDATORY>
  --ID                  Identifies a table entry by ID, in this context.

  [OPTIONAL]
```

```
--admin          Administrative State. Enable/disable, in this context. (enable|disable)
--dscp           Specify the DSCP value (0..63). Ranges are accepted (eg. 0-7,10,20)
--name           Define a name for the specified profile.
--p-bits         Define the P-bits value (0..7).
```

"create" command

Table 523. "create" command information

Name	create
Description	Creates a new profile that assigns DSCP to P-bits
Full path	/profiles/dscp-to-pbits/create
Mandatory Parameters	No
Screen Output	No

Figure 638. CLI on line help on "create" command usage in this node context

```
/cli/profiles/dscp-to-pbits> create ?

Usage CREATE:
 CREATE          Create a new profile that assigns DSCP to P-bits.

  [OPTIONAL]
  --ID           Identifies a table entry by ID, in this context.
  --admin        Administrative State. Enable/disable, in this context. (enable|disable)
  --dscp         Specify the DSCP value (0..63). Ranges are accepted (eg. 0-7,10,20)
  --name         Define a name for the specified profile.
  --p-bits       Define the P-bits value (0..7).
```

"remove" command

Table 524. "remove" command information

Name	remove
Description	Removes an existing profile
Full path	/profiles/dscp-to-pbits/remove
Mandatory Parameters	--ID
Screen Output	No

Figure 639. CLI on line help on "remove" command usage in this node context

```
/cli/profiles/dscp-to-pbits> remove ?

Usage REMOVE:
```

```
REMOVE                  Remove an existing profile.

<MANDATORY>
--ID                    Identifies a table entry by ID, in this context.
```

"show" command

Table 525. "show" command information

Name	show
Description	Shows existing profiles
Full path	/profiles/dscp-to-pbits/show
Mandatory Parameters	This command has no parameters
Screen Output	Tables Figure 641 and Figure 642. Tables' parameter description Table 526 and Table 527.

Figure 640. CLI on line help on "show" command usage in this node context

```
/cli/profiles/dscp-to-pbits> show ?

Usage SHOW:
 SHOW                   Show existing profiles.

 [OPTIONAL]
 --ID                   Identifies a table entry by ID, in this context.
```

Figure 641.Output of "show" command, without arguments, in this node context"

```
/cli/profiles/dscp-to-pbits> show
+-----------------------------------------------+
|DSCP to P-bits Profiles                        |
+-------+---------------------------------+-------+
|ID     |Name                             |Admin  |
+-------+---------------------------------+-------+
|7      |DSCP 0-63 -> P-bits 0            |enable |
+-------+---------------------------------+-------+
```

Table 526. "show" command, without arguments, output table parameters

Parameter	Description
ID	Identifies DSCP to P-bits profile by ID
Name	Indicates DSCP to P-bits profile name
Admin	Indicates DSCP to P-bits profile administrative state

Figure 642.Output of ”show” command, with argument ID, in this node context”

```
/cli/profiles/dscp-to-pbits> show --ID=7
+-------------------------------------------------------+
|DSCP to P-bits Profile 7 - DSCP 0-63 -> P-bits 0       |
+------+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|      |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
+------+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|DSCP  |0 |1 |2 |3 |4 |5 |6 |7 |8 |9 |10|11|12|13|14|15|
|P-bits|0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |
+------+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|DSCP  |16|17|18|19|20|21|22|23|24|25|26|27|28|29|30|31|
|P-bits|0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |
+------+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|DSCP  |32|33|34|35|36|37|38|39|40|41|42|43|44|45|46|47|
|P-bits|0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |
+------+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
|DSCP  |48|49|50|51|52|53|54|55|56|57|58|59|60|61|62|63|
|P-bits|0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |0 |
+------+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+--+
```

Table 527. “show” command, with argument ID, output table parameters

Parameter	Description
DSCP	DSCP values (0 to 63)
P-bits	P-bit mapped by DSCP value

“showconfig” command

Table 528. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/profiles/dscp-to-pbits/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 643. CLI on line help on “showconfig” command usage in this node context

```
/cli/profiles/dscp-to-pbits> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG                Print the command list that enforces the current configuration
```

“ethernet” sub-node

In this sub-node, it is possible to view, configure, create and remove Ethernet profiles.

- Ethernet are created according to MEF naming convention.
- There are two Ethernet default profiles created and they can neither be changed nor removed.
- Ethernet profiles in use cannot be changed or removed.

“config” command

Table 529. "config" command information

Name	config
Description	Configures ethernet traffic profiles.
Full path	/profiles/ethernet/config
Mandatory Parameters	--profileID
Screen Output	No

Figure 644. CLI on line help on “config” command usage in this node context

```
/cli/profiles/ethernet> config ?

Usage CONFIG:
  CONFIG                  Configure ethernet traffic profiles.

  <MANDATORY>
  --profileID             Identifies a profile by ID.

  [OPTIONAL]
  --admin                 Administrative State. Enable/disable, in this context. (enable|disable)
  --cbs                   Committed Burst Size: maximum number of bytes in a burst of packets
that should be guaranteed (0..262144 bytes)
  --cir                   Committed Information Rate: bandwidth that should be guaranteed, on
average (0..1000000000 bit/s)
  --ebs                   Excess Burst Size: maximum number of bytes in a burst of packets if
there is no traffic congestion (0..+Inf. bytes)
  --eir                   Excess Information Rate: bandwidth in excess that can be supplied in case
there is no traffic congestion (0..+Inf. bits/s)
  --name                  Define a name for the specified profile. (STRING 31)
```

“create” command

Table 530. "create" command information

Name	create
Description	Creates an Ethernet traffic profile

Full path	/profiles/ethernet/create
Mandatory Parameters	No
Screen Output	No

Figure 645. CLI on line help on "create" command usage in this node context

```
/cli/profiles/ethernet> create ?

Usage CREATE:
  CREATE                Create an Ethernet traffic profile

   [OPTIONAL]
   --profileID          Identifies a profile by ID.
```

"remove" command

Table 531. "remove" command information

Name	remove
Description	Removes an Ethernet traffic profile
Full path	/profiles/ethernet/remove
Mandatory Parameters	--profileID
Screen Output	No

Figure 646. CLI on line help on "remove" command usage in this node context

```
/cli/profiles/ethernet> remove ?

Usage:
  REMOVE        Remove an Ethernet traffic profile

   <MANDATORY>
   --profileID          Identifies a profile by ID.
```

"show" command

Table 532. "show" command information

Name	show
Description	Shows the current configured multicast groups
Full path	/profiles/ethernet/show
Mandatory Parameters	This command has no parameters

Screen Output	Tables Figure 648.Tables parameter description Table 533

Figure 647. CLI on line help on "show" command usage in this node context

```
/cli/profiles/ethernet> show ?

Usage:
  SHOW          Show ethernet traffic profiles.
```

Figure 648.Output of "show" command in this node context"

```
/cli/profiles/ethernet> show
+-------------------------------------------------------------------------------------------------------------------+
|Ethernet Profiles                                                                                                  |
+---+--------------------------------+-------+---------------+---------------+---------------+----------------+
|ID |Name                            |Admin  |CIR            |CBS            |EIR            |EBS             |
+---+--------------------------------+-------+---------------+---------------+---------------+----------------+
|1  |CIR_1G_Default                  |enable |1000000000     |9600           |0              |0               |
|2  |CIR_100M_Default                |enable |100000000      |9600           |0              |0               |
+---+--------------------------------+-------+---------------+---------------+---------------+----------------+
```

Table 533. "show" command output table parameters

Parameter	Description
ID	Identifies Ethernet profile by ID
Name	Indicates Ethernet profile name
Admin	Indicates Ethernet profile administrative state
CIR	Indicates Committed information rate
CBS	Indicates Committed Burst Size
EIR	Indicates Excess Information Rate
EBS	Indicates Excess Burst Size

"showconfig" command

Table 534. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/profiles/ethernet/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 649. CLI on line help on "showconfig" command usage in this node context

```
/cli/profiles/ethernet> showconfig ?
```

```
Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

“onu” sub-node

This node is used to configure, create and remove profiles for remote ONUs.

“config” command

Table 535. "config" command information

Name	config
Description	Configure an existing ONU profiles.
Full path	/profiles/onu/config
Mandatory Parameters	--profileID
Screen Output	No

Figure 650. CLI on line help on “config” command usage in this node context

```
/cli/profiles/onu> config ?

Usage CONFIG:
  CONFIG                Configure an existing ONU profile.

   <MANDATORY>
   --profileID          Identifies a profile by ID.

   [OPTIONAL]
   --admin              Administrative State. Enable/disable, in this context. (enable|disable)
   --model              Define the Model Name (STRING 47)
   --name               Define a name for this profile. (STRING 47)
   --port-num             The number of ports for a given port type (max: 4 ETH , 1 PON , 1 RF
, 2 VoIP, 4 E1, 1 VEIP )
   --port-type          The type of a port (eth|pon|voip|rf|e1|veip)
   --vendor             Define the Vendor Name (STRING 15)
```

“create” command

Table 536. "create" command information

Name	create
Description	Creates an ONU profile
Full path	/profiles/onu/create
Mandatory	No

Parameters	
Screen Output	No

Figure 651. CLI on line help on "create" command usage in this node context

```
/cli/profiles/onu> create ?

Usage CREATE:
  CREATE                  Create a new ONU profile.

   [OPTIONAL]
   --admin                Administrative State. Enable/disable, in this context. (enable|disable)
   --model                Define the Model Name (STRING 47)
   --name                 Define a name for this profile. (STRING 47)
   --port-num               The number of ports for a given port type (max: 4 ETH , 1 PON , 1 RF
, 2 VoIP, 4 E1, 1 VEIP )
   --port-type            The type of a port (eth|pon|voip|rf|e1|veip)
   --profileID            Identifies a profile by ID.
   --vendor               Define the Vendor Name (STRING 15)
```

"remove" command

Table 537. "remove" command information

Name	remove
Description	Removes an existing ONU profile
Full path	/profiles/onu/remove
Mandatory Parameters	--profileID
Screen Output	No

Figure 652. CLI on line help on "remove" command usage in this node context

```
/cli/profiles/onu> remove ?

Usage:
  REMOVE        Remove an existing ONU profile.

   <MANDATORY>
   --profileID          Identifies a profile by ID.
```

“show” command

Table 538. "show" command information

Name	show
Description	Shows the current configuration
Full path	/profiles/onu/show
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 654.Table parameters description Table 539

Figure 653. CLI on line help on “show” command usage in this node context

```
/cli/profiles/onu> show ?

Usage:
  SHOW          Show the current configuration.
```

Figure 654.Output of ”show” command in this node context”

```
/cli/profiles/onu> show
+-------------------------------------------------------------------------------------------------------------------+
|ONUs Profiles                                                                                                      |
+-------------------------------------------------------------------------------+-----------------------------------+
|                                                                               |Ports                              |
+---+--------------------+-------+--------------------+--------------------+-----+-----+-----+-----+-----+-----+
|ID |Name                |Admin  |Vendor              |Model               |PON  |Eth  |RF   |VoIP |E1   |VEIP |
+---+--------------------+-------+--------------------+--------------------+-----+-----+-----+-----+-----+-----+
|1  |SFU-RF              |enable |CISCO               |ME4601-ONT-SFU-RF   |1    |1    |1    |0    |0    |0    |
|2  |RGW-RF              |enable |CISCO               |ME4624-ONT-RGW-RF   |1    |4    |1    |2    |0    |1    |
+---+--------------------+-------+--------------------+--------------------+-----+-----+-----+-----+-----+-----+
```

Table 539. “show” command output table parameters

Parameter	Description
ID	Indicates the Profile ID
Name	Indicates the Profile Name
Admin	Indicates Administrative State
Vendor	ONU Vendor Name
Model	ONU Model name
Ports	-
PON	Number of ONU GPON ports
Eth	Number of ONU Ethernet ports
RF	Number of ONU RF ports
VoIP	Number of ONU FXS ports
E1	Number of ONU E1 ports
VEIP	Number of ONU VEIP ports

"showconfig" command

Table 540. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/profiles/onu/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 655. CLI on line help on "showconfig" command usage in this node context

```
/cli/profiles/onu> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"pbits-to-pq" sub-node

"config" command

Table 541. "config" command information

Name	config
Description	Configures/activates an existing profile.
Full path	/profiles/pbits-to-pq/config
Mandatory Parameters	--ID
Screen Output	No

Figure 656. CLI on line help on "config" command usage in this node context

```
/cli/profiles/pbits-to-pq> config ?

Usage CONFIG:
  CONFIG                  Configure/activate an existing profile.

  <MANDATORY>
  --ID                    Identifies a table entry by ID, in this context.

  [OPTIONAL]
  --admin                 Administrative State. Enable/disable, in this context. (enable|disable)
  --name                  Define a name for the specified profile.
  --p-bits                Define the P-bits value (0..7).
```

```
--p-queue                Specify the Priority Queue (0..7)
```

“create” command

Table 542. "create" command information

Name	create
Description	Creates a new profile that assigns P-bits to Priority Queues
Full path	/profiles/pbits-to-pq/create
Mandatory Parameters	No
Screen Output	No

Figure 657. CLI on line help on “create” command usage in this node context

```
/cli/profiles/pbits-to-pq> create ?

Usage CREATE:
 CREATE                  Create a new profile that assigns P-bits to Priority Queues.

  [OPTIONAL]
  --ID                  Identifies a table entry by ID, in this context.
  --admin                 Administrative State. Enable/disable, in this context. (enable|disable)
  --name                  Define a name for the specified profile.
  --p-bits                Define the P-bits value (0..7).
  --p-queue                 Specify the Priority Queue (0..7)
```

“remove” command

Table 543. "remove" command information

Name	remove
Description	Removes an existing profile
Full path	/profiles/pbits-to-pq/remove
Mandatory Parameters	--ID
Screen Output	No

Figure 658. CLI on line help on “remove” command usage in this node context

```
/cli/profiles/pbits-to-pq> remove ?

Usage REMOVE:
 REMOVE                  Remove an existing profile.

  <MANDATORY>
  --ID                  Identifies a table entry by ID, in this context.
```

“show” command

Table 544. "show" command information

Name	show
Description	Shows existing profiles.
Full path	/profiles/pbits-to-pq/show
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 660.Table parameters description Table 545

Figure 659. CLI on line help on “show” command usage in this node context

```
/cli/profiles/pbits-to-pq> show ?

Usage SHOW:
 SHOW                    Show existing profiles.
```

Figure 660.Output of ”show” command in this node context”

```
/cli/profiles/pbits-to-pq> show
+-------------------------------------------------------------------------+
|P-bits to Priority Queue Profiles                                        |
+---+---------------------------------+-------+-------+---------------+
|   |                                 |       |       |P-bits         |
+---+---------------------------------+-------+-------+-+-+-+-+-+-+-+-+
|ID |Name                             |Admin  |P-Queue|0|1|2|3|4|5|6|7|
+---+---------------------------------+-------+-------+-+-+-+-+-+-+-+-+
|1  |default                          |enable |0      |x|x|x|x|x|x|x|x|
|1  |                                 |enable |1      | | | | | | | | |
|1  |                                 |enable |2      | | | | | | | | |
|1  |                                 |enable |3      | | | | | | | | |
|1  |                                 |enable |4      | | | | | | | | |
|1  |                                 |enable |5      | | | | | | | | |
|1  |                                 |enable |6      | | | | | | | | |
|1  |                                 |enable |7      | | | | | | | | |
+---+---------------------------------+-------+-------+-+-+-+-+-+-+-+-+
```

Table 545. “show” command output table parameters

Parameter	Description
ID	Identifies a table entry by ID, in this context.
Name	Indicates the Profile Name
Admin	Indicates Administrative State
Prior.	Indicates Priority

PCPs	Indicates PCP configuration bits (0 to 7)

“showconfig” command

Table 546. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/profiles/pbits-to-pq/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 661. CLI on line help on “showconfig” command usage in this node context

```
/cli/profiles/pbits-to-pq> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG              Print the command list that enforces the current configuration
```

“upstream-dba” sub-node

“config” command

Table 547. "config" command information

Name	config
Description	Configures GPON upstream DBA profiles.
Full path	/profiles/upstream-dba/config
Mandatory Parameters	--profileID
Screen Output	No

Figure 662. CLI on line help on “config” command usage in this node context

```
/cli/profiles/upstream-dba> config ?

Usage CONFIG:
  CONFIG                  Configure GPON upstream DBA profiles.

   <MANDATORY>
   --profileID            Identifies a profile by ID.

   [OPTIONAL]
```

```
  --BWeligibility          Defines how the non assured bandwidth is handled. (non-assured|best-
effort)
  --admin                  Administrative State. Enable/disable, in this context. (enable|disable)
  --assuredBW              Maximum bandwidth for DYN type with a granularity of 8kbps.
  --dba                    Set the MAC GPON DBA algorithm to 'Status Reporting' if enabled, or
'Traffic Monitoring' if disabled. (enable|disable)
  --fixedBW                Fixed bandwidth used in CBR and UBR types with a granularity of
8kbps.
  --maxBW                  Maximum bandwidth that results from the sum: Fixed BW + Assured
BW + bandwidth not assured.
  --name                   Define a name for this profile. (STRING 31)
  --type                   Identifies the profile type. (cbr|ubr|dyn)
```

"create" command

Table 548. "create" command information

Name	create
Description	Creates a new GPON upstream DBA profile
Full path	/profiles/upstream-dba/create
Mandatory Parameters	--fixedBW --name --type
Screen Output	No

Figure 663. CLI on line help on "create" command usage in this node context

```
/cli/profiles/upstream-dba> create ?

Usage CREATE:
  CREATE                   Create a new profile.

  <MANDATORY>
  --fixedBW                Fixed bandwidth used in CBR and UBR types with a granularity of
8kbps.
  --name                   Define a name for this profile. (STRING 31)
  --type                   Identifies the profile type. (cbr|ubr|dyn)

  [OPTIONAL]
  --BWeligibility          Defines how the non assured bandwidth is handled. (non-assured|best-
effort)
  --admin                  Administrative State. Enable/disable, in this context. (enable|disable)
  --assuredBW              Maximum bandwidth for DYN type with a granularity of 8kbps.
  --dba                    Set the MAC GPON DBA algorithm to 'Status Reporting' if enabled, or
'Traffic Monitoring' if disabled. (enable|disable)
  --maxBW                  Maximum bandwidth that results from the sum: Fixed BW + Assured
BW + bandwidth not assured.
  --profileID              Identifies a profile by ID.
```

“remove” command

Table 549. "remove" command information

Name	remove
Description	Removes an existing GPON upstream DBA profile
Full path	/profiles/upstream-dba/remove
Mandatory Parameters	--profileID
Screen Output	No

Figure 664. CLI on line help on “remove” command usage in this node context

```
/cli/profiles/upstream-dba> remove ?

Usage:
  REMOVE        Remove  an existing profile by ID.

   <MANDATORY>
   --profileID          Identifies a profile by ID.
```

“show” command

Table 550. "show" command information

Name	show
Description	Shows GPON upstream DBA profile.
Full path	/profiles/upstream-dba/show
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 666.Table parameters description Table 551

Figure 665. CLI on line help on “show” command usage in this node context

```
/cli/profiles/upstream-dba> show ?

Usage:
  SHOW          Show GPON upstream DBA profile.
```

Figure 666.Output of ”show” command in this node context”

```
/cli/profiles/upstream-dba> show
+-----------------------------------------------------------------------------------------------------------------------------------------+
|Upstream DBA Profiles                                                                                                                    |
+---+--------------------------------+----------+----+----------+----------+----------+---------------+---------------------+
|ID |Name                            |Admin     |Type|Fixed BW  |Assured BW|Max BW    |BW Eligibility |DBA Algorithm        |
+---+--------------------------------+----------+----+----------+----------+----------+---------------+---------------------+
|1  |FIXED_2M                        |enable    |cbr |2048      |0         |2048      |--             |disable              |
|2  |ASSURED_10M                     |enable    |dyn |0         |10048     |10048     |--             |disable              |
|3  |ASSURED_10M_MAX_20M             |enable    |dyn |0         |10048     |20096     |non-assured    |disable              |
|4  |MAX_20M                         |enable    |dyn |0         |0         |20096     |best-effort    |disable              |
|5  |FIXED_5M_ASSURED_10M_MAX_50M    |enable    |dyn |5056      |10048     |50240     |non-assured    |disable              |
+---+--------------------------------+----------+----+----------+----------+----------+---------------+---------------------+
```

Table 551. “show” command output table parameters

Parameter	Description
ID	Identifies upstream profile by ID
Name	Identifies upstream profile by name
Admin	Indicates upstream profile administrative state
Type	Indicates upstream profile type
Fixed BW	indicates upstream profile fixed bandwidth
Assured BW	Indicates upstream profile assured bandwidth
Max BW	Indicates upstream profile maximum bandwidth
BW eligibility	Indicates upstream profile bandwidth eligibility
DBA algorithm	Indicates if DBA algorithm is used

“showconfig” command

Table 552. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/profiles/upstream-dba/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 667. CLI on line help on “showconfig” command usage in this node context

```
/cli/profiles/upstream-dba> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

“voip” sub-node

“server” sub-node

“availableValues” command

Table 553. "availableValues" command information

Name	availableValues
Description	Shows Available Values for each parameter
Full path	/profiles/voip/server/ availableValues
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 669.Table parameters description Table 554

Figure 668. CLI on line help on “availableValues” command usage in this node context

```
/cli/profiles/voip/server> availableValues ?

Usage:
  AVAILABLEVALUES Show Available Values for each parameter
```

Figure 669.Output of ” availableValues” command in this node context

```
/cli/profiles/voip/server> availableValues
+-----------------------------------------------+
|Available Values                               |
+----------+-----+-----------------------------+
|Parameter |Value|Meaning                      |
+----------+-----+-----------------------------+
|voice-gw  |1    |Megaco GR 303 TR08           |
|          |2    |Megaco V5.x                  |
|          |3    |Megaco SoftSwitch            |
|          |4    |SIP BroadSoft                |
|          |5    |SIP Nortel/SoftSwitch        |
+----------+-----+-----------------------------+
```

Table 554. “availableValues” command output table parameters

Parameter	Description
Parameter	Identifies parameter by name
Value	Indicates parameter value
Meaning	Short description for each parameter value

"config" command

Table 555. "config" command information

Name	config
Description	Configures voip server profiles.
Full path	/profiles/voip/server/config
Mandatory Parameters	--profileID
Screen Output	No

Figure 670. CLI on line help on "config" command usage in this node context

```
/cli/profiles/voip/server> config ?

Usage:
  CONFIG        Configure

   <MANDATORY>
   --profileID              Identifies a profile by ID.

   [OPTIONAL]
   --admin                  Administrative State. Enable/disable, in this context. (enable|disable)
   --gw-ip                  IPv4 address for the default GW
   --name                   Insert a name STRING.
   --server-ip              IPv4 address for the VoIP server
   --server-port            The VoIP server port
   --voice-gw               The Voice Gateway to choose. (see 'availableValues') (1..5)
```

"create" command

Table 556. "create" command information

Name	create
Description	Creates a voip server profile
Full path	/profiles/voip/server/create
Mandatory Parameters	No
Screen Output	No

Figure 671. CLI on line help on "create" command usage in this node context

```
/cli/profiles/voip/server> create ?

Usage CREATE:
  CREATE                    Create a new VoIP srver profile.
```

```
[OPTIONAL]
--admin          Administrative State. Enable/disable, in this context. (enable|disable)
--gw-ip          IPv4 address for the default GW
--name           Define a name for this profile. (STRING 15)
--server-ip      IPv4 address for the VoIP server
--server-port    The VoIP server port
--voice-gw       The Voice Gateway to choose. (see 'availableValues') (1..5)
```

"remove" command

Table 557. "remove" command information

Name	remove
Description	Removes an existing profile
Full path	/profiles/voip/server/remove
Mandatory Parameters	--profileID
Screen Output	No

Figure 672. CLI on line help on "remove" command usage in this node context

```
/cli/profiles/voip/server> remove ?

Usage REMOVE:
 REMOVE          Remove an existing profile.

  <MANDATORY>
  --profileID    Identifies a profile by ID.
```

"show" command

Table 558. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/profiles/voip/server/show
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 674.Table parameters description Table 559

Figure 673. CLI on line help on "show" command usage in this node context

```
/cli/profiles/voip/server> show ?

Usage:
 SHOW      Show the current configuration.
```

Figure 674.Output of "show" command in this node context"

```
/cli/profiles/voip/server> show
+-------------------------------------------------------------------------------------------------------------------------+
|VoIP Server Profiles                                                                                                     |
+---+--------------------+----------+------------------------------+---------------+----------+-----------------+
|ID |Name                |Admin     |Voice Gateway                 |Server IP      |Port      |Default Gateway |
+---+--------------------+----------+------------------------------+---------------+----------+-----------------+
+---+--------------------+----------+------------------------------+---------------+----------+-----------------+
```

Table 559. "show" command output table parameters

Parameter	Description
ID	Identifies a VoIP server profile by ID
Name	Identifies a VoIP server profile by name
Admin	Indicates VoIP server profile administrative state
Voice Gateway	Indicates the voice gateway in use
Server IP	Indicates IPv4 address for the VoIP server
Port	Indicates VoIP server TCP/IP port
Default Gateway	Indicates default Gateway IPv4 address

"showconfig" command

Table 560. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/profiles/voip/server/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 675. CLI on line help on "showconfig" command usage in this node context

```
/cli/profiles/voip/server> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

“specific” sub-node

“config” command

Table 561. "config" command information

Name	config
Description	Configures voip specific profiles.
Full path	/profiles/voip/specific/config
Mandatory Parameters	--profileID
Screen Output	No

Figure 676. CLI on line help on “config” command usage in this node context

```
/cli/profiles/voip/specific> config ?

Usage CONFIG:
  CONFIG                Configure an existing profile.

   <MANDATORY>
   --profileID           Identifies a profile by ID.

   [OPTIONAL]
   --admin               Administrative State. Enable/disable, in this context. (enable|disable)
   --ftp-ip              Set the FTP server IP address
   --name                Define a name for this profile. (STRING 15)
```

“create” command

Table 562. "create" command information

Name	create
Description	Creates a new voip specific profile
Full path	/profiles/voip/specific/create
Mandatory Parameters	No
Screen Output	No

Figure 677. CLI on line help on “create” command usage in this node context

```
/cli/profiles/voip/specific> create ?

Usage CREATE:
  CREATE                Create a new VoIP specific profile.

   [OPTIONAL]
```

```
--admin          Administrative State. Enable/disable, in this context. (enable|disable)
--ftp-ip         Set the FTP server IP address
--name           Define a name for this profile. (STRING 15)
```

"remove" command

Table 563. "remove" command information

Name	remove
Description	Removes an existing profile
Full path	/profiles/voip/specific/remove
Mandatory Parameters	--profileID
Screen Output	No

Figure 678. CLI on line help on "remove" command usage in this node context

```
/cli/profiles/voip/specific> remove ?

Usage REMOVE:
 REMOVE              Remove an existing profile.

  <MANDATORY>
  --profileID        Identifies a profile by ID.
```

"show" command

Table 564. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/profiles/voip/specific/show
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 680.Table parameters description Table 565

Figure 679. CLI on line help on "show" command usage in this node context

```
/cli/profiles/voip/specific> show ?

Usage:
 SHOW        Show the current configuration.
```

Figure 680.Output of ”show” command in this node context”

```
/cli/profiles/voip/specific> show
+-------------------------------------------------+
|VoIP Specific Profiles                           |
+---+--------------------+---------+--------------+
|ID |Name                |Admin    |FTP Server    |
+---+--------------------+---------+--------------+
+---+--------------------+---------+--------------+
```

Table 565. “show” command output table parameters

Parameter	Description
ID	Identifies a profile by ID
Name	Identifies a profile by name
Admin	Indicates profile administrative state
FTP Server	Indicates FTP server IPv4 address

“showconfig” command

Table 566. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/profiles/voip/specific/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 681. CLI on line help on “showconfig” command usage in this node context

```
/cli/profiles/voip/specific> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

“radius” node

Figure 682.”radius” node tree

```
/cli/radius> tree
+ radius[@config, @show, @showconfig]
   + server[@config, @create, @remove, @show, @showconfig]
```

```
+ server-group[@config, @show, @showconfig]
```

This node allows managing global Radius parameters applicable to all RADIUS servers.

“radius” node and sub-nodes radius/server and radius/server-group aggregate the commands that allow the configuration of the RADIUS server list for use by the equipment.

- “radius” node allows the configuration of the equipment for its authentication on the RADIUS server; Commands on this node allow to handle NAS Identifier sent in RADIUS attribute 32 and the max number of times a request packet is retransmitted
- Sub-node radius/server allows managing RADIUS servers related information on the equipment, so that they CAN be used by the equipment:

  In order for the equipment to use a RADIUS server, the server IP address and the ports for sending authentication and accounting requests must be specified as well as the shared authentication and encryption secret key and the connection timeout value.

  Servers must be created/configured with these parameters on radius/server.
- Sub-node radius/server-group allows managing radius server-group related information on the equipment, so that they CAN be used by the equipment. Currently there is only one server-group that is used to specify the server list and priorities for authenticating users that try to log into the equipment (if RADIUS is enabled for the application where the user is trying to login). The RADIUS server-group cannot be removed.

Current configuration on each node/sub-node can be viewed by using command show.

Current configuration on each node/sub-node can be changed by using config command.

The group of commands and corresponding parameters and respective values to be used in order to perform /replicate the current configuration is displayed by using the command showconfig on the corresponding node/sub-node.

Notes

- This node and respective sub-nodes only handle RADIUS server(s) connection and login related configuration ON THE EQUIPMENT for its use by the equipment.
- This node and respective sub-nodes DO NOT configure RADIUS servers themselves
- This node and respective sub-nodes DO NOT configure equipment applications and or users for usage of RADIUS by AAA
- This node and respective sub-nodes DO NOT SET(enable) RADIUS for usage by the equipment
- Setting (enable) AAA method for equipment and applications (WebTI and CLI) is handled on the following nodes and sub-nodes:

  applications/aaa node

  applications/aaa/cli/aaa

  applications/aaa/webti/aaa

“config” command

Table 567. "config" command information

Name	config
Description	Configure Global RADIUS parameters.
Full path	/radius/config
Mandatory Parameters	No
Screen Output	No

Figure 683. CLI on line help on “config” command usage in this node context

```
/cli/radius> config ?

Usage CONFIG:
  CONFIG                Configure Global RADIUS parameters.

   [OPTIONAL]
   --nas-identifier      NAS Identifier sent in RADIUS attribute 32. (STRING 62)
  --retransmits          Max number of times a request packet is retransmitted.(1..128)
```

“show” command

This command displays information on the current files configuration, in the format of a table.

Table 568. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/radius/show
Mandatory Parameters	No
Screen Output	Table Figure 685. Table parameters are described in Table 569.

Figure 684. CLI on line help on “show” command usage in this node context

```
/cli/radius> show ?

Usage SHOW:
  SHOW                  Show the current configuration
```

Figure 685.Output of "show" command without arguments in this node context

```
/cli/radius> show
+-------------------------------------------------------------------------+
|RADIUS Global Configuration                                              |
+------------+------------------------------------------------------------+
|Retransmits |NAS ID                                                      |
+------------+------------------------------------------------------------+
|3           |                                                            |
+------------+------------------------------------------------------------+
```

Table 569. "show" command output table parameters

Parameter	Description
Retransmits	Max number of times a request packet is retransmitted.(1..128)
NAS ID	NAS Identifier sent in RADIUS attribute 32. (STRING 62)

"showconfig" command

Table 570. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/radius/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 686. CLI on line help on "showconfig" command usage in this node context

```
/cli/radius> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG              Print the command list that enforces the current configuration
```

"server" sub-node

This node allows managing Radius server configuration parameters.

"config" command

Table 571. "config" command information

Name	config
Description	Configures parameters for a given RADIUS server.
Full path	/radius/server/config
Mandatory Parameters	No
Screen Output	No

Figure 687. CLI on line help on "config" command usage in this node context

```
/cli/radius/server> config ?

Usage CONFIG:
  CONFIG                Configure parameters for a given RADIUS server.

   [OPTIONAL]
   --ID                 Identifies a table entry by ID, in this context.
   --acct-port          Port for accounting  requests. (none|1..65535)
   --admin              Administrative State. Enable/disable, in this context. (enable|disable)
   --auth-port          Port for authentication requests. (none|1..65535)
   --ip-address         IPv4 address
   --name               Server name (STRING 30)
   --shared-key         Shared secret between the device and the RADIUS server. (STRING
63)
   --timeout            Timeout value, in seconds, for request retransmissions.(1..30)
```

"create" command

Table 572. "create" command information

Name	create
Description	Creates a new RADIUS server
Full path	/radius/server/create
Mandatory Parameters	--name
Screen Output	No

Figure 688. CLI on line help on "create" command usage in this node context

```
/cli/radius/server> create ?

Usage CREATE:
  CREATE                Create a new RADIUS server.

   <MANDATORY>
   --name               Server name (STRING 30)
```

```
  [OPTIONAL]
  --ID                  Identifies a table entry by ID, in this context.
  --acct-port           Port for accounting  requests. (none|1..65535)
  --admin               Administrative State. Enable/disable, in this context. (enable|disable)
  --auth-port           Port for authentication requests. (none|1..65535)
  --ip-address          IPv4 address
  --shared-key          Shared secret between the device and the RADIUS server. (STRING
63)
   --timeout            Timeout value, in seconds, for request retransmissions.(1..30)
```

"remove" command

Table 573. "remove" command information

Name	remove
Description	Removes a RADIUS server
Full path	/radius/server/remove
Mandatory Parameters	No
Screen Output	No

Figure 689. CLI on line help on "remove" command usage in this node context

```
/cli/radius/server> remove ?

Usage REMOVE:
 REMOVE                Remove a RADIUS server.

  [OPTIONAL]
  --ID                  Identifies a table entry by ID, in this context.
   --name               Server name (STRING 30)
```

"show" command

Table 574. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/radius/server/show
Mandatory Parameters	No
Screen Output	Table Figure 691. Table parameters are described in Table 575.

Figure 690. CLI on line help on "show" command usage in this node context

```
/cli/radius/server> show ?
```

```
Usage SHOW:
 SHOW                  Show the current configuration

 [OPTIONAL]
 --ID                  Identifies a table entry by ID, in this context.
 --name                Server name (STRING 30)
```

Figure 691.Output of "show" command without arguments in this node context

```
/cli/radius/server> show
+-------------------------------------------------------------------------------------------------------+
|RADIUS Server List                                                                                     |
+-----+----------+--------------------------------+---------------+----------+----------+-------------+
|ID   |Admin     |Name                            |IP             |Auth. Port|Acct. Port|timeout (s)|
+-----+----------+--------------------------------+---------------+----------+----------+-------------+
+-----+----------+--------------------------------+---------------+----------+----------+-------------+
```

Table 575. "show" command output table parameters

Parameter	Description
ID	Identifies a table entry by ID, in this context
Admin	Indicates administrative state.(enable|disable)
Name	Identifies Radius server by name (STRING 30)
IP	Indicates Radius server IPv4 address
Auth. Port	Indicates Port for authentication requests. (none|1..65535)
Acct. Port	Indicates Port for accounting requests. (none|1..65535)
Timeout (s)	Indicates configured timeout value, in seconds, for request retransmissions.(1..3)

"showconfig" command

Table 576. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/radius/server/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 692. CLI on line help on "showconfig" command usage in this node context

```
/cli/radius/server> showconfig ?

Usage:
  SHOWCONFIG     Print the command list that enforces the current configuration
```

“server-group” sub-node

This node allows managing Radius server-group configuration parameters.

“config” command

Table 577. "config" command information

Name	config
Description	Configures parameters for a given RADIUS server.
Full path	/radius/server-group/config
Mandatory Parameters	No
Screen Output	No

Figure 693. CLI on line help on “config” command usage in this node context

```
/cli/radius/server-group> config ?

Usage CONFIG:
  CONFIG                Configure parameters for a given RADIUS server.

   [OPTIONAL]
   --ID                 Identifies a table entry by ID, in this context.
   --name                Server Group name (STRING 30)
   --priority           Server Priority. (none|1..16)
   --server-id           Specify a server by ID. Use 'none' to clear a priority.
  --server-name          Specify a server by Name
```

“show” command

Table 578. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/radius/server-group/show
Mandatory Parameters	No
Screen Output	Table Figure 695. Table parameters are described in Table 579.

Figure 694. CLI on line help on “show” command usage in this node context

```
/cli/radius/server-group> show ?

Usage SHOW:
  SHOW                  Show the current configuration
```

```
[OPTIONAL]
 --ID                    Identifies a table entry by ID, in this context.
```

Figure 695.Output of "show" command without arguments in this node context

```
/cli/radius/server-group> show
+-----------------------------------------------+
|RADIUS Server Group List                       |
+-----+----------+--------------------------------+
|ID   |Admin     |Name                            |
+-----+----------+--------------------------------+
|1    |enable    |login                           |
+-----+----------+--------------------------------+
```

Table 579. "show" command output table parameters

Parameter	Description
ID	Identifies a table entry by ID, in this context
Admin	Indicates administrative state.(enable|disable)
Name	Identifies Radius server-group by name (STRING 30)

"showconfig" command

Table 580. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/radius/server-group/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 696. CLI on line help on "showconfig" command usage in this node context

```
/cli/radius/server-group> showconfig ?

Usage:
  SHOWCONFIG     Print the command list that enforces the current configuration
```

"remote-eq" node

This node is used to manage remote equipments (ONUs) that the system is aware of (discovery sub-node).

In the discovery sub-node the user can see the available equipments, insert them to start being managed by this ME4620 OLT, or provision the ME4620 OLT for adding remote equipments later.

On the ONUs sub-node the user can make all the possible configurations on the remote equipment as well as view all the relative information.

On the status sub-node the user can view the status of links, and interfaces.

Figure 697."remote-eq" node tree

```
/cli/remote-eq> tree
+ remote-eq[@config-onu-id, @connect, @disconnect, @showconnected]
  + discovery[@change-reg-type, @command, @config, @create, @insert, @insert-all, @reboot,
@reboot-all, @remove, @remove-all, @show, @showconfig]
  + onu[@show, @showconfig]
    + analog-rf[@config, @show, @showconfig]
    + e1[@config-e1, @config-lsp, @config-pw, @show, @showconfig, @status]
    + esmc[@config, @show, @showconfig]
    + ethernet[@config, @show, @showconfig]
    + ext-vlan-tag-op[@config, @show, @showconfig]
      + operation-table[@config, @create, @remove, @show, @showconfig]
    + ptp[@config, @show, @showconfig]
    + services[@add, @availableValues, @config, @remove, @show, @showconfig]
      + mcast-package[@create, @remove, @show, @showconfig]
      + t-cont-mapping[@config, @show, @showconfig]
    + system[@config, @show, @showconfig]
    + t-cont[@config, @create, @remove, @show, @showconfig]
    + voip[@config, @show, @showconfig]
  + statistics[]
    + fec[@show]
  + status[@show]
    + ethernet[]
      + statistics[@show]
    + firmware[@activate, @commit, @stop-transfer]
    + gem-port[]
      + statistics[@show]
    + services[@show]
      + active-channels[@show]
      + statistics[]
        + counters[@availableValues, @show, @show-active, @start, @stop]
        + dhcp[@show]
        + igmp[@show]
    + t-cont[@show]
```

"config-onu-id" command

Table 581. "config-onu-id" command information

Name	config-onu-id
Description	Configure an ONU ID for one ONU in state 'new'.

Full path	/remote-eq/config-onu-id
Mandatory Parameters	--onuID --serial-number
Screen Output	No

Figure 698. CLI on line help on "config-onu-id" command usage in this node context

```
/cli/remote-eq> config-onu-id ?

Usage:
  CONFIG-ONU-ID   Configure an ONU ID for one ONU in state 'new'.

   <MANDATORY>
   --onuID              Identifies an ONU by ID, in this context.
   --serial-number      Identify an ONU by serial Number (STRING 16).
```

"connect" command

This command defines the remote Equipment that will be used for all following commands.

Table 582. "connect" command information

Name	connect
Description	Sets the ONU identifiers (slot, port, onuID) to be used in all future commands.
Full path	/remote-eq/connect
Mandatory Parameters	--onuID --port --slot
Screen Output	No

Figure 699. CLI on line help on "connect" command usage in this node context

```
/cli/remote-eq> connect ?

Usage:
  CONNECT       Set the ONU identifiers (slot, port, onuID) to be used in all future commands.

   <MANDATORY>
   --onuID              Identifies an ONU by ID, in this context.
   --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot               Identifies a slot.
```

“disconnect” command

Table 583. "disconnect" command information

Name	disconnect
Description	Clears the connected ONU identifiers.
Full path	/remote-eq/disconnect
Mandatory Parameters	This command has no parameters
Screen Output	No

Figure 700. CLI on line help on “disconnect” command usage in this node context

```
/cli/remote-eq> disconnect ?

Usage:
  DISCONNECT      Clear the connected ONU identifiers.
```

“showconnected” command

Table 584. " showconnected " command information

Name	showconnected
Description	Shows the connected ONU identifiers.
Full path	/remote-eq/showconnected
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 702. Table parameters description in Table 585.

Figure 701. CLI on line help on “showconnected” command usage in this node context

```
/cli/remote-eq> showconnected ?

Usage:
  SHOWCONNECTED   Show the connected ONU identifiers.
```

Figure 702.Output of ”showconnected” command in this node context”

```
/cli/remote-eq> showconnected
+-----------------------+
|Remote ONU Connected   |
+-----+----------+------+
|Slot |Port      |ONU ID|
+-----+----------+------+
| --  | --       | --   |
+-----+----------+------+
```

Table 585. “showconnected” command output table parameters

Parameter	Description
Slot	Identifies the slot
Port	Identifies the ME4620 OLT Port the ONU is connected to
ONU ID	Identifies ONU by ID

“discovery” sub-node

“change-reg-type” command

Table 586. "config" command information

Name	change-reg-type
Description	Modifies the register type for a single ONU.
Full path	/remote-eq/discovery/change-reg-type
Mandatory Parameters	--onuID --port --register-type --slot
Screen Output	No

Figure 703. CLI on line help on “change-reg-type” command usage in this node context

```
/cli/remote-eq/discovery> change-reg-type ?

Usage:
  CHANGE-REG-TYPE              Modify the register type for a single ONU.

   <MANDATORY>
   --onuID                     Identifies an ONU by ID, in this context.
   --port                      Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --register-type             Set the ONU registration type. (serial-number|password|both)
   --slot                      Identifies a slot.

   [OPTIONAL]
```

```
  --password                Set the password for ONU registration. Up to 10 ASCII characters or
precisely 20 in HEX format (STRING 20)
  --serial-number           Set the serial number for ONU registration (STRING 16)
```

"command" command

Table 587. "command" command information

Name	command
Description	Sends one command to a specific ONU.
Full path	/remote-eq/discovery/command
Mandatory Parameters	--type
Screen Output	No

Figure 704. CLI on line help on "command" command usage in this node context

```
/cli/remote-eq/discovery> command ?

Usage:
  COMMAND                   Send one command to a specific ONU.

  <MANDATORY>
  --type                    Send ITU-T G.984.3 'Disable_Serial_Number' or ONU MIB re-synch.
command. (disable-sn|enable-sn|resynch|forced-resynch)

  [OPTIONAL]
  --onuID                   Identifies an ONU by ID, in this context.
  --port                    Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                    Identifies a slot. (not used for LAG)
```

"config" command

Table 588. "config" command information

Name	config
Description	Identifies an ONU by (1)(slot,port,onuID) or (2)(serial-number). To modify the serial-number use (1)(2).
Full path	/remote-eq/discovery/config
Mandatory Parameters	No
Screen Output	No

Figure 705. CLI on line help on "config" command usage in this node context

```
/cli/remote-eq/discovery> config ?

Usage CONFIG:
  CONFIG                    Configure one ONU parameters.
```

```
  [OPTIONAL]
  --admin                 Administrative State. Enable/disable, in this context. (enable|disable)
  --fec-upstream          Forward Error Correction (FEC) on the Upstream side. (enable|disable)
  --omci-encryption       Encryption on the OMCI channel. (enable|disable)
  --onuID                 Identifies an ONU by ID, in this context.
  --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --profileID             Identifies a profile by ID.
  --slot                  Identifies a slot. (not used for LAG)
  --sw-upgrade-mode       Set the upgrade mode for this ONU. By choosing 'planned' the argument 'sw-version' must be given as well. (off|auto|planned)
  --sw-version            Define a string to match with a firmware file sw-version string. (STRING 15)
```

"create" command

Table 589. "create" command information

Name	create
Description	Creates a new ONU.
Full path	/remote-eq/discovery/create
Mandatory Parameters	--onuID --port --profileID --register-type --slot
Screen Output	No

Figure 706. CLI on line help on "create" command usage in this node context

```
/cli/remote-eq/discovery> create ?

Usage CREATE:
  CREATE                  Create a new ONU.

  <MANDATORY>
  --onuID                 Identifies an ONU by ID, in this context (0..127 or none).
  --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --profileID             Identifies a profile by ID.
  --register-type         Set the ONU registration type. (serial-number|password|sn-and-passwd|passwd-once)
  --slot                  Identifies a slot.

  [OPTIONAL]
  --admin                 Administrative State. Enable/disable, in this context. (enable|disable)
  --fec-upstream          Forward Error Correction (FEC) on the Upstream side. (enable|disable)
  --omci-encryption       Encryption on the OMCI channel. (enable|disable)
```

```
  --password                Set the password for ONU registration. Up to 10 ASCII characters or
precisely 20 in HEX format (STRING 20)
  --serial-number           Set the serial number for ONU registration (STRING 16)
  --sw-upgrade-mode         Set the upgrade mode for this ONU. By choosing 'planned' the
argument 'sw-version' must be given as well. (off|auto|planned)
  --sw-version              Define a string to match with a firmware file sw-version string.
(STRING 15)
```

"insert" command

Table 590. "insert" command information

Name	insert
Description	Starts managing a remote ONU. It must be in the 'new' state.
Full path	/ remote-eq/discovery/ insert
Mandatory Parameters	--profileID --serial-number
Screen Output	No

Figure 707. CLI on line help on "insert" command usage in this node context

```
/cli/remote-eq/discovery> insert ?

Usage INSERT:
  INSERT                    Start managing one remote ONU. ONUs must be in the 'New' state.

  <MANDATORY>
  --profileID               Identifies a profile by ID.
  --serial-number           Select the ONU by serial number. (STRING 16)

  [OPTIONAL]
  --admin                   Administrative State. Enable/disable, in this context. (enable|disable)
  --fec-upstream            Forward Error Correction (FEC) on the Upstream side.
(enable|disable)
  --omci-encryption         Encryption on the OMCI channel. (enable|disable)
  --onuID                   Identifies an ONU by ID, in this context.
  --sw-upgrade-mode         Set the upgrade mode for this ONU. By choosing 'planned' the
argument 'sw-version' must be given as well. (off|auto|planned)
  --sw-version              Define a string to match with a firmware file sw-version string.
(STRING 15)
```

"insert-all" command

Table 591. "insert-all" command information

Name	insert
Description	Starts managing all ONUs (in 'NEW' state) on a given Slot, or interface. Default values will be used for all parameters.
Full path	/remote-eq/discovery/insert-all

Mandatory Parameters	--slot
Screen Output	No

Figure 708. CLI on line help on "insert-all" command usage in this node context

```
/cli/remote-eq/discovery> insert-all ?

Usage INSERT-ALL:
  INSERT-ALL                Start managing all ONUs (in 'NEW' state) on a given Slot, or interface.
Default values will be used for all parameters.

   <MANDATORY>
   --slot                   Identifies a slot.

   [OPTIONAL]
   --port                   Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

"reboot" command

Table 592. "reboot" command information

Name	reboot
Description	Sends the reboot command to one ONU.
Full path	/remote-eq/discovery/reboot
Mandatory Parameters	No
Screen Output	No

Figure 709. CLI on line help on "reboot" command usage in this node context

```
/cli/remote-eq/discovery> reboot ?

Usage REBOOT:
  REBOOT                    Send the reboot command to one ONU.

   [OPTIONAL]
   --onuID                  Identifies an ONU by ID, in this context.
   --port                   Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot                   Identifies a slot. (not used for LAG)
```

"reboot-all" command

Table 593. "reboot-all" command information

Name	reboot-all
Description	Sends the reboot command to all ONUs (on a given Slot, or interface).

Full path	/remote-eq/discovery/reboot-all
Mandatory Parameters	--slot
Screen Output	No

Figure 710. CLI on line help on "reboot-all" command usage in this node context

```
/cli/remote-eq/discovery> reboot-all ?

Usage:
  REBOOT-ALL            Send the reboot command to all ONUs (on a given Slot, or interface).

  <MANDATORY>
  --slot                Identifies a slot.

  [OPTIONAL]
  --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

"remove" command

Table 594. "remove" command information

Name	remove
Description	Stops managing one remote ONU. It will return to the 'NEW' state if physically connected.
Full path	/remote-eq/discovery/remove
Mandatory Parameters	No
Screen Output	No

Figure 711. CLI on line help on "remove" command usage in this node context

```
/cli/remote-eq/discovery> remove ?

Usage REMOVE:
  REMOVE                Stop managing one remote ONU. It will return to the 'NEW' state if
physically connected.

  [OPTIONAL]
  --onuID               Identifies an ONU by ID, in this context.
  --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                Identifies a slot. (not used for LAG)
```

"remove-all" command

Table 595. "remove-all" command information

Name	remove-all

Description	Removes all inserted ONUs on a given Slot, or interface. Affected ONUs will return to the 'NEW' state if physically connected.
Full path	/remote-eq/discovery/remove-all
Mandatory Parameters	--slot
Screen Output	No

Figure 712. CLI on line help on "remove-all" command usage in this node context

```
/cli/remote-eq/discovery> remove-all ?

Usage:
  REMOVE-ALL        Remove all inserted ONUs on a given Slot, or interface. Affected ONUs will
return to the 'NEW' state if physically connected.

   <MANDATORY>
   --slot                    Identifies a slot.

   [OPTIONAL]
   --port                    Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1
```

"show" command

Table 596. "show" command information

Name	show
Description	Shows a list with all ONUs known. Filters can be applied with the arguments below.
Full path	/remote-eq/discovery/show
Mandatory Parameters	No
Screen Output	Table, Figure 714. Table parameters description in Table 597.

Figure 713. CLI on line help on "show" command usage in this node context

```
cli/remote-eq/discovery> show ?

Usage SHOW:
  SHOW                              Show a list with all ONUs known. Filters can be applied with the
arguments below.

   [OPTIONAL]
   --matching-serial-number         Show ONU matching the serial number specified (STRING 16)
   --only-new                       Show only entries with state equal to 'new'. (true|false)
   --password-format                Choose the display format for the Password column (ascii-string|hex-
string) default: hex-string
   --port                           Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --serial-number-format           Choose the display format for the Serial Number column (ascii-
string|hex-string) default: hex-string
   --slot                           Identifies a slot. (not used for LAG)
```

Figure 714.Output of ”show” command in this node context – partial view

```
/cli/remote-eq/discovery> show
+-----------------------------------------------------------------------------------------------------------------------------------------------------------------------
|Remote Equipments List -- Page 1
+----+------+---+-------+---------+-----------------+---------------------+---------------------+-------+----------------+--------------+-------+----------+
|Slot|Port  |ONU|Admin  |Reg. Type|Serial Number    |Password (HEX)       |Profile              |SW mode|SW version      |Status        |FEC    |OMCI-encr.|
+----+------+---+-------+---------+-----------------+---------------------+---------------------+-------+----------------+--------------+-------+----------+
|9   |PON 1 |1  |enable |S/N      |5054494E393A03F4 |46453144383541443430 |(1) SFU              |Off    | --             |OK            |disable|enable    |
|9   |PON 2 |0  |disable|S/N      |5054494E393A997F |46453144383541334538 |(1) SFU              |Off    | --             |New           |disable|enable    |
|9   |PON 2 |1  |enable |S/N      |5054494E393A074D |--                   |(1) SFU              |Off    | --             |Absent        |disable|enable    |
+----+------+---+-------+---------+-----------------+---------------------+---------------------+-------+----------------+--------------+-------+----------+
```

Table 597. “show” command output table parameters

Parameter	Description
Slot	Indicates a slot
Port	Indicates an ME4620 OLT port
ONU	Identifies the ONU by ONU ID (number)
Admin	Indicates the ONU administrative state
Reg. Type	Register type
Serial Number	Indicates the ONU serial number
Password (HEX)	Indicates password (Hexadecimal)
Profile	Identifies the ONU profile by ID and name
SW Mode	Indicates the ONU configured software upgrade mode
SW version	Indicates the SW version
Status	Indicates the ONT state
FEC	Indicates if FEC is enabled
OMCI-encr.	Indicates if OMCI encriptation is enabled

“showconfig” command

Table 598. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/remote-eq/discovery/showconfig
Mandatory Parameters	No
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 715. CLI on line help on “showconfig” command usage in this node context

```
/cli/remote-eq/discovery> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG                Print the command list that enforces the current configuration

  [OPTIONAL]
  --onuID                   Identifies an ONU by ID, in this context.
  --port                    Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

--slot	Identifies a slot. (not used for LAG)

"onu" sub-node

This node can be used to configure the remote ONU equipments.

All the commands in this node (and children) always apply to a specific ONU.

When executing each command the identification of the ONU must be provided.

In this sense all commands will have at least three parameters: slot, port, onuID.

If the user does not give those arguments, the command will use the information stored with **/remote-eq/connect**. If there is no information saved, it will display en error.

If there is information saved with the connect command, but the user gives another set of argument values, then the user given values take precedence over the existing ones.

All the **showconfi**g commands will have the three parameters as well.

So, their structure will change (for this node and children only) and be the one depicted below.

"show" command

This command will give the user an overview of how many ONUs exists and where (slot, port), This command should be executed when trying to find the right values for the arguments <slot,port,onuID>.

For each slot, displays all the PONs and respective ONUs IDs.

The table can grow to be very large, hence it accepts two optional parameters to filter the information displayed

Table 599. "show" command information

Name	show
Description	Displays a table with all ONU IDs and their respective interfaces. Can filter the results with the optional arguments.
Full path	/remote-eq/onu/show
Mandatory Parameters	No
Screen Output	Table, Figure 717 and Figure 718. Tables' parameters description in Table 600.

Figure 716. CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/onu> show ?

Usage:
  SHOW          Display a table with all ONU IDs and their respective interfaces. Can filter the
results with the optional arguments.

  [OPTIONAL]
  --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                Identifies a slot. (not used for LAG)
```

Figure 717.Output of ”show” command in this node context –partial view

```
/cli/remote-eq/onu> show

+-------------------------------------------------------------------------------------------+
|Available Values for arguments 'slot', 'port' and 'onuID' -- Page 1                        |
+------+------+-------------------------------------------------------------------------------+
|Slot  |Port  |ONUs IDs list                                                                  |
+------+------+-------------------------------------------------------------------------------+
|9     |PON 1 | 01                                                                            |
|9     |PON 2 | 00 01                                                                         |
|9     |PON 3 |                                                                               |
|9     |PON 4 |                                                                               |
|9     |PON 5 |                                                                               |
|9     |PON 6 |                                                                               |
|9     |PON 7 |                                                                               |
|9     |PON 8 |                                                                               |
|9     |PON 9 |                                                                               |
|9     |PON 10|                                                                               |
|9     |PON 11|                                                                               |
|9     |PON 12|                                                                               |
|9     |PON 13|                                                                               |
|9     |PON 14|                                                                               |
|9     |PON 15|                                                                               |
|9     |PON 16|                                                                               |
+------+------+-------------------------------------------------------------------------------+
```

Figure 718.Output of ”show” command, with arguments slot and port, in this node context

```
/cli/remote-eq/onu> show --slot=9 --port=pon.1

+-------------------------------------------------------------------------------------------+
|Available Values for arguments 'slot', 'port' and 'onuID' -- Page 1                        |
+------+------+-------------------------------------------------------------------------------+
|Slot  |Port  |ONUs IDs list                                                                  |
+------+------+-------------------------------------------------------------------------------+
|9     |PON 1 | 01                                                                            |
+------+------+-------------------------------------------------------------------------------+
```

Table 600. “show” command output table parameters

Parameter	Description
Slot	Indicates a slot
Port	Indicates an ME4620 OLT PON port
ONU ID list	Lists the ONUs connected to a PON port ONU ID (number)

"showconfig" command

Table 601. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/remote-eq/onu/showconfig
Mandatory Parameters	No
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 719. CLI on line help on "showconfig" command usage in this node context

```
/cli/remote-eq/onu> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG                Print the command list that enforces the current configuration

  [OPTIONAL]
  --onuID                   Identifies an ONU by ID, in this context.
  --port                    Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                    Identifies a slot. (not used for LAG)
```

"analog-rf" sub-node

"config" command

Table 602. "config" command information

Name	config
Description	Configures analog-RF parameters for a single ONU
Full path	/remote-eq/onu/analog-rf/config
Mandatory Parameters	No
Screen Output	No

Figure 720. CLI on line help on "config" command usage in this node context

```
/cli/remote-eq/onu/analog-rf> config ?

Usage CONFIG:
  CONFIG                    Configure Analog RF parameters for a single ONU.

  [OPTIONAL]
  --admin                   Administrative State. Enable/disable, in this context. (enable|disable)
  --filter                  Choose how many channels to filter. (all|15|25|35)
```

--onuID	Identifies an ONU by ID, in this context.
--port	Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
--slot	Identifies a slot. (not used for LAG)

"show" command

The show command used without parameters shows analog-RF information for the ONU specified with the command

/remote-eq/connect –onuID=xx --slot=yy –port=ccc.zz.

If there is no connected ONU, all the parameters must be specified to address the desired ONU otherwise the command will return an error message, Figure 721

Figure 721."show" command return error

```
/cli/remote-eq/onu/analog-rf> show
No remote ONU specified.
```

Table 603. "show" command information

Name	show
Description	Shows the current configuration
Full path	/remote-eq/onu/analog-rf/show
Mandatory Parameters	No
Screen Output	Table, Figure 723. Table parameters description in Table 604.

Figure 722. CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/onu/analog-rf> show ?

Usage:
  SHOW          Show the current configuration

  [OPTIONAL]
  --onuID                 Identifies an ONU by ID, in this context.
  --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                  Identifies a slot. (not used for LAG)
```

Figure 723.Output of ”show” command in this node context

```
/cli/remote-eq/onu/analog-rf> show --slot=9 --port=pon.2 --onuID=01
+-----------------------------------------------------------+
|Analog RF Interface                                        |
+---+----------+----------+-------------------------------+
|ID |Port      |Admin     |Filter                         |
+---+----------+----------+-------------------------------+
|0  |RF 1      |disable   |All channels                   |
+---+----------+----------+-------------------------------+
```

Table 604. “show” command output table parameters

Parameter	Description
ID	Identifies analog RF interface by ID
Port	Identifies analog RF interface by name
Admin	Indicates analog RF interface administrative state
Filter	Indicates type of channel filter used (how many filtered channels)

“showconfig” command

Table 605. "showconfig" command information

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/remote-eq/analog-rf/showconfig
Mandatory Parameters	No
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 724. CLI on line help on “showconfig” command usage in this node context

```
/cli/remote-eq/onu/analog-rf> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG                Print the command list that enforces the current configuration

  [OPTIONAL]
  --onuID                    Identifies an ONU by ID, in this context.
  --port                   Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                   Identifies a slot. (not used for LAG)
```

"e1" sub-node

"config-e1" command

Table 606. "config-e1" command information

Name	config-e1
Description	Configures E1 interfaces for a given ONU.
Full path	/remote-eq/onu/e1/config-e1
Mandatory Parameters	--ID
Screen Output	No

Figure 725. CLI on line help on "config-e1" command usage in this node context

```
/cli/remote-eq/onu/e1> config-e1 ?

Usage CONFIG-E1:
  CONFIG-E1                Configure E1 interfaces for a given ONU.

  <MANDATORY>
  --ID                     Identifies a table entry by ID, in this context.

  [OPTIONAL]
  --admin                  Administrative State. Enable/disable, in this context. (enable|disable)
  --jitter                 E1 timing configuration (dcr|re-timing|acr)
  --loop                   E1 loop configuration (no-loop|local|remote)
  --monitor                E1 Frame (none|g.704|g.704-g.706)
  --onuID                  Identifies an ONU by ID, in this context.
  --port                   Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                   Identifies a slot. (not used for LAG)
```

"config-lsp" command

Table 607. "config-lsp" command information

Name	config-lsp
Description	Configures LSP Ig/Eg paramters for a given ONU E1 interface.
Full path	/remote-eq/onu/e1/config-lsp
Mandatory Parameters	--ID --lsp-egress --lsp-ingress
Screen Output	No

Figure 726. CLI on line help on "config-lsp" command usage in this node context

```
/cli/remote-eq/onu/e1> config-lsp ?

Usage:
  CONFIG-LSP              Configure LSP Ig/Eg parameters for a given ONU E1 interface.

   <MANDATORY>
   --ID                  Identifies a table entry by ID, in this context.
   --lsp-egress            Egress LSP label (16..1048575)
   --lsp-ingress           Ingress LSP label (16..1048575)

   [OPTIONAL]
   --onuID                 Identifies an ONU by ID, in this context.
   --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot                Identifies a slot. (not used for LAG)
```

"config-pw" command

Table 608. "config-pw" command information

Name	config-pw
Description	Configures Pseudowire Ig/Eg parameters for a given ONU E1 interface.
Full path	/remote-eq/onu/e1/config-pw
Mandatory Parameters	--ID
Screen Output	No

Figure 727. CLI on line help on "config-pw" command usage in this node context

```
/cli/remote-eq/onu/e1> config-pw ?

Usage:
  CONFIG-PW               Configure Pseudowire Ig/Eg parameters for a given ONU E1 interface.

   <MANDATORY>
   --ID                  Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --onuID                 Identifies an ONU by ID, in this context.
   --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --pw-egress             Egress pseudowire label (16..1048575)
   --pw-ingress            Ingress pseudowire label (16..1048575)
   --slot                Identifies a slot. (not used for LAG)
```

"show" command

The show command used without parameters shows e1 information for the ONU specified with the command

/remote-eq/connect –onuID=xx --slot=yy –port=ccc.zz.

If there is no connected ONU, all the parameters must be specified to address the desired ONU otherwise the command will return an error message, Figure 728.

Figure 728."show" command return error

```
/cli/remote-eq/onu/e1> show
No remote ONU specified.
```

Table 609. "show" command information

Name	show
Description	Shows the current configuration
Full path	/remote-eq/onu/e1/show
Mandatory Parameters	No
Screen Output	Table.

Figure 729. CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/onu/e1> show ?

Usage:
  SHOW                  Show all the current E1 interfaces configuration for a given ONU.

  [OPTIONAL]
  --onuID               Identifies an ONU by ID, in this context.
  --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                Identifies a slot. (not used for LAG)
```

"showconfig" command

Table 610. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/cli/remote-eq/onu/e1/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 730. CLI on line help on "showconfig" command usage in this node context

```
/cli/remote-eq/onu/e1> showconfig ?

Usage:
  SHOWCONFIG              Print the command list that enforces the current configuration

  [OPTIONAL]
  --onuID                 Identifies an ONU by ID, in this context.
  --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                  Identifies a slot. (not used for LAG)
```

"status" command

The status command used without parameters shows e1interfaces status information for the ONU specified with the command

/remote-eq/connect –onuID=xx --slot=yy –port=ccc.zz.

If there is no connected ONU, all the parameters must be specified to address the desired ONU otherwise the command will return an error message, Figure 731

Figure 731."status" command return error

```
/cli/remote-eq/onu/e1> status
No remote ONU specified.
```

Table 611. "status" command information

Name	status
Description	Shows all the current E1 interfaces status for a given ONU.
Full path	/remote-eq/onu/e1/status
Mandatory Parameters	No
Screen Output	Table.

Figure 732. CLI on line help on "status" command usage in this node context

```
/cli/remote-eq/onu/e1> status ?

Usage:
  STATUS                  Show all the current E1 interfaces status for a given ONU.

  [OPTIONAL]
  --onuID                 Identifies an ONU by ID, in this context.
  --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                  Identifies a slot. (not used for LAG)
```

“esmc” sub-node

This sub-node allows managing synchronism parameters for a single ONU.

“config” command

Table 612. "config" command information

Name	config
Description	Configures Synchronism parameters for a single ONU
Full path	/remote-eq/onu/esmc/config
Mandatory Parameters	No
Screen Output	No

Figure 733. CLI on line help on “config” command usage in this node context

```
/cli/remote-eq/onu/esmc> config ?

Usage CONFIG:
  CONFIG                Configure Synchronism parameters for a single ONU.

  [OPTIONAL]
  --admin               Administrative State. Enable/disable, in this context. (enable|disable)
  --onuID               Identifies an ONU by ID, in this context (0..127 or none).
  --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                Identifies a slot. (not used for LAG)
```

“show” command

Table 613. "show" command information

Name	show
Description	Show the current configuration
Full path	/remote-eq/onu/esmc/show
Mandatory Parameters	No
Screen Output	Table, Figure 735. Table parameters description in Table 614.

Figure 734. CLI on line help on “show” command usage in this node context

```
/cli/remote-eq/onu/esmc> show ?

Usage SHOW:
  SHOW                  Show the current configuration

  [OPTIONAL]
```

```
  --onuID          Identifies an ONU by ID, in this context (0..127 or none).
  --port           Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot           Identifies a slot. (not used for LAG)
```

Figure 735.Output of "show" command in this node context

```
/cli> remote-eq/onu/esmc/show --onuID=1 --port=pon.1 --slot=3
+----------+
|ESMC      |
+----------+
|Admin     |
+----------+
|disable   |
+----------+
```

Table 614. "show" command output table parameters

Parameter	Description
Table title	ESMC.
Admin	Indicates ESMC administrative state (enable|disable)

"showconfig" command

Table 615. "showconfig" command information

Name	showconfig
Description	Print the command list that enforces the current configuration
Full path	/remote-eq/onu/esmc/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 736. CLI on line help on "showconfig" command usage in this node context

```
/cli/remote-eq/onu/esmc> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG              Print the command list that enforces the current configuration

  [OPTIONAL]
  --onuID          Identifies an ONU by ID, in this context (0..127 or none).
  --port           Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot           Identifies a slot. (not used for LAG)
```

"ethernet" sub-node

"config" command

Table 616. "config" command information

Name	config
Description	Configures ethernet parameters for the specified ONU
Full path	/remote-eq/onu/ethernet/config
Mandatory Parameters	--ID
Screen Output	No

Figure 737. CLI on line help on "config" command usage in this node context

```
/cli/remote-eq/onu/ethernet> config ?

Usage:
  CONFIG        Configure

  <MANDATORY>
  --ID                  Identifies a table entry by ID, in this context.

  [OPTIONAL]
  --admin               Administrative State. Enable/disable, in this context. (enable|disable)
  --media-type          Identifies the ethernet media type  (auto|10|100|1000 BaseT Full Duplex)
  --onuID               Identifies an ONU by ID, in this context.
  --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                Identifies a slot. (not used for LAG)
```

"show" command

Table 617. "show" command information

Name	show
Description	Shows the current configuration
Full path	/remote-eq/onu/ethernet/show
Mandatory Parameters	No
Screen Output	Table, Figure 739. Table parameters description in Table 618.

Figure 738. CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/onu/ethernet> show ?

Usage:
  SHOW          Show the current configuration
```

[OPTIONAL]	
--onuID	Identifies an ONU by ID, in this context.
--port	Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
--slot	Identifies a slot. (not used for LAG)

Figure 739.Output of "show" command in this node context

```
/cli/remote-eq/onu/ethernet> show --slot=9 --port=pon.2 --onuID=01
+-------------------------------------------------------------------------------------------+
|Ethernet Interfaces                                                                        |
+---+-------+------------------------------+---------------+---------------+---------------+
|ID |Admin  |Name                          |Media Type     |Flow Control   |Loop           |
+---+-------+------------------------------+---------------+---------------+---------------+
|0  |enable |Eth 1                         |auto           |Disabled       |none           |
+---+-------+------------------------------+---------------+---------------+---------------+
```

Table 618. "show" command output table parameters

Parameter	Description
ID	Identifies an interface by ID
Admin	Indicates interface administrative state
Name	Identifies an interface by name
Media Type	Indicates media type - Link Speed and Duplex (Autoneg,10BASE-T Full Duplex,100BASE-T Full Duplex,1000BASE-T Full Duplex)
Flow Control	Indicates if flow control (transmission and processing of Pause Frames) is enabled or disabled
Loop	Indicates if port loop is used

"showconfig" command

Table 619. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/remote-eq/onu/ethernet/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 740. CLI on line help on "showconfig" command usage in this node context

```
/cli/remote-eq/onu/ethernet> showconfig ?
```

```
Usage:
  SHOWCONFIG              Print the command list that enforces the current configuration

  [OPTIONAL]
  --onuID                 Identifies an ONU by ID, in this context.
  --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                  Identifies a slot. (not used for LAG)
```

"ext-vlan-tag-op" sub-node

"config" command

Table 620. "config" command information

Name	config
Description	Configures the Extended VLAN Tagging Operation Global Attributes
Full path	/remote-eq/onu/ext-vlan-tag-op/config
Mandatory Parameters	--onu-port
Screen Output	No

Figure 741. CLI on line help on "config" command usage in this node context

```
/cli/remote-eq/onu/ext-vlan-tag-op> config ?

Usage:
  CONFIG                  Configure the Extended VLAN Tagging Operation Global
                          Attributes

  <MANDATORY>
  --onu-port              Identifies an interface on the ONU

  [OPTIONAL]
  --dscp-to-pbit-profile-id  Specifies the profile for mapping DSCP to P bits
  --enable                Enable/disable Extended VLAN Tagging operations on the
                          specified ONU port. (enable|disable)
  --input-tpid            Special TPID value for operations on the input (filtering) side of
                          the table in HEX format.
  --onuID                 Identifies an ONU by ID, in this context.
  --output-tpid           Special TPID value for operations on the output (tagging) side of
                          the table in HEX format.
  --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                  Identifies a slot. (not used for LAG)
```

"show" command

Table 621. "show" command information

Name	show
Description	Shows Extended VLAN Tagging Operation information on this ONU
Full path	/remote-eq/onu/ext-vlan-tag-op/show
Mandatory Parameters	No
Screen Output	Table, Figure 743. Table parameters description in Table 622.

Figure 742. CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/onu/ext-vlan-tag-op> show ?

Usage:
  SHOW                  Show Extended VLAN Tagging Operation information on this ONU.

   [OPTIONAL]
   --onuID              Identifies an ONU by ID, in this context.
   --port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot               Identifies a slot. (not used for LAG)
```

Figure 743.Output of "show" command in this node context

```
/cli/remote-eq/onu/ext-vlan-tag-op> show --slot=9 --port=pon.2 --onuID=01
+-------------------------------------------------------------------------------------------------------+
|Extended VLAN Tagging Operation Config.                                                                |
+----------+----------+------------------+------------------+---------------------------------------+
|ONU Port  |Enable    |Input TPID        |Output TPID       |(ID) DSCP to P-bits Profile            |
+----------+----------+------------------+------------------+---------------------------------------+
|Eth 1     |disable   |0X8100            |0X8100            |(7) DSCP 0-63 -> P-bits 0              |
+----------+----------+------------------+------------------+---------------------------------------+
```

Table 622. "show" command output table parameters

Parameter	Description
ONU Port	Identifies an ONU port by ID
Enable	Flag; indicates if the port is enabled.
Input TPID	Identifies input VLAN tag
Output TPID	Indicates output VLAN tag
(ID)	DSCP to PBIT profile identifier (Number)
DSCP to PBIT profile	Indicates DSCP to PBIT profile bit mapping

"showconfig" command

Table 623. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/remote-eq/onu/ext-vlan-tag-op/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 744. CLI on line help on "showconfig" command usage in this node context

```
/cli/remote-eq/onu/ext-vlan-tag-op> showconfig ?

Usage:
  SHOWCONFIG              Print the command list that enforces the current configuration

  [OPTIONAL]
  --onuID                 Identifies an ONU by ID, in this context.
  --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                  Identifies a slot. (not used for LAG)
```

"operation-table" sub-node

"config" command

Table 624. "config" command information

Name	config
Description	Configures an Extended VLAN Tagging Operation Table entry
Full path	/remote-eq/onu/ext-vlan-tag-op/operation-table/config
Mandatory Parameters	--ID --onu-port
Screen Output	No

Figure 745. CLI on line help on "config" command usage in this node context

```
/cli/remote-eq/onu/ext-vlan-tag-op/operation-table> config ?

Usage CONFIG:
  CONFIG                  Configure an Extended VLAN Tagging Operation Table entry

  <MANDATORY>
  --ID                    Identifies a table entry by ID, in this context.
  --onu-port              Identifies an interface on the ONU
```

```
  [OPTIONAL]
  --admin                 Administrative State. Enable/disable, in this context. (enable|disable)
  --f-ethertype           Filter by ETHERTYPE (any|IPoE|PPPoE|ARP|IPv6_IPoE)
  --f-inner-priority      Filter by Inner Priority (0..7|any)
  --f-inner-tpid          Filter by Inner TPID (any|8100|input-dei-any|input-dei-0|input-dei-1)
  --f-inner-vid           Filter by Inner VID
  --onuID                 Identifies an ONU by ID, in this context.
  --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --serviceID-onu         Choose a ONU service by ID.
  --slot                  Identifies a slot. (not used for LAG)
  --t-op-vid              Treatment - VID Operation (add|replace|discard)
  --t-priority            Treatment - Priority (0..7|copy|derive-from-dscp)
  --t-tpid                Treatment - TPID (0x8100)
```

"create" command

Table 625. "create" command information

Name	create
Description	Creates an Extended VLAN Tagging Operation Table entry
Full path	/remote-eq/onu/ext-vlan-tag-op/operation-table/config
Mandatory Parameters	--onu-port --type
Screen Output	No

Figure 746. CLI on line help on "create" command usage in this node context

```
/cli/remote-eq/onu/ext-vlan-tag-op/operation-table> create ?

Usage CREATE:
  CREATE                  Create an Extended VLAN Tagging Operation Table entry

  <MANDATORY>
  --onu-port              Identifies an interface on the ONU
  --type                  Specifies the input frame type (untagged|single-tag)

  [OPTIONAL]
  --ID                    Identifies a table entry by ID, in this context.
  --admin                 Administrative State. Enable/disable, in this context. (enable|disable)
  --f-ethertype           Filter by ETHERTYPE (any|IPoE|PPPoE|ARP|IPv6_IPoE)
  --f-inner-priority      Filter by Inner Priority (0..7|any)
  --f-inner-tpid          Filter by Inner TPID (any|8100|input-dei-any|input-dei-0|input-dei-1)
  --f-inner-vid           Filter by Inner VID
  --onuID                 Identifies an ONU by ID, in this context.
  --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --serviceID-onu         Choose a ONU service by ID.
  --slot                  Identifies a slot. (not used for LAG)
  --t-op-vid              Treatment - VID Operation (add|replace|discard)
  --t-priority            Treatment - Priority (0..7|copy|derive-from-dscp)
```

--t-tpid	Treatment - TPID (0x8100)

"remove" command

Table 626. "remove" command information

Name	remove
Description	Removes an Extended VLAN Tagging Operation Table entry
Full path	/remote-eq/onu/ext-vlan-tag-op/operation-table/remove
Mandatory Parameters	--ID --onu-port
Screen Output	No

Figure 747. CLI on line help on "remove" command usage in this node context

```
/cli/remote-eq/onu/ext-vlan-tag-op/operation-table> remove ?

Usage:
  REMOVE                Remove an Extended VLAN Tagging Operation Table entry

  <MANDATORY>
  --ID                  Identifies a table entry by ID, in this context.
  --onu-port            Identifies an interface on the ONU

  [OPTIONAL]
  --onuID               Identifies an ONU by ID, in this context.
  --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                Identifies a slot. (not used for LAG)
```

"show" command

Table 627. "show" command information

Name	show
Description	Shows the Extended VLAN Tagging Operation Table on this ONU.
Full path	/remote-eq/onu/ext-vlan-tag-op/operation-table/show
Mandatory Parameters	No
Screen Output	Table Figure 749.Table parameters description Table 628

Figure 748. CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/onu/ext-vlan-tag-op/operation-table> show ?

Usage:
  SHOW                  Show the Extended VLAN Tagging Operation Table on this ONU.

  [OPTIONAL]
```

--onuID	Identifies an ONU by ID, in this context.
--port	Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
--slot	Identifies a slot. (not used for LAG)

Figure 749.Output of "show" command in this node context"

```
/cli/remote-eq/onu/ext-vlan-tag-op/operation-table> show --slot=9 --port=pon.2 --onuID=01
+-------------------------------------------------------------------------------------------------------------------------------------------------+
|Extended VLAN Tagging Operation Table                                                                                                            |
+---------------------+-----------------------------------------+-----------------------------------------------------------------------------------+
|                     |Filter                                   |Treatment                                                                          |
+--------+--+-------+-+---------------+--------------+---------+---------+-----------------------------------+-----------------+-----------------+
|ONU Port|ID|Admin  |T|Inner Pri/VID  |Inn. TPID     |ETHTYPE  |Operation|(ID) Service                       |Priority         |TPID             |
+--------+--+-------+-+---------------+--------------+---------+---------+-----------------------------------+-----------------+-----------------+
+--------+--+-------+-+---------------+--------------+---------+---------+-----------------------------------+-----------------+-----------------+
```

Table 628. "show" command output table parameters

Parameter Group	Parameter	Description
	ONU Port	ONU Port Identifier
	ID	Table entry numeric Identifier
	Admin	Indicates upstream profile administrative state
	T	
Filter	Inner Pri/VID	Indicates Priotity/VID
	Inner TPID	Indicates Inner TPID
	Ethertype	Indicates ETHERTYPE
Treatment	Operation	Indicates Operation
	(ID) Service	Indicates service by ID (number and Name Identifier
	Priority	Indicates Priority
	TPID	Indicates TPID

"showconfig" command

Table 629. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/remote-eq/onu/ext-vlan-tag-op/operation-table/showconfig
Mandatory Parameters	No
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 750. CLI on line help on "showconfig" command usage in this node context

```
/cli/remote-eq/onu/ext-vlan-tag-op/operation-table> showconfig ?

Usage:
  SHOWCONFIG                Print the command list that enforces the current configuration

   [OPTIONAL]
   --onuID                  Identifies an ONU by ID, in this context.
   --port                   Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

--slot	Identifies a slot. (not used for LAG)

"ptp" sub-node

"config" command

Table 630. "config" command information

Name	config
Description	Configures PTP parameters for a single ONU.
Full path	/remote-eq/onu/ptp/config
Mandatory Parameters	No
Screen Output	No

Figure 751. CLI on line help on "config" command usage in this node context

```
//cli/remote-eq/onu/ptp> config ?

Usage CONFIG:
  CONFIG                Configure PTP parameters for a single ONU.

  [OPTIONAL]
  --admin               Administrative State. Enable/disable, in this context. (enable|disable)
  --onuID               Identifies an ONU by ID, in this context (0..127 or none).
  --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                Identifies a slot. (not used for LAG)
```

"show" command

Table 631. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/remote-eq/onu/ptp/show
Mandatory Parameters	No
Screen Output	Table, Figure 753. table parameters description in Table 631.

Figure 752. CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/onu/ptp> show ?

Usage SHOW:
  SHOW                  Show the current configuration
```

```
[OPTIONAL]
--onuID          Identifies an ONU by ID, in this context (0..127 or none).
--port           Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
--slot           Identifies a slot. (not used for LAG)
```

Figure 753.Output of "show" command without arguments in this node context

```
/cli/remote-eq/onu/ptp> show --onuID=1 --port=pon.1 –slot=3
+----------+
|PTP       |
+----------+
|Admin     |
+----------+
|disable   |
+----------+
```

Table 632. "show" command output table parameters

Parameter	Description
Table title	PTP.
Admin	Indicates PTP administrative state (enable|disable)

"showconfig" command

Table 633. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/remote-eq/onu/ptp/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 754. CLI on line help on "showconfig" command usage in this node context

```
/cli/remote-eq/onu/ptp> showconfig ?

Usage SHOWCONFIG:
 SHOWCONFIG          Print the command list that enforces the current configuration

 [OPTIONAL]
 --onuID          Identifies an ONU by ID, in this context (0..127 or none).
 --port           Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
 --slot           Identifies a slot. (not used for LAG)
```

"services" sub-node

"add" command

Table 634. "add " command information

Name	add
Description	Adds an ME4620 OLT service to a specific ONU.
Full path	/remote-eq/onu/services/add
Mandatory Parameters	--name --serviceID
Screen Output	No

Figure 755. CLI on line help on "add" command usage in this node context

```
/cli/remote-eq/onu/services> add ?

Usage ADD:
  ADD                    Add an OLT service to a specific ONU.

  <MANDATORY>
  --name                 Define a name for the ONU Client Service. (STRING 65)
  --serviceID            Select an OLT service by ID.

  [OPTIONAL]
  --add-onu-port         Attach an ONU interface to an ONU service. See available values by
executing the command 'availableValues'.
  --admin                Administrative State. Enable/disable, in this context. (enable|disable)
  --dhcp-op18            DHCP Op.18 flag
  --dhcp-op37            DHCP Op.37 flag
  --dhcp-op82            DHCP Op.82 flag
  --encryption           Enable or disable encryption.
  --ethernet-profileID   View available Ethernet profile IDs in /profiles/ethernet (use zero
for no profile)
  --igmp                 IGMP (enable|disable)
  --ip-mgmt              If enabled, use this service for IP management of the ONU
(enable|disable)
  --mac-limit            Specifies the maximum number of MAC addresses allowed for a given
client service (unlimited or 1..99)
  --max-bw               Set the multicast group maximum bandwidth in Kbps (unlimited or
0..100000000)
  --max-groups           Set the maximum number of multicast groups (unlimited or 0..16384)
  --nativeVlan           All traffic through the client port will be untagged, upstream and
downstream. (enable|disable)
  --nni-ctag             Inner VLAN ID (client) on the network-facing (Ethernet) interface.
(1..4094)
  --onuID                Identifies an ONU by ID, in this context (0..127 or none).
  --pbits-to-pq-profile-id  Specify an existing P-bits to Priority Queue Profile
  --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --remoteID             Remote ID field added to DHCP packets in DHCPop.82 enabled
```

```
services. (STRING 63)
  --serviceID-onu          Choose a ONU service by ID.
  --slot                   Identifies a slot. (not used for LAG)
  --uni-ctag               VLAN ID delivered/received from the (Ethernet) subscriber-facing
interface at the ONU. (1..4094)
  --upstream-dba-profile-id  (mandatory for non-multicast services) View available Upstream
DBA profile IDs in /profiles/upstream-dba
  --use-global-dhcp-ops    Use the DHCP options defined in the OLT global service.
(enable|disable)
```

"availableValues" command

Table 635. "availableValues" command information

Name	availableValues
Description	Shows the available values for argument 'remote-port'
Full path	/remote-eq/onu/services/availableValues
Mandatory Parameters	No
Screen Output	Table Figure 757.Table parameters description Table 636

Figure 756. CLI on line help on "availableValues" command usage in this node context

```
/cli/remote-eq/onu/services> availableValues ?

Usage:
  AVAILABLEVALUES Show the available values for argument 'remote-port'.

  [OPTIONAL]
  --onuID          Identifies an ONU by ID, in this context.
  --port           Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot           Identifies a slot. (not used for LAG)
```

Figure 757.Output of "availableValues" command in this node context

```
/cli/remote-eq/onu/services> availableValues --slot=9 --port=pon.2 --onuID=01

Available Values for arguments 'add-onu-port and 'del-onu-port':
+-------------------------+
|Remote ONU Interface List|
+-------------------------+
|Eth 1                    |
+-------------------------+
```

Table 636. "availableValues" command output table parameters

Parameter	Description
Remote ONU Interface List	Lists the available interfaces on the Remote ONU

"config" command

Table 637. "config" command information

Name	config
Description	Configures/activates an existing service on this ONU.
Full path	/remote-eq/onu/services/config
Mandatory Parameters	--serviceID-onu
Screen Output	No

Figure 758. CLI on line help on "config" command usage in this node context

```
/cli/remote-eq/onu/services> config ?

Usage CONFIG:
  CONFIG                    Configure/activate an existing service on this ONU.

   <MANDATORY>
   --serviceID-onu              Choose a ONU service by ID.

   [OPTIONAL]
   --add-onu-port               Attach an ONU interface to an ONU service. See available values by
executing the command 'availableValues'.
   --admin                   Administrative State. Enable/disable, in this context. (enable|disable)
   --del-onu-port               Remove an ONU interface from an ONU service. See available values
by executing the command 'availableValues'.
   --dhcp-op18                  DHCP Op.18 flag
   --dhcp-op37                  DHCP Op.37 flag
   --dhcp-op82                  DHCP Op.82 flag
   --encryption                 Enable or disable encryption.
   --ethernet-profileID            View available Ethernet profile IDs in /profiles/ethernet (use zero
for no profile)
   --igmp                    IGMP (enable|disable)
   --ip-mgmt                    If enabled, use this service for IP management of the ONU
(enable|disable)
   --mac-limit                  Specifies the maximum number of MAC addresses allowed for a given
client service (unlimited or 1..99)
   --max-bw                     Set the multicast group maximum bandwidth in Kbps (unlimited or
0..100000000)
   --max-groups                 Set the maximum number of multicast groups (unlimited or 0..16384)
   --name                    Define a name for the ONU Client Service. (STRING 65)
   --nativeVlan                 All traffic through the client port will be untagged, upstream and
```

```
downstream. (enable|disable)
  --nni-ctag                Inner VLAN ID (client) on the network-facing (Ethernet) interface.
(1..4094)
  --onuID                   Identifies an ONU by ID, in this context (0..127 or none).
  --pbits-to-pq-profile-id  Specify an existing P-bits to Priority Queue Profile
  --port                    Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --remoteID                Remote ID field added to DHCP packets in DHCPop.82 enabled
services. (STRING 63)
  --serviceID               Select an OLT service by ID.
  --slot                    Identifies a slot. (not used for LAG)
  --uni-ctag                VLAN ID delivered/received from the (Ethernet) subscriber-facing
interface at the ONU. (1..4094)
  --upstream-dba-profile-id (mandatory for non-multicast services) View available Upstream
DBA profile IDs in /profiles/upstream-dba
  --use-global-dhcp-ops     Use the DHCP options defined in the OLT global service.
(enable|disable)
```

"remove" command

Table 638. "remove" command information

Name	remove
Description	Removes a service from a specific ONU.
Full path	/remote-eq/onu/services/remove
Mandatory Parameters	--serviceID-onu
Screen Output	No

Figure 759. CLI on line help on "remove" command usage in this node context

```
/cli/remote-eq/onu/services> remove ?

Usage:
  REMOVE        Remove a service from a specific ONU.

  <MANDATORY>
  --serviceID-onu       Choose a ONU service by ID.

  [OPTIONAL]
  --onuID               Identifies an ONU by ID, in this context.
  --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                Identifies a slot. (not used for LAG)
```

"show" command

Table 639. "show" command information

Name	show
Description	Shows Services information on this ONU. Give a service ID to see the full information for that service.
Full path	/remote-eq/onu/services/show
Mandatory Parameters	No
Screen Output	Tables Figure 761 and Figure 762.Tables parameters description in Table 640 and Table 641.

Figure 760. CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/onu/services> show ?

Usage:
  SHOW              Show Services information on this ONU. Give a service ID to see the full
information for that service.

  [OPTIONAL]
  --onuID           Identifies an ONU by ID, in this context.
  --port            Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --serviceID-onu   Choose a ONU service by ID.
  --slot            Identifies a slot. (not used for LAG).
```

Figure 761.Output of "show" command in this node context

```
/cli/remote-eq/onu/services> show --slot=9 --onuID=01 --port=pon.1
+-------------------------------------------------------------------------------------------------------------------------------------------------------+
|Remote ONU Service List                                                                                                                                |
+---+--------+--------------------+--------------------+--------------------+----------------+--------+--------+--------+--------+----------+
|ID |Admin   |ONU Service Name    |(ID) OLT Service-Name|Upstream DBA Profile|Ethernet Profile|NNI-CTAG|Native  |Encryp. |UNI-CTAG|IP mgmt   |
+---+--------+--------------------+--------------------+--------------------+----------------+--------+--------+--------+--------+----------+
|1  |enable  |Id 1                |(1) mb_stack_3001    |(6) MAX_1G_DYN      |(0) No Profile  |101     |disable |disable |14      |disable   |
|2  |enable  |Id 2                |(2) mb_stack_3002    |(6) MAX_1G_DYN      |(0) No Profile  |101     |disable |disable |15      |disable   |
+---+--------+--------------------+--------------------+--------------------+----------------+--------+--------+--------+--------+----------+
```

Figure 762.Output of ”show” command with argument –serviceID-onu in this node context

```
/cli/remote-eq/onu/services> show --slot=9 --onuID=01 --port=pon.1 --serviceID-onu=1
+-----------------------------------------------------------------------------------------------+
|Remote ONU Service -- (1) Id 1                                                                 |
+--------------------------+--------------------------------------------------------------------+
|Parameter                 |Value                                                               |
+--------------------------+--------------------------------------------------------------------+
|ID                        |1                                                                   |
|Admin                     |enable                                                              |
|Name                      |Id 1                                                                |
|OLT (ID)Service-Name      |(1) mb_stack_3001                                                   |
|Upstream DBA Profile      |(6) MAX_1G_DYN                                                      |
|Ethernet Profile          |(0) No Profile                                                      |
|P-bits to P-Queue Profile|--                                                                  |
|NNI-CTAG                  |101                                                                 |
|Native                    |disable                                                             |
|Encryption                |disable                                                             |
|UNI-CTAG                  |14                                                                  |
|IP Mgmt                   |disabled                                                            |
|Number of MACs            |unlimited                                                           |
|ONU Ports Attached        |VEIP 1                                                              |
+--------------------------+--------------------------------------------------------------------+
```

Table 640. “show” command output table parameters

Parameter	Description
ID	Identifies a table entry(Service) by ID
Admin	Indicates ONU service administrative state
Name	Identifies ONU service by name
OLT (ID) Service-Name	Identifies an ME4620 OLT service by ID and Name
Upstream DBA Profile	Indicates the upstream profile associated to the service by ID and name
Ethernet Profile	Indicates the Ethernet profile associated to the service by ID and name
P-bits to P-Queue Profile	Indicates the P-bits to P-Queue profile associated to the service.
NNI-CTAG	Indicates the client vlan used in the service
Native	Indicates if the Native service is active. It’s only possible to have a Native service by ONU port. In case this service is untagged in the client port, this option must be active.
Encryption	Indicates if the encryption is enabled
UNI-CTAG	Indicates the vlan delivered/received to/from the ONU
IP mgmt	Indicates if IP management is enabled

Table 641. “show” command, with argument serviceID-onu, output table parameters

Parameter	Description
ID	Identifies a table entry(Service) by ID
Admin	Indicates ONU service administrative state
ONU Service Name	Identifies ONU service by name
(ID) OLT Service-Name	Identifies an ME4620 OLT service by ID and Name
Upstream DBA Profile	Indicates the upstream profile associated to the service by ID and name
Ethernet Profile	Indicates the Ethernet profile associated to the service by ID and

	name
NNI-CTAG	Indicates the client vlan used in the service
Native	Indicates if the Native service is active. It's only possible to have a Native service by ONU port. In case this service is untagged in the client port, this option must be active.
Encryp.	Indicates if the encryption is enabled
UNI-CTAG	Indicates the vlan delivered/received to/from the ONU
IP mgmt	Indicates if IP management is enabled
Number of MACs	Indicates the configured maximum number of MAC addresses allowed for a given client service (unlimited or 1..99)
ONU Ports Attached	Indicates ONU Ports attached

"mcast-package" sub-node

"create" command

Table 642. "create" command information

Name	create
Description	Creates an association of a multicast channel package to a client service
Full path	/remote-eq/onu/services/mcast-package/create
Mandatory Parameters	--pkg-id --serviceID-onu
Screen Output	No

Figure 763. CLI on line help on "create" command usage in this node context

```
/cli/remote-eq/onu/services/mcast-package> create ?

Usage CREATE:
  CREATE                Create an association of a multicast channel package to a client service.

  <MANDATORY>
  --pkg-id              Identify one Multicast channel package by ID. (1..256)
  --serviceID-onu       Choose a ONU service by ID.

  [OPTIONAL]
  --onuID               Identifies an ONU by ID, in this context (0..127 or none).
  --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                Identifies a slot. (not used for LAG).
```

"remove" command

Table 643. "remove" command information

Name	remove
Description	Removes an association of a multicast channel package to a client
Full path	/remote-eq/onu/services/mcast-package/remove

Mandatory Parameters	--pkg-id --serviceID-onu
Screen Output	No

Figure 764. CLI on line help on "remove" command usage in this node context

```
/cli/remote-eq/onu/services/mcast-package> remove ?

Usage REMOVE:
  REMOVE                    Remove an association of a multicast channel package to a client
service.

   <MANDATORY>
   --pkg-id              Identify one Multicast channel package by ID. (1..256)
   --serviceID-onu          Choose a ONU service by ID.

   [OPTIONAL]
   --onuID               Identifies an ONU by ID, in this context (0..127 or none).
   --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot                Identifies a slot. (not used for LAG)
```

"show" command

Table 644. "show" command information

Name	show
Description	Shows multicast channel packages associated to the specified client service.
Full path	/remote-eq/onu/services/mcast-package/show
Mandatory Parameters	No
Screen Output	Table, Figure 766.Table parameters description Table 644Table 645.

Figure 765. CLI on line help on "show" command usage in this node context

```
 /cli/remote-eq/onu/services/mcast-package> show ?

 Usage SHOW:
   SHOW                  Show multicast channel packages associated to the specified client
service.

    <MANDATORY>
    --serviceID-onu          Choose a ONU service by ID.

    [OPTIONAL]
    --onuID               Identifies an ONU by ID, in this context (0..127 or none).
    --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot                Identifies a slot. (not used for LAG)
```

Figure 766.Output of "show" command in this node context"

```
/cli/remote-eq/onu/services/mcast-package> show --slot=2 --port=pon.1
--onuID=12 --serviceID-onu=1
+-------------------------------------------------------------------+
|Multicast channel packages Associations - Remote ONU Service 1     |
+------+------------------------------------------------------------+
|Pkg ID|Name                                                        |
+------+------------------------------------------------------------+
+------+------------------------------------------------------------+
```

Table 645. "show" command output table parameters

Parameter	Description
Table Name	Multicast channel packages Associations - Remote ONU Service # (selected number – serviceID-onu)
Pkg ID	Identifies Multicast channel package by Package ID - number(1..256).
Name	Identifies Multicast channel package

"showconfig" command

Table 646. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/remote-eq/onu/services/mcast-package/showconfig
Mandatory Parameters	No
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 767. CLI on line help on "showconfig" command usage in this node context

```
/cli/remote-eq/onu/services/mcast-package> showconfig ?

Usage SHOWCONFIG:
 SHOWCONFIG              Print the command list that enforces the current configuration

 [OPTIONAL]
 --onuID                 Identifies an ONU by ID, in this context (0..127 or none).
 --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
 --slot                  Identifies a slot. (not used for LAG)
```

"t-cont-mapping" sub-node

"config" command

Table 647. "config" command information

Name	config
Description	Configure an association of a specific Priority Queue from a service to a T-CON
Full path	/remote-eq/onu/services/t-cont-mapping/config
Mandatory Parameters	--p-queue --serviceID-onu
Screen Output	No

Figure 768. CLI on line help on "config" command usage in this node context

```
/cli/remote-eq/onu/services/t-cont-mapping> config ?

Usage CONFIG:
  CONFIG                  Configure an association of a specific Priority Queue from a service to
a T-CONT.

  <MANDATORY>
  --p-queue               Specify the Priority Queue (0..7)
  --serviceID-onu           Choose a ONU service by ID.

  [OPTIONAL]
  --onuID                 Identifies an ONU by ID, in this context.
  --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                  Identifies a slot. (not used for LAG)
  --t-cont-id               Specify an existing T-CONT (0 for none)
```

"show" command

Table 648. "show" command information

Name	show
Description	Shows T-CONT information on this ONU
Full path	/remote-eq/onu/services/t-cont-mapping/show
Mandatory Parameters	No
Screen Output	Table, Figure 770. Table parameters description in Table 649.

Figure 769. CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/onu/services/t-cont-mapping> show ?
```

```
Usage:
  SHOW                  Show T-CONT information on this ONU.

  [OPTIONAL]
  --onuID               Identifies an ONU by ID, in this context.
  --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --serviceID-onu       Choose a ONU service by ID.
  --slot                Identifies a slot. (not used for LAG)
```

Figure 770.Output of "show" command in this node context

```
/cli/remote-eq/onu/services/t-cont-mapping> show --onuID=1 --port=pon.1 --serviceID-onu=1 --slot=9
+-------------------------------------------------------------------------------------------------------------+
|ONU Service to T-CONT associations                                                                           |
+-------------------------------------------------------------------------------------------------------------+
|Remote ONU Service -- (1)                                                                                    |
+-----------------------------------+-------+--------------+-----------------------------------+
|ONU Service ID                     |P-Queue|P-bits        |T-CONT (Upstream Profile)          |
+-----------------------------------+-------+--------------+-----------------------------------+
+-----------------------------------+-------+--------------+-----------------------------------+
```

Table 649. "show" command output table parameters

Parameter	Description
ONU Service ID	Identifies an ONU Service by ID
P-Queue	Indicates Service P-Queue
P-bits	Indicates used P-bits
T-CONT (Upstream Profile)	Indicates used T-CONT

"showconfig" command

Table 650. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/remote-eq/onu/services/t-cont-mapping/showconfig
Mandatory Parameters	No
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 771. CLI on line help on "showconfig" command usage in this node context

```
/cli/remote-eq/onu/services/t-cont-mapping> showconfig ?

Usage:
  SHOWCONFIG            Print the command list that enforces the current configuration

  [OPTIONAL]
  --onuID               Identifies an ONU by ID, in this context.
```

--port	Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
--slot	Identifies a slot. (not used for LAG)

"system" sub-node

"config" command

Table 651. "config" command information

Name	config
Description	Configures system information for the specified ONU
Full path	/remote-eq/onu/system/config
Mandatory Parameters	No
Screen Output	No

Figure 772. CLI on line help on "config" command usage in this node context

```
/cli/remote-eq/onu/system> config ?

Usage:
 CONFIG        Configure

  [OPTIONAL]
  --contact          Set contact information as appropriate
  --description      Set a description, in this context.
  --location         Set the system location as appropriate
  --name             Insert a name STRING.
  --onuID            Identifies an ONU by ID, in this context.
  --port             Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot             Identifies a slot. (not used for LAG)
```

"show" command

Table 652. "show" command information

Name	show
Description	Shows the current configuration
Full path	/remote-eq/onu/system/show
Mandatory Parameters	No
Screen Output	Table, Figure 774. Table parameters description in Table 653.

Figure 773. CLI on line help on “show” command usage in this node context

```
/cli/remote-eq/onu/system> show ?

Usage:
  SHOW          Show the current configuration

  [OPTIONAL]
  --onuID                 Identifies an ONU by ID, in this context.
  --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --serial-number         Select the ONU by serial number. (STRING 16)
  --slot                  Identifies a slot. (not used for LAG)
```

Figure 774.Output of ”show” command in this node context

```
/cli/remote-eq/onu/system> show --slot=2 --port=pon.1 --onuID=22
+-------------------------------------------------------------------------------------------------------+
|System Parameters                                                                                      |
+-------------------------+-----------------------------------------------------------------------------+
|Parameter                |Value                                                                        |
+-------------------------+-----------------------------------------------------------------------------+
|Equipment Name           |5054494E07C12E65                                                             |
|Description              |ONU 2.1.22                                                                   |
|Serial Number            |5054494E07C12E65                                                             |
|Contact                  |                                                                             |
|Location                 |                                                                             |
+-------------------------+-----------------------------------------------------------------------------+
|Date on equipment        |2015/10/20                                                                   |
|Time on equipment        |14:24:58                                                                     |
+-------------------------+-----------------------------------------------------------------------------+
|HW Version               |ONTRGW1269U002                                                               |
|Active SW Version        |3RGW030500a111                                                               |
|Model                    |GR2402G                                                                      |
+-------------------------+-----------------------------------------------------------------------------+
|Administrative Status    |Registered                                                                   |
+-------------------------+-----------------------------------------------------------------------------+
```

Table 653. “show” command output table parameters

Parameter	Description
Equipment Name	Indicates the equipment name
Description	Brief description of the equipment
Serial Number	Indicates the ONU serial number
Contact	Indicates the entity responsible for this equipment
Location	Indicates the equipment location
Date on equipment	Indicates the date on the equipment
Time on the equipment	Indicates the time on the equipment
HW Version	Indicates the equipment hardware version
Administrative Status	Indicates the equipment administrative state
Model	Indicates ONU model
Administrative Status	Indicates the equipment administrative state

"showconfig" command

Table 654. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/remote-eq/onu/system/showconfig
Mandatory Parameters	No
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 775. CLI on line help on "showconfig" command usage in this node context

```
/cli/remote-eq/onu/system> showconfig ?

Usage:
  SHOWCONFIG                Print the command list that enforces the current configuration

  [OPTIONAL]
  --onuID                   Identifies an ONU by ID, in this context.
  --port                    Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                    Identifies a slot. (not used for LAG)
```

"t-cont" sub-node

"config" command

Table 655. "config" command information

Name	config
Description	Configures/activates an existing T-CONT on this ONU.
Full path	/remote-eq/onu/t-cont/config
Mandatory Parameters	--ID
Screen Output	No

Figure 776. CLI on line help on "config" command usage in this node context

```
/cli/remote-eq/onu/t-cont> config ?

Usage:
  CONFIG                    Configure/activate an existing T-CONT on this ONU.

  <MANDATORY>
  --ID                      Identifies a table entry by ID, in this context.
```

```
[OPTIONAL]
--admin                    Administrative State. Enable/disable, in this context. (enable|disable)
--onuID                    Identifies an ONU by ID, in this context.
--port                     Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
--slot                     Identifies a slot. (not used for LAG)
--upstream-dba-profile-id  View available Upstream DBA profile IDs in /profiles/upstream-dba
```

"create" command

Table 656. "create" command information

Name	create
Description	Adds a T-CONT to a specific ONU.
Full path	/remote-eq/onu/t-cont/create
Mandatory Parameters	No
Screen Output	No

Figure 777. CLI on line help on "create" command usage in this node context

```
/cli/remote-eq/onu/t-cont> create ?

Usage:
 CREATE                    Add a T-CONT to a specific ONU.

 [OPTIONAL]
 --ID                      Identifies a table entry by ID, in this context.
 --admin                   Administrative State. Enable/disable, in this context. (enable|disable)
 --onuID                   Identifies an ONU by ID, in this context.
 --port                    Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
 --slot                    Identifies a slot. (not used for LAG)
 --upstream-dba-profile-id View available Upstream DBA profile IDs in /profiles/upstream-dba
```

"remove" command

Table 657. "remove" command information

Name	remove
Description	Removes a T-CONT from a specific ONU.
Full path	/remote-eq/onu/t-cont/remove
Mandatory Parameters	No
Screen Output	No

Figure 778. CLI on line help on "remove" command usage in this node context

```
/cli/remote-eq/onu/t-cont> remove ?
```

```
Usage:
  REMOVE                Remove a T-CONT from a specific ONU.

  [OPTIONAL]
  --ID                  Identifies a table entry by ID, in this context.
  --onuID               Identifies an ONU by ID, in this context.
  --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                Identifies a slot. (not used for LAG)
```

"show" command

Table 658. "show" command information

Name	show
Description	Shows T-CONT information on this ONU.
Full path	/remote-eq/onu/t-cont/show
Mandatory Parameters	No
Screen Output	Table Figure 780.Table parameters description Table 659

Figure 779. CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/onu/t-cont> show ?

Usage:
  SHOW                  Show T-CONT information on this ONU.

  [OPTIONAL]
  --onuID               Identifies an ONU by ID, in this context.
  --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                Identifies a slot. (not used for LAG)
```

Figure 780.Output of "show" command in this node context"

```
/cli/remote-eq/onu/t-cont> show --onuID=1 --port=pon.1 --slot=9
+---------------------------------+
|ONU T-CONT List                  |
+---+---------+-------------------+
|ID |Admin    |Upstream DBA Profile|
+---+---------+-------------------+
+---+---------+-------------------+
```

Table 659. "show" command output table parameters

Parameter	Description
ID	Table entry numeric Identifier
Admin	Indicates administrative state
Upstream DBA profile	Indicates upstream profile

"showconfig" command

Table 660. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/remote-eq/onu/t-cont/showconfig
Mandatory Parameters	No
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 781. CLI on line help on "showconfig" command usage in this node context

```
/cli/remote-eq/onu/t-cont> showconfig ?

Usage:
  SHOWCONFIG                Print the command list that enforces the current configuration

  [OPTIONAL]
  --onuID                   Identifies an ONU by ID, in this context.
  --port                    Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                    Identifies a slot. (not used for LAG)
```

"voip" sub-node

"config" command

Table 661. "config" command information

Name	config
Description	Configures a remote ONU VoIP interface
Full path	/remote-eq/onu/voip/config
Mandatory Parameters	--onu-voip-port
Screen Output	No

Figure 782. CLI on line help on "config" command usage in this node context

```
/cli/remote-eq/onu/voip> config ?

Usage:
  CONFIG        Configure a remote ONU VoIP interface

  <MANDATORY>
  --onu-voip-port           Identifies the VoIP port to be configured. (e.g voip.1)
```

```
[OPTIONAL]
--admin              Administrative State. Enable/disable, in this context. (enable|disable)
--client-ip          VoIP client IP address. If the value is 0.0.0.0, the IP address will be
                     obtained by DHCP.
--ftp-passwd         User password to login in the FTP server to get the XML file with the
                     VoIP client configuration
--ftp-username       User name to login in the FTP server to get the XML file with the VoIP
                     client configuration
--hold-over-time     Time during which POTS loop voltage is held up when the ONU is not
                     ranged on the GPON.
--ip-mask            IP Network Mask.
--onuID              Identifies an ONU by ID, in this context.
--port               Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
--remote-file        This is the .xml file that contains the client configuration (ex.supported
                     codecs, number, etc)
--rx-gain            Specifies the receiver gain (dB) (-12..6)
--slot               Identifies a slot. (not used for LAG)
--specific-profile   Identifies a VoIP specific profile by ID (manage profiles in
                     '/profiles/voip/specific-profiles/' node)
--termination-id     Used for MEGACO(H.248) to identify the line termination
--tx-gain            Specifies the transmitter gain (dB) (-12..6)
--voip-profile       Identifies a VoIP profile by ID (manage profiles in '/profiles/voip/' node)
```

"show" command

Table 662. "show" command information

Name	show
Description	Shows the current configuration
Full path	/remote-eq/onu/voip/show
Mandatory Parameters	No
Screen Output	Table, Figure 784. Table parameters description in Table 663.

Figure 783. CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/onu/voip> show ?

Usage:
  SHOW          Show the current VoIP interface configuration.

  [OPTIONAL]
  --onu-voip-port       Identifies the VoIP port to be configured. (e.g. voip.1)
  --onuID               Identifies an ONU by ID, in this context.
  --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                Identifies a slot. (not used for LAG)
```

Figure 784.Output of "show" command in this node context

```
/cli/remote-eq/onu/voip> show --onuID=1 --port=pon.1 --slot=9
+-------------------------------------------------------------------------+
|VoIP Interfaces                                                          |
+----------+----------+--------------------+---------------+---------------+
|VoIP Port |Admin     |Hold Over Time (s)  |Gain Rx (dB)   |Gain Tx (dB)   |
+----------+----------+--------------------+---------------+---------------+
+----------+----------+--------------------+---------------+---------------+
```

Table 663. "show" command output table parameters

Parameter	Description
VoIP Port	Port Identifier
Admin	Indicates administrative state
Hold Over Time (s)	Indicates the time during which POTS loop voltage is held up when the ONU is not ranged on the PON. When the ONU ranges successfully on the PON, it restores POTS loop voltage immediately and reset the timer
Gain Rx (dB)	Indicates the specified receiver gain (-12.0…+6 dBm)
Gain Tx (dB)	Indicates the specified transmitter gain (-12.0…+6 dBm)

"showconfig" command

Table 664. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/remote-eq/onu/voip/showconfig
Mandatory Parameters	No
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 785. CLI on line help on "showconfig" command usage in this node context

```
/cli/remote-eq/onu/voip> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG                Print the command list that enforces the current configuration

  [OPTIONAL]
  --onu-voip-port           Identifies the VoIP port to be configured. (e.g. voip.1)
  --onuID                   Identifies an ONU by ID, in this context.
  --port                    Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                    Identifies a slot. (not used for LAG)
```

“statistics” sub-node

“fec” sub-node

“show” command

Table 665. "show" command information

Name	show
Description	Shows FEC statistics in the upstream direction
Full path	/remote-eq/statistics/fec/show
Mandatory Parameters	No
Screen Output	Table.

Figure 786. CLI on line help on “show” command usage in this node context

```
/cli/remote-eq/statistics/fec> show ?

Usage:
  SHOW          Show FEC statistics in the upstream direction

   [OPTIONAL]
   --direction              Specify the direction (upstream|downstream)
   --onuID                    Identifies an ONU by ID, in this context.
   --port                     Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot                     Identifies a slot. (not used for LAG)
```

“status” sub-node

“show” command

This command displays status information on all the parameters for the specified ONU:

- Ethernet Status Table
- Analog RF Status Table
- GPON Status Table
- Service Status Table
- Firmware Status Table

Table 666. "show" command information

Name	show
Description	Shows status information on all the parameters for the specified ONU
Full path	/remote-eq/status/show

Mandatory Parameters	No
Screen Output	Tables, Figure 788. Tables' parameters description in Table 667 to Table 672.

Figure 787. CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/status> show ?

Usage:
  SHOW          Show

  [OPTIONAL]
  --onuID                 Identifies an ONU by ID, in this context.
  --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                  Identifies a slot. (not used for LAG)
```

Figure 788.Output of "show" command in this node context

```
/cli/remote-eq> status/show --onuID=1 --port=pon.1 --slot=9

+-----------------------------------------------------------+
|Ethernet Status (Slot:9 Port:'PON 1' ONU ID:1)             |
+------------+-------+--------------------------------+------+
|Remote Port|Admin  |Type                             |Link  |
+------------+-------+--------------------------------+------+
|Eth 1       |enable |--                               |Not OK|
+------------+-------+--------------------------------+------+

+-----------------------------------------------------------+
|Analog RF Status (Slot:9 Port:'PON 1' ONU ID:1)            |
+-----------+-------+---------------------------------------+
|Port       |Admin  |State                                  |
+-----------+-------+---------------------------------------+
|RF 1       |disable|--                                     |
+-----------+-------+---------------------------------------+

+-------------------------------------------------------------------------------------------------------------------------+
|GPON Status (Slot:9 Port:'PON 1' ONU ID:1)                                                                               |
+----------+---------------------+---------------------+---------------------+---------------------+---------------------+
|Port      |Rx Power 1550nm (dbm)|Rx Power 1490nm (dbm)|Tx Power 1310nm (dbm)|Temperature (C)      |Distance (Km)        |
+----------+---------------------+---------------------+---------------------+---------------------+---------------------+
|Pon 1     |-inf.                |-24.13               |2.60                 |34.00                |0.00                 |
+----------+---------------------+---------------------+---------------------+---------------------+---------------------+

+-----------------------------------------------+
|Services Status (Slot:9 Port:'PON 1' ONU ID:1) |
+-----------------------------------+-----------+
|(ID) ONU Service Name              |Admin      |
+-----------------------------------+-----------+
|(1) Id 1                           |disable    |
|(2) Id 2                           |enable     |
|(3) Id 3                           |disable    |
|(4) Id 4                           |disable    |
|(5) Id 5                           |enable     |
+-----------------------------------+-----------+

+-------------------------------------------------------------------------------+
|Firmware Status (Slot:9 Port:'PON 1' ONU ID:1)                                 |
+------------+------------------------------------------------------------------+
|Parameter   |Value                                                             |
+------------+------------------------------------------------------------------+
|Image 0     |                                                                  |
|   Active   |No                                                                |
|   Committed|No                                                                |
|   Valid    |Yes                                                               |
|   Version  |3NT7Sw0000005A                                                    |
|Image 1     |                                                                  |
|   Active   |Yes                                                               |
|   Committed|Yes                                                               |
|   Valid    |Yes                                                               |
|   Version  |3NT7SW0000005I                                                    |
+------------+------------------------------------------------------------------+
|Maintenance | --                                                               |
+------------+------------------------------------------------------------------+
|Alarms      |                                                                  |
+------------+------------------------------------------------------------------+
```

Table 667. "show" command output table parameters –Ethernet Status table

Parameter	Description
Remote Port	Indicates the Ethernet port at the ONU
Admin	Indicates the Administrative state

Type	Indicates the link speed and duplex
Link	Indicates the physical port state.

Table 668. "show" command output tables parameters –Analog RF Status table

Parameter	Description
Port	Indicates the ONU Analog RF port
Admin	Indicates the administrative state
State	Indicates the port operational state

Table 669. "show" command output tables parameters –GPON Status table

Parameter	Description
Port	Indicates the ONU GPON port
Rx Power 1550nm (dBm)	Indicates the 1550 nm Received Optical Power in dBm
Tx Power 1490nm (dBm)	Indicates the 1490 nm Received Optical Power in dBm
Tx Power 1310nm (dBm)	Indicates the 1310 nm Transmitted Optical Power in dBm
Temperature (ºC)	Indicates the ONU Temperature in ºC
Distance (km)	Indicates the ONU distance in km

Table 670. "show" command output tables parameters –Services Status table

Parameter	Description
(ID) ONU Service Name	Indicates the ONU service by ID and name
Admin	Indicates the ONU service administrative state

Table 671. "show" command output tables parameters –Firmware Status table

Parameter	Description
Image 0/1	Indicates the Image name
Active	Indicates which of the images is active
Committed	Indicates which of the images is active after a reboot
Valid	Indicates if the SW/FW version is Valid
Version	Indicates the SW/FW version name

Table 672. "show" command output tables parameters –Maintenance and Alarms status

Parameter	Description
Maintenance	Indicates if ONU is in maintenance
Alarms	Indicates alarms if existing

“ethernet” sub-node

“statistics” sub-node

“show” command

Table 673. "show" command information

Name	show
Description	Shows ethernet statistics
Full path	/remote-eq/status/ethernet/statistics/show
Mandatory Parameters	--remote-port
Screen Output	Table, Figure 790. Table parameters description in Table 674

Figure 789. CLI on line help on “show” command usage in this node context

```
/cli/remote-eq/status/ethernet/statistics> show ?

Usage:
  SHOW          Show ethernet statistics

  <MANDATORY>
  --remote-port             Identifies an interface on a remote device.

  [OPTIONAL]
  --onuID                   Identifies an ONU by ID, in this context.
  --port                    Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                    Identifies a slot. (not used for LAG)
```

Figure 790.Output of "show" command in this node context

```
/cli/remote-eq> status/ethernet/statistics/show --remote-port=eth.1 --onuID=1 --port=pon.1 --slot=9
+-------------------------------------------------------------------------------+
|Ethernet Statistics for Slot:9 Port:'PON 1' ONU-ID:1 -- interface:'Eth 1')     |
+-------------------------+-------------------------------+-------------------------------+
|Parameter                |Rx                             |Tx                             |
+-------------------------+--------------+--------------+--------------+--------------+
|                         |Total         |Partial       |Total         |Partial       |
+-------------------------+--------------+--------------+--------------+--------------+
|Drop Events              |0             |0             |-             |-             |
|Octets                   |0             |0             |389632        |0             |
|Packets                  |0             |0             |6088          |0             |
|Unicast Packets          |0             |0             |0             |0             |
|Broadcast Packets        |0             |0             |0             |0             |
|Multicast Packets        |0             |0             |6088          |0             |
|CRC Align Errors         |-             |-             |-             |-             |
|Undersize Packets        |0             |0             |-             |-             |
|Oversize Packet          |0             |0             |-             |-             |
|Fragments                |0             |0             |-             |-             |
|Jabbers                  |0             |0             |-             |-             |
|Collisions               |-             |-             |0             |0             |
|Buffer Overflows         |0             |0             |0             |0             |
|Packets     64    Octets |6088          |0             |-             |-             |
|Packets   65-127  Octets |0             |0             |-             |-             |
|Packets  128-255  Octets |0             |0             |-             |-             |
|Packets  256-511  Octets |0             |0             |-             |-             |
|Packets  512-1023 Octets |0             |0             |-             |-             |
|Packets   >=1024  Octets |0             |0             |-             |-             |
+-------------------------+--------------+--------------+--------------+--------------+
qPress 'q' to quit or 'r' to reset
```

Table 674. "show" command output table parameters

Parameter	Description
Rx Total & Partial	Received total & partial counters
Tx Total & Partial	Transmitted total & partial counters
Drop Events	Number of dropped packets
Octets	Number of bytes
Packets	Number of Packets
Unicast Packets	Number of Unicast Packets
Broadcast Packets	Number of Broadcast Packets
Multicast Packets	Number of Multicast Packets
CRC Align Errors	Number of packets with wrong FCS (Frame Check Sequence)
Undersize Packets	Number of packets with size less than 64 bytes
Oversize Packets	Number of packets with size over than 1518 bytes
Fragments	Number of packets with size less than 64 bytes and with wrong FCS (Frame Check Sequence)
Jabbers	Number of packets with size over than 1518 bytes and with wrong FCS (Frame Check Sequence)
Collisions	Number of collisions in the Ethernet Segment (only in Half Duplex)
Buffer Overflows	
Packets 64 Octets	Number of 64 bytes packets
Packets 65-127 Octets	Number of packets with size between 65 to 127 bytes

Packets 128-255 Octets	Number of packets with size between 128 to 255 bytes
Packets 256-511 Octets	Number of packets with size between 256 to 511 bytes
Packets 512-1023 Octets	Number of packets with size between 512 to 1023 bytes
Packets >=1024 Octets	Number of packets with size equal to or higher than 1024 bytes

"firmware" sub-node

This sub-node allows the manual management of the firmware that is active in a specific ONU.

For bulk operations on firmware versions, the node **/applications/firmware-upgrade** should be used.

"activate" command

Table 675. "activate" command information

Name	activate
Description	Forces an ONU to reboot and startup with the specified image.
Full path	/remote-eq/status/firmware/activate
Mandatory Parameters	--imageID
Screen Output	No

Figure 791. CLI on line help on "activate" command usage in this node context

```
/cli/remote-eq/status/firmware> activate ?

Usage:
  ACTIVATE      Forces an ONU to reboot and startup with the specified image.

  <MANDATORY>
  --imageID                 Identify an image by ID (0|1)

  [OPTIONAL]
  --onuID                   Identifies an ONU by ID, in this context.
  --port                    Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                    Identifies a slot. (not used for LAG)
```

"commit" command

Table 676. "commit" command information

Name	commit
Description	Indicates which of the images is used after the next reboot.
Full path	/remote-eq/status/firmware/commit
Mandatory Parameters	--imageID
Screen Output	No

Figure 792. CLI on line help on "commit" command usage in this node context

```
/cli/remote-eq/status/firmware> commit ?

Usage:
  COMMIT        Indicates which of the images is used after the next reboot.

  <MANDATORY>
  --imageID                 Identify an image by ID (0|1)

  [OPTIONAL]
  --onuID                   Identifies an ONU by ID, in this context.
  --port                    Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                    Identifies a slot. (not used for LAG)
```

"stop-transfer" command

Table 677. "stop-transfer " command information

Name	stop-transfer
Description	Stops an ongoing image transfer to a given ONU.
Full path	/remote-eq/status/firmware/stop-transfer
Mandatory Parameters	--imageID
Screen Output	No

Figure 793. CLI on line help on "stop-transfer" command usage in this node context

```
/cli/remote-eq/status/firmware> stop-transfer ?

Usage:
  STOP-TRANSFER   Stop an ongoing image transfer to a given ONU.

  [OPTIONAL]
  --onuID                   Identifies an ONU by ID, in this context.
  --port                    Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                    Identifies a slot. (not used for LAG)
```

"gem-port" sub-node

"statistics" sub-node

"show" command

Table 678. "show" command information

Name	show
Description	Show the GEM packet statistics for a given ONU.
Full path	/remote-eq/status/gem-port/statistics/show
Mandatory Parameters	No
Screen Output	Table, Figure 795. Table parameters description in Table 679

Figure 794. CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/status/gem-port/statistics> show ?

Usage:
  SHOW          Show the GEM packet statistics for a given ONU.

  [OPTIONAL]
  --onuID                 Identifies an ONU by ID, in this context.
  --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                  Identifies a slot. (not used for LAG)
```

Figure 795.Output of "show" command in this node context

```
/cli/remote-eq/status> gem-port/statistics/show --onuID=1 --port=pon.1 --slot=9
+-----------------------------------------------------------------------------------------------------------------------------------------------------------+
|GEM Port counters                                                                                                                                          |
+-----+--------------------+-----------------------------------+-------------------+-------------------+-------------------+-------------------+
|GEM  |ONU Service Name    |OLT Service                        |Rx Dropped Packets |Packets Received   |Blocks Received    |Blocks Transmitted |
+-----+--------------------+-----------------------------------+-------------------+-------------------+-------------------+-------------------+
|512  |Id 5                |(10)MB#3000                        |0                  |3353344            |4142848            |0                  |
+-----+--------------------+-----------------------------------+-------------------+-------------------+-------------------+-------------------+
```

Table 679. "show" command output table parameters

Parameter	Description
GEM	Gem Identifier (number)
ONU Service Name	ONU Service identified by name
OLT service	Indicates the ME4620 OLT service identifier and name
Rx Dropped Packets	Indicates the number of dropped packets
Packets Received	Indicates the number of received packets
Blocks Received	Indicates the number of received GEM blocks
Bocks Transmitted	Indicates the number of transmitted GEM blocks

“services” sub-node

“show” command

Table 680. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/remote-eq/status/services/show
Mandatory Parameters	No
Screen Output	Tables Figure 797. Table parameter description in Table 681

Figure 796. CLI on line help on “show” command usage in this node context

```
/cli/remote-eq/status/services> show ?

Usage:
  SHOW          Show the current configuration

   [OPTIONAL]
   --onuID                Identifies an ONU by ID, in this context.
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot                 Identifies a slot. (not used for LAG)
```

Figure 797. Output of ”show” command in this node context

```
/cli/remote-eq/status> services/show --onuID=1 --port=pon.1 --slot=9
+-----------------------------------------------------+
|Services Status (Slot:9 Port:'PON 1' ONU ID:1)       |
+-----------------------------------------+-----------+
|(ID) ONU Service Name                    |Admin      |
+-----------------------------------------+-----------+
|(1) Id 1                                 |disable    |
|(2) Id 2                                 |enable     |
|(3) Id 3                                 |disable    |
|(4) Id 4                                 |disable    |
|(5) Id 5                                 |enable     |
+-----------------------------------------+-----------+
```

Table 681. “show” command output table parameters

Parameter	Description
(ID) ONU Service Name	Indicates the ONU service identifier and name
Admin	Indicates the ONU service administrative state

"active-channels" sub-node

"show" command

Table 682. "show" command information

Name	show
Description	Shows the active channels on a given ONU.
Full path	/remote-eq/status/services/active-channels/show
Mandatory Parameters	--serviceID-onu
Screen Output	Tables Figure 799. Table parameter description in Table 683

Figure 798. CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/status/services/active-channels> show ?

Usage:
  SHOW          Show the active channels on a given ONU.

   <MANDATORY>
   --serviceID-onu              Choose a ONU service by ID.

   [OPTIONAL]
   --onuID                      Identifies an ONU by ID, in this context.
   --port                       Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot                       Identifies a slot. (not used for LAG)
```

Figure 799. Output of "show" command in this node context

```
/cli/remote-eq/status> services/active-channels/show --serviceID-onu=2 --onuID=1 --port=pon.1 --slot=9
+-------------------------------------------------------------------------+
|Active Channels on ONU Service: (2) Id 2                                 |
+--------------------+----------------------------------------------------+
|Source IP           |IP Address                                          |
+--------------------+----------------------------------------------------+
|0.0.0.0             |236.0.0.2                                           |
+--------------------+----------------------------------------------------+
```

Table 683. "show" command output table parameters

Parameter	Description
Source IP	Indicates active channel Source IP address
IP Address	Indicates active channel IP address

"statistics" sub-node

"counters" sub-node

""availableValues" command

Table 684. "availableValues" command information

Name	availableValues
Description	Displays all ONU services where counters can be activated
Full path	/remote-eq/status/services/statistics/counters/availableValues
Mandatory Parameters	No
Screen Output	Table, Figure 801. Table parameters description in Table 685.

Figure 800. CLI on line help on "availableValues" command usage in this node context

```
/cli/remote-eq/status/services/statistics/counters> availableValues ?

Usage:
  AVAILABLEVALUES Display all ONU services where counters can be activated.

  [OPTIONAL]
  --onuID          Identifies an ONU by ID, in this context.
  --port           Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot           Identifies a slot. (not used for LAG)
```

Figure 801. Output of "availableValues" command in this node context

```
/cli/remote-eq/status/services/statistics/counters> availableValues --onuID=1 --port=pon.1 --slot=9
+-------------------------------------------+
|Services where Counters can be Activated   |
+-------------------------------------------+
|ONU Service (ID) Name                      |
+-------------------------------------------+
|(5) Id 5                                   |
+-------------------------------------------+
```

Table 685. "availableValues" command output table parameters

Parameter	Description
ONU Service (ID) Name	Available ONU Service identified by Service ID (number) and Service Name

""show" command

Table 686. "show" command information

Name	show
Description	Shows the statistics for a given ONU service, whose counter has already been activated.
Full path	/remote-eq/status/services/statistics/counters/show
Mandatory Parameters	--serviceID-onu
Screen Output	Table, Figure 803, if Service Statistics Counter is active. Table parameters description in Table 687.

Figure 802. CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/status/services/statistics/counters> show ?

Usage:
 SHOW            Show the statistics for a given ONU service, whose counter has already been
activated.

  <MANDATORY>
  --serviceID-onu          Choose an ONU service by ID.

  [OPTIONAL]
  --onuID                  Identifies an ONU by ID, in this context.
  --port                   Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                   Identifies a slot. (not used for LAG)
```

Figure 803. Output of "show" command in this node context

```
/cli/remote-eq/status/services/statistics/counters> show --serviceID-onu=5 --onuID=1 --port=pon.1 --slot=9
+-----------------------------------------------------+
|Statistics for ONU Service (5) Id 5                  |
+----------+---------------------+---------------------+
|          |OLT Eth/LAG Interface|OLT PON Interface    |
+----------+----------+----------+----------+----------+
|Parameter |Rx        |Tx        |Rx        |Tx        |
+----------+----------+----------+----------+----------+
|Total     |--        |--        |0         |0         |
|Unicast   |--        |--        |0         |0         |
|Multicast |--        |--        |0         |0         |
|Broadcast |--        |--        |0         |0         |
|Dropped   |--        |--        |0         |0         |
+----------+----------+----------+----------+----------+
```

Table 687. "show" command output table parameters

Parameter	Description
OLT Eth/LAG Interface || OLT PON Interface (Rx/Tx)	ME4620 OLT Eth/LAG or PON Interface as applicable for the selected Service. Rx/Tx counter values for the applicable interface

Total	Total number of packets
Unicast	Total number of Unicast packets
Multicast	Total number of Multicast packets
Broadcast	Total number of Broadcast packets
Dropped	Total number of Dropped packets

"show-active" command

Table 688. "show-active" command information

Name	show-active
Description	Displays all active counters.
Full path	/remote-eq/status/services/statistics/counters/show-active
Mandatory Parameters	No
Screen Output	Table Figure 805. Table parameters description in Table 688.

Figure 804. CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/status/services/statistics/counters> show-active ?

Usage:
  SHOW-ACTIVE     Display all active ONU service counters.

   [OPTIONAL]
   --onuID                Identifies an ONU by ID, in this context.
   --port                 Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot                 Identifies a slot. (not used for LAG)
```

Figure 805. Output of "show-active" command in this node context

```
/cli/remote-eq/status/services/statistics/counters> show-active --onuID=1 --port=pon.1 --slot=9
+-------------------------------------------------+
|Active Counters gathering Services Statistics    |
+-------------------------------------------------+
|ONU Service (ID) Name                            |
+-------------------------------------------------+
|(5) Id 5                                         |
+-------------------------------------------------+
```

Table 689. "show-active" command output table

Parameter	Description
ONU Service (ID) Name	ONU Service identified by Service ID (number) and Service Name with active counters gathering service statistics

""start" command

Table 690. "start" command information

Name	start
Description	Activates one statistics counter on the given ONU service.
Full path	/remote-eq/status/services/statistics/counters/start
Mandatory Parameters	--serviceID-onu
Screen Output	No

Figure 806. CLI on line help on "start" command usage in this node context

```
/cli/remote-eq/status/services/statistics/counters> start ?

Usage:
  START         Activate one statistics counter on the given ONU service.

  <MANDATORY>
  --serviceID-onu             Choose a ONU service by ID.

  [OPTIONAL]
  --onuID                     Identifies an ONU by ID, in this context.
  --port                      Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                      Identifies a slot. (not used for LAG)
```

""stop" command

Table 691. "stop" command information

Name	stop
Description	Disables an active counter on the given ONU service.
Full path	/remote-eq/status/services/statistics/counters/stop
Mandatory Parameters	--serviceID-onu
Screen Output	No

Figure 807. CLI on line help on "stop" command usage in this node context

```
/cli/remote-eq/status/services/statistics/counters> stop ?

Usage:
  STOP          Disable an active counter on the given ONU service.

  <MANDATORY>
  --serviceID-onu             Select an ONU service by ID.
```

```
[OPTIONAL]
--onuID          Identifies an ONU by ID, in this context.
--port           Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
--slot           Identifies a slot. (not used for LAG)
```

"dhcp" sub-node

"show" command

Table 692. "show" command information

Name	show
Description	Shows the DHCP statistics for a given unicast service that has DHCPop82 enabled.
Full path	/remote-eq/status/services/statistics/dhcp/show
Mandatory Parameters	--serviceID-onu
Screen Output	Table, Figure 809. Table parameters description in Table 693

Figure 808. CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/status/services/statistics/dhcp> show ?

Usage:
 SHOW        Show the DHCP statistics for a given unicast service that has DHCPop82 enabled.

  <MANDATORY>
  --serviceID-onu          Choose a ONU service by ID.

  [OPTIONAL]
  --onuID                  Identifies an ONU by ID, in this context.
  --port                   Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                   Identifies a slot. (not used for LAG)
```

Figure 809. Output of "show" command in this node context

```
/cli/remote-eq/status/services> statistics/dhcp/show --serviceID-onu=3 --port=pon.3 --slot=3 --onuID=1
+-------------------------------------------------------------------------------+
|(Slot:3 Port:'PON 3' ONU ID:1) DHCP Statistics on Service: (3) Id 3            |
+-----------------------------------------------------+-----------+-----------+
|Parameter                                            |Rx         |Tx         |
+-----------------------------------------------------+-----------+-----------+
|Valid Packets                                        |18834      |0          |
|Drop                                                 |0          |--         |
+-----------------------------------------------------+-----------+-----------+
|Client Request Without Options                       |18834      |--         |
|               With Option 82                        |--         |--         |
|               With Option 37                        |--         |--         |
|               With Option 18                        |--         |--         |
+-----------------------------------------------------+-----------+-----------+
|Server Replies Without Options                       |--         |0          |
|               With Option 82                        |--         |--         |
|               With Option 37                        |--         |--         |
|               With Option 18                        |--         |--         |
+-----------------------------------------------------+-----------+-----------+
|Client Packets Trusted                               |--         |--         |
|Client Packets With Opts Untrusted                   |0          |--         |
|Server Packets Untrusted                             |0          |--         |
|Server Packets Without Opts Trusted                  |--         |--         |
+-----------------------------------------------------+-----------+-----------+
```

Table 693. "show" command output table parameters

Parameter	Description
Valid Packets	Indicates the number of transmitted and received valid DHCP packets
Drop	Indicates the number of transmitted and received DHCP dropped packets
Client Request	Indicates the number of transmitted and received DHCP client request packets • **Without Options** • **Option 82** • **Option 37** • **Option 17**
Server Replies	Indicates the number of transmitted and received DHCP server replies packets • **Without Options:** • **Option 82** • **Option 37** • **Option 17**
Client Packets Trusted	Number of dropped packets because they are client requests without options received in Trusted interfaces (Network side)
Client Pack with Opts Untrusted	Number of dropped packets because they are client requests with options received in Untrusted interfaces (Client side)
Server Packets	Number of dropped packets because they are server replies with options received in

Untrusted	Untrusted interfaces (Client Side)
Server Pack without Options Trusted	Number of dropped packets because they are server replies without options received in Trusted interfaces (Network Side)

"igmp" sub-node

"show" command

Table 694. "show" command information

Name	show
Description	Shows the IGMP statistics for a given multicast client service.
Full path	/remote-eq/status/services/statistics/igmp/show
Mandatory Parameters	No
Screen Output	Table, Figure 811. Table parameters description in Table 695.

Figure 810. CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/status/services/statistics/igmp> show ?

Usage:
  SHOW          Show the IGMP statistics for a given multicast service, on this ONU.

   [OPTIONAL]
   --onuID                  Identifies an ONU by ID, in this context.
   --port                   Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --slot                   Identifies a slot. (not used for LAG)
```

Figure 811: Output of ”show” command in this node context

```
/cli/remote-eq/status/services> statistics/igmp/show --onuID=1 --port=pon.1 --slot=9
+-------------------------------------------------------------------------------------------------------------------------------------+
|Remote ONU IGMP Statistics                                                                                                           |
+-----------------------------------+-------------------------------------------------------------+-------------------------------------------------------+
|Parameter                          |Rx                                                           |Tx                                                     |
+-----------------------------------+-------------------------------+-------------------------------+-------------------------------+-------------------------------+
|                                   |Total                          |Partial                        |Total                          |Partial                        |
+-----------------------------------+-------------------------------+-------------------------------+-------------------------------+-------------------------------+
|Packets Total                      |0                              |0                              |0                              |0                              |
|        Dropped                    |0                              |0                              |-                              |-                              |
|        Valid                      |0                              |0                              |-                              |-                              |
|        Invalid                    |0                              |0                              |-                              |-                              |
+-----------------------------------+-------------------------------+-------------------------------+-------------------------------+-------------------------------+
|v2      Join                       |0                              |0                              |0                              |0                              |
|        Invalid Join               |0                              |0                              |-                              |-                              |
|        Leave                      |0                              |0                              |0                              |0                              |
+-----------------------------------+-------------------------------+-------------------------------+-------------------------------+-------------------------------+
|v3      Membership Report          |0                              |0                              |0                              |0                              |
|        Invalid Membership Report  |0                              |0                              |-                              |-                              |
|        To-Include                 |0                              |0                              |0                              |0                              |
|        To-Exclude                 |0                              |0                              |0                              |0                              |
|        Is-Include                 |0                              |0                              |0                              |0                              |
|        Is-Exclude                 |0                              |0                              |0                              |0                              |
|        Allow                      |0                              |0                              |0                              |0                              |
|        Block                      |0                              |0                              |0                              |0                              |
|        Invalid To-Include         |0                              |0                              |-                              |-                              |
|        Invalid To-Exclude         |0                              |0                              |-                              |-                              |
|        Invalid Is-Include         |0                              |0                              |-                              |-                              |
|        Invalid Is-Exclude         |0                              |0                              |-                              |-                              |
|        Invalid Allow              |0                              |0                              |-                              |-                              |
|        Invalid Block              |0                              |0                              |-                              |-                              |
+-----------------------------------+-------------------------------+-------------------------------+-------------------------------+-------------------------------+
|Queries General                    |0                              |0                              |0                              |0                              |
|        Group Specific             |0                              |0                              |0                              |0                              |
|        Group and Source Specific  |0                              |0                              |0                              |0                              |
+-----------------------------------+-------------------------------+-------------------------------+-------------------------------+-------------------------------+
```

Table 695. “show” command output table parameters

Parameter	Description
Packets Total and Partial counters	Indicates the number of transmitted and received packets: • **Total:** sum of all packets • **Dropped:** sum of all dropped packets • **Valid:** sum of all valid (compliant with the IGMP standards) packets • **Invalid:** sum of all invalid (non-compliant with the IGMP standards) packets
V2 Total and Partial counters	Indicates the number of transmitted and received IGMPv2 packets of type • **Join** • **Invalid Join** • **Leave**
V3 Total and Partial counters	Number of Transmitted and Received IGMPv3 packets of type: • **Membership Report** • **Invalid Membership Report** • **To-Include** • **To-exclude** • **Is-Include** • **Is-Exclude** • **Allow** • **Block** • **Invalid To-Include** • **Invalid To-Exclude** • **Invalid Is-Include** • **Invalid Is-Exclude** • **Invalid Allow** • **Invalid Block**
Queries	Number of transmitted and Received Queries of type

Total and Partial counters	• **General:** of type General queries • **Group Specific:** of type Group specific queries • **Group and Source Specific:** of type Group and Source specific queries

"t-cont" sub-node

"show" command

Table 696. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/remote-eq/status/t-cont/show
Mandatory Parameters	No
Screen Output	Tables Figure 813. Table parameter description in Table 697.

Figure 812. CLI on line help on "show" command usage in this node context

```
/cli/remote-eq/status/t-cont> show ?

Usage:
  SHOW                  Show the current configuration

  [OPTIONAL]
  --onuID               Identifies an ONU by ID, in this context.
  --port                Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                Identifies a slot. (not used for LAG)
```

Figure 813. Output of "show" command in this node context

```
/cli/remote-eq> status/t-cont/show --onuID=1 --port=pon.1 --slot=9
+-----------------------------------------------------------------------------------------+
|T-CONT (Slot:9 Port:'PON 1' ONU ID:1)                                                    |
+----------+--------------------+-------------+-------+---------------+----------+-------------+
|T-CONT    |ONU Service Name    |P-bits       |GEM    |Priority Queue |ALLOC-ID  |T-CONT ME ID |
+----------+--------------------+-------------+-------+---------------+----------+-------------+
|--        |(5) Id 5            |0            |512    |0              |259       |32769        |
|          |(5) Id 5            |1            |512    |0              |          |             |
|          |(5) Id 5            |2            |512    |0              |          |             |
|          |(5) Id 5            |3            |512    |0              |          |             |
|          |(5) Id 5            |4            |512    |0              |          |             |
|          |(5) Id 5            |5            |512    |0              |          |             |
|          |(5) Id 5            |6            |512    |0              |          |             |
|          |(5) Id 5            |7            |512    |0              |          |             |
+----------+--------------------+-------------+-------+---------------+----------+-------------+
```

Table 697. "show" command output table parameters

Parameter	Description
T-CONT	Identifies the T-CONT
ONU Service Name	Indicates Client Service
P-bits	Indicates used priority bits
GEM	Indicates used GEM
Priority Queue	Indicates Used priority queue
ALLOC-ID	Indicates ALLOC-ID
T-CONT ME ID	Indicates T-CONT MEID

"routing" node

Figure 814. "routing" node tree

```
/cli/routing> tree
+ routing[]
  + arp-table[@remove, @status]
  + ipv4-interface[@config, @create, @remove, @show, @showconfig]
  + ping[@create, @remove, @show, @showconfig, @status]
  + route-table[@config, @create, @remove, @show, @showconfig, @status]
  + traceroute[@create, @remove, @show, @showconfig, @status]
```

"arp-table" sub-node

"remove" command

Table 698. "remove" command information

Name	remove
Description	Removes an existing ARP table.
Full path	/routing/arp-table/remove
Mandatory Parameters	-ip-address
Screen Output	No

Figure 815. CLI on line help on "remove" command usage in this node context

```
/cli/routing/arp-table> remove ?

Usage REMOVE:
 REMOVE                  Remove an existing ARP entry

  <MANDATORY>
  --ip-address           IPv4 address
```

“status” command

Table 699. "status" command information

Name	status
Description	Displays existing problems with the file repository.
Full path	/routing/arp-table/status
Mandatory Parameters	No parameters
Screen Output	Table, Figure 817. Table parameters are described in Table 700.

Figure 816. . CLI on line help on “status” command usage in this node context

```
/cli/routing/arp-table> status ?

Usage STATUS:
  STATUS                    Show the current ARP table status
```

Figure 817. Output of ”status” command in this node context

```
/cli/routing> arp-table/status
+-----------------------------------------------------------------------------------------------------------------------------+
|ARP Table                                                                                                                    |
+-------------------------------------+---------------------------------------------+------------------+----------+------------+
|(ID) Routing Interface               |IP Address                                   |MAC Address       |Type      |Age         |
+-------------------------------------+---------------------------------------------+------------------+----------+------------+
|(  2) NB_RT_2                        |30.0.0.254                                   |00:06:91:07:CD:5A | Local    | --         |
|(  4) NB_Amora_1                     |173.10.20.31                                 |00:06:91:07:CD:59 | Local    | --         |
|(  5) NB_Amora_2                     |173.10.20.131                                |00:06:91:07:CD:5A | Local    | --         |
+-------------------------------------+---------------------------------------------+------------------+----------+------------+
```

Table 700.“status” command output table parameters

Parameter	Description
(ID) Routing Interface	Routing Interface identifier
IP Address	IP address of the system for ARP mapping.
MAC Adress	MAC address of the system mapped to the IP address.
Type	Type of ARP entry (LOCAL|Dynamic)
Age	Aging time - Time during which the MAC Address is active.

“ipv4-interface” sub-node

“config” command

Table 701. "config" command information

Name	config
Description	Configures parameters for an IPv4 routing interface
Full path	/routing/ipv4-interface/config
Mandatory Parameters	--ID
Screen Output	No

Figure 818. CLI on line help on “config” command usage in this node context

```
/cli/routing/ipv4-interface> config ?

Usage CONFIG:
  CONFIG                  Configure

   <MANDATORY>
   --ID                   Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --admin                Administrative State. Enable/disable, in this context. (enable|disable)
   --ip-address           IPv4 address
   --mtu                  Interface MTU [68 - 9198].
   --name                 IP interface name. (STRING 31)
   --serviceID            Select an OLT service by ID.
   --subnet-mask          IPv4 Subnet Mask
```

“create” command

Table 702. "create" command information

Name	create
Description	Creates a new entity.
Full path	/routing/ipv4-interface/create
Mandatory Parameters	--serviceID
Screen Output	No

Figure 819. CLI on line help on “create” command usage in this node context

```
/cli/routing/ipv4-interface> create ?

Usage CREATE:
```

```
CREATE                  Create a new entity.

<MANDATORY>
--serviceID             Select an OLT service by ID.

[OPTIONAL]
--admin                 Administrative State. Enable/disable, in this context. (enable|disable)
--ip-address            IPv4 address
--mtu                   Interface MTU [68 - 9198].
--name                  IP interface name. (STRING 31)
--subnet-mask           IPv4 Subnet Mask
```

"remove" command

Table 703. "remove" command information

Name	remove
Description	Removes an existing entity by ID
Full path	/routing/ipv4-interface/remove
Mandatory Parameters	--ID
Screen Output	No

Figure 820. CLI on line help on "remove" command usage in this node context

```
/cli/routing/ipv4-interface> remove ?

Usage REMOVE:
 REMOVE                 Remove an existing entity by ID.

  <MANDATORY>
  --ID                  Identifies a table entry by ID, in this context.
```

"show" command

Table 704. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/routing/ipv4-interface/show
Mandatory Parameters	No mandatory parameters
Screen Output	Table, Figure 822. Table parameters description in Table 705.

Figure 821. CLI on line help on “show” command usage in this node context

```
/cli/routing/ipv4-interface> show ?

Usage SHOW:
  SHOW                    Show the current configuration
```

Figure 822: Output of ”show” command in this node context

```
/cli/routing> ipv4-interface/show
+-------------------------------------------------------------------------------------------------------------------------------------+
|IPv4 Interfaces                                                                                                                      |
+---+-------+--------------------------------+-----------------------------------+----------------+----------------+------+
|ID |Admin  |Name                            |(ID) Network Service               |IP Address      |Subnet Mask     |MTU   |
+---+-------+--------------------------------+-----------------------------------+----------------+----------------+------+
|1  |enable |Cenas                           |(  1) ID 1                         |20.0.0.254      |255.255.255.0   |1500  |
|2  |enable |NB_RT_2                         |(  2) ID 2                         |30.0.0.254      |255.255.255.0   |2048  |
|3  |disable|NB_RT_3                         |(  3) ID 3                         |40.0.0.254      |255.255.255.0   |2048  |
|4  |enable |NB_Amora_1                      |(  4) ID 4                         |173.10.20.31    |255.255.255.128 |2048  |
|5  |enable |NB_Amora_2                      |(  5) ID 5                         |173.10.20.131   |255.255.255.248 |2048  |
|6  |disable|NB_Amora_3                      |(  6) ID 6                         |173.10.20.139   |255.255.255.248 |2048  |
+---+-------+--------------------------------+-----------------------------------+----------------+----------------+------+
```

Table 705. “show” command output table parameters

Parameter	Description
ID	IPv4 Interface identifier (number)
Admin	IPv4 Interface administrative state
Name	IPv4 Interface identifier (name)
(ID) Network Service	ME4620 OLT Network Service Identifier (number) and name
IP Address	IP address of the system for ARP mapping.
Subnet Mask	IPv4 Subnet Mask
MTU	IPv4 Interface MTU (68 to 9198)

“showconfig” command

Table 706. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/routing/ipv4-interface/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 823. CLI on line help on "showconfig" command usage in this node context

```
/cli/routing/ipv4-interface> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG                Print the command list that enforces the current configuration
```

"ping" sub-node

"create" command

Table 707. "create" command information

Name	create
Description	Creates a new ping session.
Full path	/routing/ping/create
Mandatory Parameters	--ip-address
Screen Output	No

Figure 824. CLI on line help on "create" command usage in this node context

```
/cli/routing/ping> create ?

Usage CREATE:
  CREATE                    Create a new ping session.

  <MANDATORY>
  --ip-address              IPv4 address

  [OPTIONAL]
  --probe-count             Number of probes to send. (1..15)
  --probe-interval          Interval (in seconds) between each probe. (1..60)
  --probe-size              Probe size. (0..65507)
```

"remove" command

Table 708. "remove" command information

Name	remove
Description	Removes an existing ping session
Full path	/routing/ping/remove
Mandatory Parameters	--ID
Screen Output	No

Figure 825. CLI on line help on “remove” command usage in this node context

```
/cli/routing/ping> remove ?

Usage REMOVE:
 REMOVE                  Remove an existing ping session.

  <MANDATORY>
  --ID                   Identifies a table entry by ID, in this context.
```

“show” command

Table 709. "show" command information

Name	show
Description	Shows the current ping sessions configuration
Full path	/routing/ping/show
Mandatory Parameters	No mandatory parameters
Screen Output	Table, Figure 827. Table parameters description in Table 710.

Figure 826. CLI on line help on “show” command usage in this node context

```
/cli/routing/ping> show ?

Usage SHOW:
 SHOW                    Show the current ping sessions configuration

  [OPTIONAL]
  --ID                   Identifies a table entry by ID, in this context.
```

Figure 827. Output of ”show” command in this node context

```
/cli/routing/ping> show
+-------------------------------------------------+
|Ping Sessions                                    |
+--------------------+----------------------------+
|                    |Probes                      |
+---+----------------+---------+---------+--------+
|ID |IP Address      |Count    |Size     |Interval |
+---+----------------+---------+---------+--------+
+---+----------------+---------+---------+--------+
```

Table 710. “show” command output table parameters

Parameter	Description
ID	Table entry identifier
IP Address	IP address of the system to ping.

Probes	**Count:** Number of packets to send **Size:** Size of packets to send **Interval:** Interval between packets to send

"showconfig" command

Table 711. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/routing/ping/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 828. CLI on line help on "showconfig" command usage in this node context

```
/cli/routing/ping> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG              Print the command list that enforces the current configuration
```

"status" command

Table 712. "status" command information

Name	status
Description	Shows the current ping sessions status.
Full path	/routing/ping/status
Mandatory Parameters	No
Screen Output	Table, Figure 830. Table parameters description in Table 713.

Figure 829. CLI on line help on "status" command usage in this node context

```
/cli/routing/ping> status ?

Usage STATUS:
  STATUS                  Show the current ping sessions status

   [OPTIONAL]
   --ID                   Identifies a table entry by ID, in this context.
```

Figure 830. Output of ”status” command in this node context

```
/cli/routing/ping> status
+-------------------------------------------------------------------+
|Ping Sessions Status                                               |
+-----------+-------------------------+---------------------+       +
|           |Probes                   |Round-trip time (us) |       |
+---+-------+--------+--------+-------+-------+-------+-------+       +
|ID |Active |Sent    |Success |Fail   |Min    |Avg    |Max    |       |
+---+-------+--------+--------+-------+-------+-------+-------+       +
+---+-------+--------+--------+-------+-------+-------+-------+       +
```

Table 713. “status” command output table parameters

Parameter	Description
ID	Table entry identifier
Active	Flag; enabled if probe active.
Probes	**Send:** Number of sent packets. **Success:** Number of received packets. **Fail:** Number of failed packets.
Round trip time (us)	**Min:** Minimum observed Round trip time **Avg:** Average observed Round trip time **Max:** Maximum observed Round trip time

“route-table” sub-node

“config” command

Table 714. "config" command information

Name	config
Description	Configures an existing static route by ID.
Full path	/routing/route-table/config
Mandatory Parameters	--ID
Screen Output	No

Figure 831. CLI on line help on “config” command usage in this node context

```
/cli/routing> route-table/config ?

Usage CONFIG:
  CONFIG                  Configure an existing static route by ID.

   <MANDATORY>
   --ID                   Identifies a table entry by ID, in this context.
```

```
[OPTIONAL]
--admin              Administrative State. Enable/disable, in this context. (enable|disable)
--dst-ip-addr         Destination IP address.
--dst-ip-mask         Destination IP mask.
--gw-ip-addr          Gateway IP address.
--preference          Route preference.
```

“create” command

Table 715. "create" command information

Name	create
Description	Creates a new static route.
Full path	/routing/route-table/create
Mandatory Parameters	--dst-ip-address --dst-ip-mask --gw-ip-addr
Screen Output	No

Figure 832. CLI on line help on “create” command usage in this node context

```
/cli/routing/route-table> create ?

Usage CREATE:
 CREATE               Create a new static route.

 <MANDATORY>
 --dst-ip-addr         Destination IP address.
 --dst-ip-mask         Destination IP mask.
 --gw-ip-addr          Gateway IP address.

 [OPTIONAL]
 --admin              Administrative State. Enable/disable, in this context. (enable|disable)
 --preference          Route preference.
```

“remove” command

Table 716. "remove" command information

Name	remove
Description	Removes an existing static route by ID
Full path	/routing/route-table/remove
Mandatory Parameters	-ID
Screen Output	No

Figure 833. CLI on line help on “remove” command usage in this node context

```
/cli/routing/route-table> remove ?

Usage REMOVE:
 REMOVE                  Remove an existing static route by ID.

  <MANDATORY>
  --ID                   Identifies a table entry by ID, in this context.
```

“show” command

This command displays information on the current files configuration, in the format of a table.

Table 717. "show" command information

Name	show
Description	Shows the current configuration
Full path	/routing/route-table/show
Mandatory Parameters	No mandatory parameters
Screen Output	Table, Figure 835. Table parameters description in Table 718.

Figure 834. CLI on line help on “show” command usage in this node context

```
/cli/routing/route-table> show ?

Usage SHOW:
 SHOW                    Show the current configuration

  [OPTIONAL]
  --ID                   Identifies a table entry by ID, in this context.
```

Figure 835. Output of ”show” command in this node context

```
/cli/routing> route-table/show
+-------------------------------------------------------------------------------+
|Static Routes                                                                  |
+---+-------+-------------------+-------------------+-----------------+-----------+
|ID |Admin  |Destination IP Addr |Destination IP Mask |Gateway IP Addr  |Preference |
+---+-------+-------------------+-------------------+-----------------+-----------+
|1  |enable |0.0.0.0             |0.0.0.0             |173.10.20.30     |5          |
+---+-------+-------------------+-------------------+-----------------+-----------+
```

Table 718. “show” command output table parameters

Parameter	Description
ID	Table entry identifier
Admin	Static Route administrative state

Destination IP Addr	Static Route Destination IP address
Destination IP Mask	Static Route Destination IP Mask
Gateway IP Addr	Static Route Gateway IP address
Preference	Static Route preference

"showconfig" command

Table 719. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/routing/route-table/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 836. CLI on line help on "showconfig" command usage in this node context

```
/cli/routing/route-table> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG                Print the command list that enforces the current configuration
```

"status" command

Table 720. "status" command information

Name	status
Description	Shows the current route table status.
Full path	/routing/route-table/status
Mandatory Parameters	No
Screen Output	Table, Figure 838. Table parameters description in Table 721.

Figure 837. CLI on line help on "status" command usage in this node context

```
/cli/routing/route-table> status ?

Usage STATUS:
  STATUS                    Show the current route-table status
```

Figure 838. Output of ”status” command in this node context

```
/cli/routing/route-table> status
+-----------------------------------------------------------------------------------------------------------------------------------------------------+
|Route Table                                                                                                                                          |
+-----------------------------------+----------+-----------------+-------------------+-------------------+-----------------+-----------+--------+
|(ID) Routing Interface             |Protocol  |Update Time      |Destination IP Addr |Destination IP Mask |Gateway IP Addr  |Preference |Metric |
+-----------------------------------+----------+-----------------+-------------------+-------------------+-----------------+-----------+--------+
|(  4) NB_Amora_1                   |Default   |00d 00h 02m 32s  |0.0.0.0            |0.0.0.0            |173.10.20.30     |5          | --     |
|(  2) NB_RT_2                      |Local     |00d 00h 02m 32s  |30.0.0.0           |255.255.255.0      |30.0.0.254       | --        |1       |
|(  4) NB_Amora_1                   |Local     |00d 00h 02m 32s  |173.10.20.0        |255.255.255.128    |173.10.20.31     | --        |1       |
|(  5) NB_Amora_2                   |Local     |00d 00h 02m 32s  |173.10.20.128      |255.255.255.248    |173.10.20.131    | --        |1       |
+-----------------------------------+----------+-----------------+-------------------+-------------------+-----------------+-----------+--------+
```

Table 721. “status” command output table parameters

Parameter	Description
(ID) Routing Interface	Routing interface identifier
Protocol	Used protocol identifier
Update time	Route update time
Destination IP Address	Route Destination IP Address
Destination IP Mask	Route Destination IP Mask
Gateway IP Addr	Route used Gateway IP Address
Preference	Route Preference
Metric	Route Metric (number of hops)

“traceroute” sub-node

“create” command

Table 722. "create" command information

Name	create
Description	Creates a new traceroute session.
Full path	/routing/traceroute /create
Mandatory Parameters	--ip-address
Screen Output	No

Figure 839. CLI on line help on “create” command usage in this node context

```
/cli/routing/traceroute> create ?

Usage CREATE:
 CREATE                  Create a new traceroute session.

  <MANDATORY>
  --ip-address           IPv4 address

  [OPTIONAL]
  --dont-fragment        Enable or disable fragmenting of the traceroute probe (true/false)
  --init-ttl             Initial TTL for the traceroute probes. (1..255)
```

```
  --max-fails              Max number of failed probes for each hop before the traceroute session
in stopped. (0..255)
  --max-ttl                Max TTL for the traceroute probes. (1..255)
  --port                   Destination port for the traceroute probe. (0..65535)
  --probe-interval         Interval (in seconds) between each probe. (1..60)
  --probe-size             Probe size. (0..65507)
  --probes-per-hop         Number of probes to send. (1..10)
```

"remove" command

Table 723. "remove" command information

Name	remove
Description	Removes an existing traceroute session
Full path	/routing/traceroute/remove
Mandatory Parameters	--ID
Screen Output	No

Figure 840. CLI on line help on "remove" command usage in this node context

```
/cli/routing/traceroute> remove ?

Usage REMOVE:
 REMOVE                  Remove an existing traceroute session.

  <MANDATORY>
  --ID                   Identifies a table entry by ID, in this context.
```

"show" command

This command displays information on the current files configuration, in the format of a table.

Table 724. "show" command information

Name	show
Description	Shows the current configuration
Full path	/routing/traceroute/show
Mandatory Parameters	No mandatory parameters
Screen Output	Table, Figure 842. Table parameters description in Table 725.

Figure 841. CLI on line help on "show" command usage in this node context

```
/cli/routing/traceroute> show ?

Usage SHOW:
 SHOW                    Show the current traceroute sessions configuration
```

```
[OPTIONAL]
--ID                    Identifies a table entry by ID, in this context.
```

Figure 842. Output of "show" command in this node context

```
/cli/routing/traceroute> show
+-------------------------------------------------------------------------------------------------------+
|Traceroute Sessions                                                                                    |
+--------------------+-------------------------+-------------------------------------------------------+
|                    |Probes                   |                                                       |
+---+----------------+--------+------+---------+---------------+------+--------+---------+-----------+
|ID |IP Address      |Per Hop |Size  |Interval |Don't Fragment |Port  |Max TTL |Init TTL |Max Fails  |
+---+----------------+--------+------+---------+---------------+------+--------+---------+-----------+
+---+----------------+--------+------+---------+---------------+------+--------+---------+-----------+
```

Table 725. "show" command output table parameters

Parameter Group	Parameter	Description
	ID	Table entry identifier
	IP Address	IPv4 Address
Probes	**Per Hop**	Number of probes to send (1 to 10)
	Size	Probe Size (0 to 65507)
	Interval	Interval in seconds between each probe (1 to 60)
	Don't Fragment	Flag; Indicates if fragmenting of the traceroute probe is enable
	Port	Destination port for the trace route probe (0 to 65535)
	Max TTL	Maximum time to live for the traceroute probe
	Init TTL	Initial time to live for the traceroute probe (1 to 255)
	Max Fails	Max number of failed probes for each hop before the traceroute session in stopped. (0 to 255)

"showconfig" command

Table 726. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/routing/traceroute/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 843. CLI on line help on "showconfig" command usage in this node context

```
/cli/routing/traceroute> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG            Print the command list that enforces the current configuration
```

“status” command

Table 727. "status" command information

Name	status
Description	Shows the current route table status.
Full path	/routing/traceroute/status
Mandatory Parameters	No
Screen Output	Table, Figure 845. Table parameters description in Table 728.

Figure 844. CLI on line help on “status” command usage in this node context

```
/cli> routing/traceroute/status ?

Usage STATUS:
  STATUS                  Show the current traceroute sessions status

  [OPTIONAL]
  --ID                    Identifies a table entry by ID, in this context.
```

Figure 845. Output of ”status” command in this node context

```
/cli/routing/traceroute> status
+-------------------------------------------------------+
|Traceroute Sessions Status                             |
+---------------------------------------+---------------+
|                                       |Probes         |
+---+-------+-------------+--------------+-----+--------+
|ID |Active |Current TTL  |Current Hops  |Sent |Success |
+---+-------+-------------+--------------+-----+--------+
+---+-------+-------------+--------------+-----+--------+
```

Table 728. “status” command output table parameters

Parameter Group	Parameter	Description
	ID	Table entry identifier
	Active	Flag; Indicates if traceroute session is active
	Current TTL	Current traceroute session time to live
	Current Hops	Current number of traceroute hops
Probes	**Sent**	Number of traceroute probes sent
	Success	Number of traceroute probes with success

“services” node

This node is used to configure, create and remove services and view traffic statistics information.

Figure 846. “services” node tree

```
/cli/services> tree
+ services[@availableValues, @config, @create, @remove, @show, @showconfig]
  + statistics[]
    + arp-inspection[@show]
    + counters[@availableValues, @show, @show-active, @start, @stop]
    + dhcp[@availableValues, @show]
    + igmp[@availableValues, @show]
```

“availableValues” command

Table 729. "availableValues" command information

Name	availableValues
Description	Shows the available <slot-port> combination values for creating new services.
Full path	/services/availableValues
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 848.Table parameters description Table 730

Figure 847. CLI on line help on “availableValues” command usage in this node context

```
/cli/services> availableValues ?

Usage:
  AVAILABLEVALUES Show the available <slot-port> combination values for creating new
services.
```

Figure 848.Output of ”availableValues” command in this node context”

```
/cli/services> availableValues
+-------------------------------------------------------------------------------+
|Available Uplink interfaces                                                    |
+-----+-------------------------------------------------------------------------+
|Slot |Interfaces                                                               |
+-----+-------------------------------------------------------------------------+
|5    |Eth 1, Eth 2, Eth 3, Eth 4, Eth 5, Eth 6, Eth 7, Eth 8, Eth 9, Eth 10    |
|     |Eth 11, Eth 12, Eth 13, Eth 14, Eth 15, Eth 16, Eth 17, Eth 18, Eth 19   |
|     |Eth 20, Eth 21, Eth 22, Eth 23, Eth 24, Eth 25, Eth 26, Eth 27, Eth 28   |
|     |Eth 29, Eth 30, Eth 31, Eth 32, Eth 33, Eth 34, Eth 35, Eth 36, Eth 37   |
|     |Eth 38, Eth 39, Eth 40, Eth 41, Eth 42, Eth 43, Eth 44, Eth 45, Eth 46   |
|     |Eth 47, Eth 48                                                           |
|11   |Eth 1, Eth 2, Eth 3, Eth 4, Eth 5, Eth 6, Eth 7, Eth 8, Eth 9, Eth 10    |
|     |Eth 11, Eth 12, Eth 13, Eth 14, Eth 15, Eth 16, Eth 17, Eth 18, Eth 19   |
|     |Eth 20, Eth 21, Eth 22, Eth 23, Eth 24, Eth 25, Eth 26, Eth 27, Eth 28   |
|     |Eth 29, Eth 30, Eth 31, Eth 32, Eth 33, Eth 34, Eth 35, Eth 36, Eth 37   |
|     |Eth 38, Eth 39, Eth 40, Eth 41, Eth 42, Eth 43, Eth 44, Eth 45, Eth 46   |
|     |Eth 47, Eth 48                                                           |
|17   |Eth 1, Eth 2, Eth 3, Eth 4                                               |
+-----+-------------------------------------------------------------------------+

+-------------------------------------------------------------------------------+
|Available Downlink interfaces                                                  |
+-----+-------------------------------------------------------------------------+
|Slot |Interface                                                                |
+-----+-------------------------------------------------------------------------+
|5    |--                                                                       |
|9    |PON 1, PON 2, PON 3, PON 4, PON 5, PON 6, PON 7, PON 8, PON 9, PON 10    |
|     |PON 11, PON 12, PON 13, PON 14, PON 15, PON 16                           |
|11   |--                                                                       |
+-----+-------------------------------------------------------------------------+
```

Table 730. “availableValues” command output Uplink/Downlink table parameters

Parameter Group	Parameter	Description
Available Uplink interfaces	Slot	Indicates the slots with uplink cards
	Interfaces	Indicates the ME4620 OLT uplink interfaces
Available Downlink interfaces	Slot	Indicates the slots with downlink interfaces
	Interfaces	Indicates the ME4620 OLT interfaces

“config” command

Table 731. "config" command information

Name	config
Description	Configures parameters for a given service. Flags PPPoE, McFlood, IGMP and DHCP are ignored for Bitstream services
Full path	/services/config

Mandatory Parameters	--serviceID
Screen Output	No

Figure 849. CLI on line help on "config" command usage in this node context

```
/cli/services> config ?

Usage CONFIG:
  CONFIG                    Configure parameters for a given service. Flags PPPoE, McFlood,
IGMP and DHCP are ignored for Bitstream services.

  <MANDATORY>
  --serviceID               Select an OLT service by ID.

  [OPTIONAL]
  --add-downlink-ports      Add interfaces to the Downlink interface List, for a given service.
(format: slot.port|slot(all) : 3.1,3.5,7)
  --add-uplink-lags         Add LAG interfaces to the Uplink interface List for a given service.
(format: lagID : 1,2,3)
  --add-uplink-ports        Add interfaces to the Uplink interface List, for a given service.
(format: slot.port|slot(all) : 3.1,3.5,7)
  --admin                   Administrative State. Enable/disable, in this context. (enable|disable)
  --dai                     Enable or disable DAI for a given service. (enable|disable)
  --del-downlink-ports      Remove interfaces from the Downlink interface List, for a given
service. (format: slot.port|slot(all) : 3.1,3.5,7)
  --del-uplink-lags         Remove LAG interfaces from the Uplink interface List, for a given
service. (format: lagID : 1,2,3)
  --del-uplink-ports        Remove interfaces from the Uplink interface List, for a given service.
(format: slot.port|slot(all) : 3.1,3.5,7)
  --dhcp-v4                 Enable or disable the DHCPv4 Relay Agent for a given service.
(enable|disable)
  --dhcp-v6                 Enable or disable the Lightweight DHCPv6 Relay Agent for a given
service. (enable|disable)
  --igmp                    Enable or disable IGMP for a given service. (enable|disable)
  --mcFlood                 Multicast flooding. (enable|disable)
  --nni-stag                Outer VLAN ID (service) on the network-facing (Ethernet) interface.
(1..4094)
  --pppoe                   Enable or disable PPPoE for a given service. (enable|disable)
  --serviceName             The Name for the new service. (STRING 31)
  --stacked                 Frame format for the uplink interface. If enabled, it has two VLAN tags,
otherwise only one VLAN tag. (enable|disable)
  --type                    Identifies the type of service. (unicast|multicast|bitstream|univoip|mac
bridge)
  --uni-ctag                VLAN ID delivered/received from the (Ethernet) subscriber-facing
interface at the ONU. (1..4094)
```

“create” command

Table 732. "create" command information

Name	create
Description	Creates a new network service.
Full path	/services/create
Mandatory Parameters	--nni-stag --serviceName --type --uni-ctag
Screen Output	No

Figure 850. CLI on line help on “create” command usage in this node context

```
/cli/services> create ?

Usage CREATE:
  CREATE                    Create a new network service.

   <MANDATORY>
   --nni-stag               Outer VLAN ID (service) on the network-facing (Ethernet) interface.
(1..4094)
   --serviceName            The Name for the new service. (STRING 31)
   --type                   Identifies the type of service. (unicast|multicast|bitstream|univoip|mac
bridge)
   --uni-ctag               VLAN ID delivered/received from the (Ethernet) subscriber-facing
interface at the ONU. (1..4094)

   [OPTIONAL]
   --add-downlink-ports     Add interfaces to the Downlink interface List, for a given service.
(format: slot.port|slot(all) : 3.1,3.5,7)
   --add-uplink-lags        Add LAG interfaces to the Uplink interface List for a given service.
(format: lagID : 1,2,3)
   --add-uplink-ports       Add interfaces to the Uplink interface List, for a given service.
(format: slot.port|slot(all) : 3.1,3.5,7)
   --admin                  Administrative State. Enable/disable, in this context. (enable|disable)
   --dai                    Enable or disable DAI for a given service. (enable|disable)
   --dhcp-v4                Enable or disable the DHCPv4 Relay Agent for a given service.
(enable|disable)
   --dhcp-v6                Enable or disable the Lightweight DHCPv6 Relay Agent for a given
service. (enable|disable)
   --igmp                   Enable or disable IGMP for a given service. (enable|disable)
   --mcFlood                Multicast flooding. (enable|disable)
   --pppoe                  Enable or disable PPPoE for a given service. (enable|disable)
   --stacked                Frame format for the uplink interface. If enabled, it has two VLAN tags,
otherwise only one VLAN tag. (enable|disable)
```

About the service type:

- **Unicast:** Bidirectional service, where each frame has only one final destination. These services are used in Residential applications, where some kinds of packets can be trapped and processed (ex. DHCP, IGMP). In case of Unstacked Services, MAC Learning is performed.
- **Multicast:** Unidirectional Service, where one frame can be delivered to several destinations. These destinations are controlled by IGMP Snooping/Prox**y.**
- **UniVoIP:** Bidirectional Service, where each frame has only one final destination. Similar to Unicast Services, with the difference that when it's configured to the ONU, VoIP configurations are downloaded to the ONU.
- **Bitstream:** Bidirectional Service, where each frame has only one final destination. These services are used in Business applications, where all packets pass transparently by the system and MAC learning is disabled.
- **Macbridge:** In this type of service forwarding is based on S-VID+DMAC or S-VID+C-VID+DMAC.Unicast Unknown, Multicast and Broadcast MAC Addresses are replicated to all the GEM Ports that belong to the same S-VID or S-VID+C-VID

"remove" command

Table 733. "remove" command information

Name	remove
Description	Removes an existing service
Full path	/services/remove
Mandatory Parameters	--serviceID
Screen Output	No

Figure 851. CLI on line help on "remove" command usage in this node context

```
/cli/services> remove ?

Usage:
  REMOVE        Remove an existing service.

   <MANDATORY>
   --serviceID          Select an OLT service by ID.
```

"show" command

Table 734. "show" command information

Name	show
Description	Shows the current services configuration. If a service ID is given shows all the downlink ports.
Full path	/services/show
Mandatory Parameters	No
Screen Output	Tables Figure 853 and Figure 854.Table parameters description in Table 735 and Table 736.

Figure 852. CLI on line help on "show" command usage in this node context

```
/cli/services> show ?

Usage:
  SHOW              Show the current services configuration. If a service ID is given shows all the
downlink ports.

  [OPTIONAL]
  --serviceID       Select an OLT service by ID.
```

Figure 853.Output of "show" command in this node context

```
/cli> services/show
+-----------------------------------------------------------------------------------------------------------------------------------+
|Network Services Summary                                                                                                           |
+---+--------------------+--------+------------+--------+--------+--------+--------+--------+--------+--------+---------+--------+
|ID |Name                |Admin   |Type        |Stacked |MC Flood|DHCPv4  |DHCPv6  |PPPoE   |IGMP    |DAI     ||NNI-STAG|UNI-CTAG|
+---+--------------------+--------+------------+--------+--------+--------+--------+--------+--------+--------+---------+--------+
|1  |Delta9              |disable |MAC Bridge  |enable  |enable  |disable |disable |disable |enable  |disable |9        |1069    |
+---+--------------------+--------+------------+--------+--------+--------+--------+--------+--------+--------+---------+--------+
```

Table 735. "show" command output table parameters

Parameter	Description
ID	Service Identifier
Name	Name that identifies the Service
Admin	Service Administrative State
Type	Identifies the type of service: **Unicast**: Bidirectional service, where each frame has only one final destination. These services are used in Residential applications, where some kinds of packets can be trapped and processed (ex. DHCP, IGMP). In case of Unstacked Services, MAC Learning is performed. **Multicast**: Unidirectional Service, where one frame can be delivered to several destinations. These destinations are controlled by IGMP Snooping/Proxy. **UniVoIP**: Bidirectional Service, where each frame has only one final destination. Similar to Unicast Services, with the difference that when it's configured to the ONU, VoIP configurations are downloaded to the ONU. **Bitstream**: Bidirectional Service, where each frame has only one final destination. These services are used in Business applications, where all packets pass transparently by the system and MAC learning is disabled. **Macbridge:** In this type of service forwarding is based on S-VID+DMAC or S-VID+C-VID+DMAC.Unicast Unknown, Multicast and Broadcast MAC Addresses are replicated to all the GEM Ports that belong to the same S-VID or S-VID+C-VID.
Stacked	Provides the frame format in the uplink interface. If it's Stacked the frame contains two vlan tags, if it's Unstacked the frame contains only one vlan tag. Both vlans have Ethertype=0x8100.
MC Flood	Indicates Multicast flooding. configuration for a given service(enable|disable)
DHCPv4	Identifies if the service has a DHCPv4 Relay Agent enabled.
DHCPv6	Identifies if the service has Lightweight DHCPv6 Relay Agent enabled.
PPPoE	Indicates PPPoE configuration for a given service. (enable|disable)
IGMP	Indicates IGMP configuration for a given service. (enable|disable)
DAI	Flag; if enabled Dynamic ARP Inspection is active for the service

NNI S-TAG	Identifies the outer tag of the service used in the uplink port
UNI C-TAG	Identifies the VLAN delivered/received to/from the ONU. After this VLAN can be translated in the ONU.

This command used with serviceID parameter provides detailed information on the specified service configuration,

Figure 854. Output of "show" command used with parameter –serviceID, in this node context

```
/cli> services/show --serviceID=1
+-----------------------------------------------------+
|Network Service (1) 'Delta9'                         |
+---------------------+-------------------------------+
|Parameter            |Value                          |
+---------------------+-------------------------------+
|Admin                |disable                        |
|Type                 |MAC Bridge                     |
|Stacked              |enable                         |
|MC Flood             |enable                         |
|DHCPv4               |disable                        |
|DHCPv6               |disable                        |
|PPPoE                |disable                        |
|IGMP                 |enable                         |
|DAI                  |disable                        |
+---------------------+-------------------------------+
|NNI-STAG             |9                              |
|UNI-CTAG             |1069                           |
+---------------------+-------------------------------+
|Uplink Interfaces    |10/Eth 4                       |
+---------------------+-------------------------------+
|Downlink Interfaces  |2/Pon 1                        |
+---------------------+-------------------------------+
```

Table 736. "show" command, used with serviceID parameter, output table parameters

Parameter	Description
Admin	Service Administrative State
Type	Identifies the type of service: **Unicast**: Bidirectional service, where each frame has only one final destination. These services are used in Residential applications, where some kinds of packets can be trapped and processed (ex. DHCP, IGMP). In case of Unstacked Services, MAC Learning is performed. **Multicast**: Unidirectional Service, where one frame can be delivered to several destinations. These destinations are controlled by IGMP Snooping/Proxy. **UniVoIP**: Bidirectional Service, where each frame has only one final destination. Similar to Unicast Services, with the difference that when it's configured to the ONU, VoIP configurations are downloaded to the ONU. **Bitstream**: Bidirectional Service, where each frame has only one final destination. These services are used in Business applications, where all packets pass transparently by the system and MAC learning is disabled. **Macbridge:** In this type of service forwarding is based on S-VID+DMAC or S-VID+C-VID+DMAC.Unicast Unknown, Multicast and Broadcast MAC Addresses are replicated to all the GEM Ports that belong to the same S-VID or S-VID+C-VID.
Stacked	Provides the frame format in the uplink interface. If it's Stacked the frame contains two vlan tags, if it's Unstacked the frame contains only one vlan tag. Both vlans have Ethertype=0x8100.

Mult. Flood	Multicast flooding. (enable|disable)
DHCPv4	Identifies if the service has a DHCPv4 Relay Agent enabled.
DHCPv6	Identifies if the service has Lightweight DHCPv6 Relay Agent enabled.
PPPoE	Enable or disable PPPoE for a given service. (enable|disable)
IGMP	Enable or disable IGMP for a given service. (enable|disable)
DAI	Flag; if enabled Dynamic ARP Inspection is active for the service
NNI S-TAG	Identifies the outer tag of the service on the network-facing (Ethernet) interface in the uplink port (1..4094)
UNI C-TAG	Identifies the VLAN delivered/received to/from the (Ethernet) subscriber-facing interface at the ONU. (1..4094) After this VLAN can be translated in the ONU.
Uplink Interfaces	Uplink Slot/port pair (NNI)
Downlink Interfaces	Slot/Port (PON) pair (UNI).Identifies the GPON port(s) associated to the Service

"showconfig" command

Table 737. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/services/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 855. CLI on line help on "showconfig" command usage in this node context

```
/cli/services> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"statistics" sub-node

This sub-node is used to view statistics information for each service. Before statistics are available a counter must be set on the desired interface. Service statistics use a few resources on the hardware so they must activated when needed and disabled otherwise.

The information shown depends on the type of service; each type of service will display a different table and different information.

"arp-inspection" sub-node

"show" command

Table 738. "show" command information

Name	show
Description	Shows ARP Inspection statistics for a given service with DAI flag active.
Full path	/services/statistics/arp-inspection/show
Mandatory Parameters	--serviceID
Screen Output	Table, Figure 861. Table parameters description in Table 743.

Figure 856. CLI on line help on "show" command usage in this node context

```
/cli> services/statistics/arp-inspection/show ?

Usage SHOW:
  SHOW                    Show ARP Inspection statistics for a given service with DAI flag active.

   <MANDATORY>
   --serviceID             Select an OLT service by ID
```

Figure 857:"show" command, used with serviceID parameter, output in this node context

```
/cli/services/statistics/arp-inspection> show --serviceID=5
+-------------------------------------------------------------------------------------------+
|ARP Inspection Statistics for Network Service (5) macbridge_unst                           |
+-----------------------------------+-------------------------------+-------------------------------+
|Parameter                          |Value                                                          |
+-----------------------------------+-------------------------------+-------------------------------+
|                                   |Total                          |Partial                        |
+-----------------------------------+-------------------------------+-------------------------------+
|DHCP Drops                         |0                              |0                              |
|ACL Drops                          |0                              |0                              |
|DHCP Permits                       |0                              |0                              |
|ACL Permits                        |0                              |0                              |
|Bad Source MAC                     |0                              |0                              |
|Bad Dest MAC                       |0                              |0                              |
|Invalid IP                         |0                              |0                              |
|Forwarded                          |0                              |0                              |
|Dropped                            |0                              |0                              |
+-----------------------------------+-------------------------------+-------------------------------+
gPress 'q' to quit or 'r' to reset
```

Table 739. "show" command, used with serviceID parameter, output table parameters

Parameter	Description
DHCP Drops	ARP packets dropped by DAI because no entry was found on DHCP snooping binding table
ACL Drops	ARP packets dropped by DAI because no entry was found on ARP ACL rules and the static flag is set on this service/VLAN
DHCP Permits	ARP packets forwarded by DAI because a match was found on the DHCP snooping binding table
ACL Permits	ARP packets permitted by DAI because a match was found on the ARP ACL rules for this service/VLAN
Bad Source MAC	ARP packets dropped by DAI because the sender MAC address in ARP packet didn't match the source MAC in ethernet header
Bad Dest. MAC	ARP packets dropped by DAI because the target MAC address in ARP reply packet didn't match the destination MAC in ethernet

	header
Invalid IP	ARP packets dropped by DAI because the sender IP address in ARP packet or target IP address in ARP reply packet is invalid. Invalid addresses include 0.0.0.0, 255.255.255.255, IP multicast addresses, class E addresses (240.0.0.0/4), loopback addresses (127.0.0.0/8)
Forwarded	Valid ARP packets forwarded by DAI
Dropped	Invalid ARP packets dropped by DAI

"counters" sub-node

This sub node is used to activate or deactivate the service counters.

"availableValues" command

Table 740. "availableValues" command information

Name	availableValues
Description	Displays all services and Interfaces where counters can be activated.
Full path	/services/statistics/counters/availableValues
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 859. Table parameters description in Table 741.

Figure 858. CLI on line help on "availableValues" command usage in this node context

```
/cli/services/statistics/counters> availableValues ?

Usage:
  AVAILABLEVALUES Display all services and Interfaces where counters can be activated.
```

Figure 859. Output of ”availableValues” command in this node context

```
/cli/services/statistics/counters> availableValues
+-------------------------------------------------------------
|Interfaces where Counters can be Activated
+-----------------------------------+-----+---------------
|Service (ID) Name                  |Slot |Port
+-----------------------------------+-----+---------------
|(1) MBStacked#100                  |5    |--
|                                   |9    |PON 1
|                                   |11   |--
|                                   |17   |Eth 3
+-----------------------------------+-----+---------------
|(2) MB#200                         |9    |PON 1
|                                   |11   |--
|                                   |17   |Eth 3
+-----------------------------------+-----+---------------
|(3) UniStacked#300                 |5    |--
|                                   |9    |PON 1, PON 2
|                                   |11   |--
|                                   |17   |Eth 3
+-----------------------------------+-----+---------------
|(4) Uni#400                        |5    |--
|                                   |9    |PON 1, PON 2
|                                   |11   |--
|                                   |17   |Eth 3
+-----------------------------------+-----+---------------
```

Table 741. “availableValues” command output table parameters

Parameter	Description
Service (ID) Name	Available Service identified by Service ID (number) and Service Name
Slot	Slot number where is the port with the service available
Port	Port number where the service is available.

"show" command

Table 742. "show" command information

Name	show
Description	Shows the statistics for a given service and interface, whose counter has already been activated.
Full path	/services/statistics/counters/show
Mandatory Parameters	--serviceID
Screen Output	Table, Figure 861. Table parameters description in Table 743.

Figure 860. CLI on line help on "show" command usage in this node context

```
/cli/services/statistics/counters> show ?

Usage:
  SHOW          Show the statistics for a given service and interface, whose counter has already
been activated.

  <MANDATORY>
  --serviceID              Select an OLT service by ID.

  [OPTIONAL]
  --port                   Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                   Identifies a slot. (not used for LAG)
```

Figure 861:"show" command output in this node context

```
/cli/services/statistics/counters> show --serviceID=1 --port=pon.1 --slot=9
+-------------------------------------------------------------------------------------------------------------------------------+
|Slot 9, intEth 1, Service (1) 'MBStacked#100'                                                                                  |
+----------+-------------------------------------------------------------+-------------------------------------------------------+
|Parameter |Rx                                                           |Tx                                                     |
+----------+-----------------------------+-----------------------------+-----------------------------+-----------------------------+
|          |Total                        |Partial                      |Total                        |Partial                      |
+----------+-----------------------------+-----------------------------+-----------------------------+-----------------------------+
|Total     |0                            |0                            |-                            |-                            |
|Unicast   |0                            |0                            |-                            |-                            |
|Multicast |0                            |0                            |-                            |-                            |
|Broadcast |0                            |0                            |-                            |-                            |
|Dropped   |0                            |0                            |-                            |-                            |
+----------+-----------------------------+-----------------------------+-----------------------------+-----------------------------+
qPress 'q' to quit or 'r' to reset
```

Table 743. "show" command output table parameters

Parameter Group	Parameter	Description
Rx/Tx	Unicast	Total number of Unicast packets
	Multicast	Total number of Multicast packets
	Broadcast	Total number of Broadcast packets
	Dropped	Total number of Dropped packets
	Total	Total number (all types) of packets

"show-active" command

Table 744. "show-active" command information

Name	Show-active
Description	Displays all active counters.
Full path	/services/statistics/counters/show-active
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 863. Table parameters description in Table 745

Figure 862. CLI on line help on "show" command usage in this node context

```
/cli/services/statistics/counters> show-active ?

Usage:
  SHOW-ACTIVE     Display all active counters.
```

Figure 863. Output of "show-active" command in this node context

```
/cli/services/statistics/counters> show-active
+-------------------------------------------------------------
|Active Counters gathering Services Statistics
+-----------------------------------+-----+---------------
|Service (ID) Name                  |Slot |Port
+-----------------------------------+-----+---------------
|(1) MBStacked#100                  |5    |
|                                   |9    |PON 1
+-----------------------------------+-----+---------------
```

Table 745. "show-active" command output table

Parameter	Description
Service (ID) Name	Service identified by Service ID (number) and Service Name with active counters gathering service statistics
Slot	Slot number where is the port with the service available
Port	Port number where the service is available.

"start" command

Table 746. "start" command information

Name	start
Description	Starts the statistics counter for a given interface and service.
Full path	/services/statistics/counters/start
Mandatory Parameters	--serviceID
Screen Output	No

Figure 864. CLI on line help on "start" command usage in this node context

```
/cli/services/statistics/counters> start ?

Usage:
 START        Start the statistics counter for a given interface and service.

  <MANDATORY>
  --serviceID              Select an OLT service by ID.

  [OPTIONAL]
  --port                   Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --slot                   Identifies a slot. (not used for LAG)
```

"stop" command

Table 747. "stop" command information

Name	stop
Description	Stops an active statistics counter.
Full path	/services/statistics/counters/stop
Mandatory Parameters	--serviceID
Screen Output	No

Figure 865. CLI on line help on "stop" command usage in this node context

```
/cli/services/statistics/counters> stop ?

Usage:
 STOP         Stop an active statistics counter.

  <MANDATORY>
  --serviceID              Select an OLT service by ID.

  [OPTIONAL]
```

--port	Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
--slot	Identifies a slot. (not used for LAG)

"dhcp" sub-node

"availableValues" command

Table 748. "availableValues" command information

Name	availableValues
Description	Displays possible values for service IDs and Interfaces.
Full path	/services/statistics/dhcp/availableValues
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 867. Table parameters description in Table 749.

Figure 866. CLI on line help on "availableValues" command usage in this node context

```
/cli/services/statistics/dhcp> availableValues ?

Usage:
  AVAILABLEVALUES Display possible values for service IDs and Interfaces.
```

Figure 867. Output of "availableValues" command in this node context

```
/cli/services/statistics> dhcp/availableValues
+-----------------------------------------------------------
|Slots and Interfaces with DHCP statistics Available
+-----------------------------------+-----+-------------
|Service (ID) Name                  |Slot |Port
+-----------------------------------+-----+-------------
|(8) UniStacked#900                 |5    |--
|                                   |11   |--
+-----------------------------------+-----+-------------
```

Table 749. "availableValues" command output table parameters

Parameter	Description
Service (ID) Name	Available Service identified by Service ID (number) and Service Name
Slot	Slot number where is the port with the service available
Port	Port number where the service is available.

"show" command

Table 750. "show" command information

Name	show
Description	Shows DHCP statistics for a unicast service with DHCPop82 enabled. If no port is given, show the slot information.
Full path	/services/statistics/dhcp/show
Mandatory Parameters	--serviceID --slot
Screen Output	Table, Figure 869. Table parameter description in Table 751.

Figure 868. CLI on line help on "show" command usage in this node context

```
/cli/services/statistics/dhcp> show ?

Usage:
  SHOW          Show DHCP statistics for a unicast service with DHCPop82 enabled. If no port is
given, show the slot information.

  <MANDATORY>
  --serviceID               Select an OLT service by ID.
  --slot                    Identifies a slot.

  [OPTIONAL]
  --port                    Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
```

Figure 869. Output of "show" command in this node context

```
/cli/services/statistics> dhcp/show --serviceID=8 --slot=5
+-------------------------------------------------------------------------------+
|Slot 5, Service (8) UniStacked#900                                             |
+-----------------------------------------------------+-----------+-----------+
|Parameter                                            |Rx         |Tx         |
+-----------------------------------------------------+-----------+-----------+
|Valid Packets                                        |0          |0          |
|Drop                                                 |0          |0          |
+-----------------------------------------------------+-----------+-----------+
|Client Request Without Options                       |0          |--         |
|               With Option 82                        |--         |0          |
|               With Option 37                        |--         |0          |
|               With Option 18                        |--         |0          |
+-----------------------------------------------------+-----------+-----------+
|Server Replies Without Options                       |--         |0          |
|               With Option 82                        |0          |--         |
|               With Option 37                        |0          |--         |
|               With Option 18                        |0          |--         |
+-----------------------------------------------------+-----------+-----------+
|Client Packets Trusted                               |0          |--         |
|Client Packets With Opts Untrusted                   |0          |--         |
|Server Packets Untrusted                             |0          |--         |
|Server Packets Without Opts Trusted                  |0          |--         |
+-----------------------------------------------------+-----------+-----------+
```

Table 751. "show" command output table

Parameter	Description
Valid Packets	Indicates the number of transmitted and received valid DHCP packets
Drop	Indicates the number of transmitted and received DHCP dropped packets
Client Request	Indicates the number of transmitted and received DHCP client request packets • **Without Options** • **Option 82** • **Option 37** • **Option 17**
Server Replies	Indicates the number of transmitted and received DHCP server replies packets • **Without Options:** • **Option 82** • **Option 37** • **Option 17**
Client Packets Trusted	Number of dropped packets because they are client requests without options received in Trusted interfaces (Network side)

Client Pack with Opts Untrusted	Number of dropped packets because they are client requests with options received in Untrusted interfaces (Client side)
Server Packets Untrusted	Number of dropped packets because they are server replies with options received in Untrusted interfaces (Client Side)
Server Pack without Options Trusted	Number of dropped packets because they are server replies without options received in Trusted interfaces (Network Side)

"igmp" sub-node

"availableValues" command

Table 752. "availableValues" command information

Name	availableValues
Description	Display possible values for service IDs and Interfaces.
Full path	/services/statistics/igmp/availableValues
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 871. Table parameters description in Table 753

Figure 870. CLI on line help on "availableValues" command usage in this node context

```
/cli/services/statistics/igmp> availableValues ?

Usage:
  AVAILABLEVALUES Display possible values for service IDs and Interfaces.
```

Figure 871. Output of ”availableValues” command in this node context

```
/cli/services/statistics> igmp/availableValues
+-------------------------------------------------------------------
|Interfaces with IGMP statistics Available
+-----------------------------------+-----+----------------------
|Service (ID) Name                  |Slot |Port
+-----------------------------------+-----+----------------------
|(1) MBStacked#100                  |5    |--
|                                   |9    |PON 1
|                                   |11   |--
+-----------------------------------+-----+----------------------
|(2) MB#200                         |9    |PON 1
|                                   |11   |--
+-----------------------------------+-----+----------------------
|(3) UniStacked#300                 |5    |--
|                                   |9    |PON 1, PON 2
|                                   |11   |--
+-----------------------------------+-----+----------------------
|(4) Uni#400                        |5    |--
|                                   |9    |PON 1, PON 2
|                                   |11   |--
+-----------------------------------+-----+----------------------
|(5) MCast#600                      |5    |--
|                                   |9    |PON 1, PON 2
|                                   |11   |--
|                                   |17   |Eth 3
+-----------------------------------+-----+----------------------
```

Table 753. “availableValues” command output table parameters

Parameter	Description
Service (ID) Name	Available Service identified by Service ID (number) and Service Name
Slot	Slot number where is the port with the service available
Port	Port number where the service is available.

“show” command

Table 754. "show" command information

Name	show
Description	Shows the IGMP statistics for a given multicast service and respective interface.
Full path	/services/statistics/igmp/show
Mandatory Parameters	--port --serviceID
Screen Output	Table, Figure 873. Table parameter description in Table 755

Figure 872. CLI on line help on "show" command usage in this node context

```
/cli/services/statistics/igmp> show ?

Usage:
  SHOW        Show the IGMP statistics for a given multicast service and respective interface.

  <MANDATORY>
  --port                  Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
  --serviceID             Select an OLT service by ID.

  [OPTIONAL]
  --slot                  Identifies a slot. (not used for LAG)
```

Figure 873. Output of "show" command in this node context

```
/cli/services/statistics> igmp/show --serviceID=5 --slot=9 --port=pon.1
+-----------------------------------------------------------------------------------------------------------------------------------
|IGMP Statistics for Network Service (5) MCast#600
+-----------------------------------+-----------------------------------------------------------+-----------------------------------------------
|Parameter                          |Rx                                                         |Tx
+-----------------------------------+-----------------------------+-----------------------------+-----------------------------+---------------
|                                   |Total                        |Partial                      |Total                        |Partial
+-----------------------------------+-----------------------------+-----------------------------+-----------------------------+---------------
|Packets Total                      |0                            |0                            |0                            |0
|        Dropped                    |0                            |0                            |-                            |-
|        Valid                      |0                            |0                            |-                            |-
|        Invalid                    |0                            |0                            |-                            |-
+-----------------------------------+-----------------------------+-----------------------------+-----------------------------+---------------
|v2      Join                       |0                            |0                            |0                            |0
|        Invalid Join               |0                            |0                            |-                            |-
|        Leave                      |0                            |0                            |0                            |0
+-----------------------------------+-----------------------------+-----------------------------+-----------------------------+---------------
|v3      Membership Report          |0                            |0                            |0                            |0
|        Invalid Membership Report  |0                            |0                            |-                            |-
|        To-Include                 |0                            |0                            |0                            |0
|        To-Exclude                 |0                            |0                            |0                            |0
|        Is-Include                 |0                            |0                            |0                            |0
|        Is-Exclude                 |0                            |0                            |0                            |0
|        Allow                      |0                            |0                            |0                            |0
|        Block                      |0                            |0                            |0                            |0
|        Invalid To-Include         |0                            |0                            |-                            |-
|        Invalid To-Exclude         |0                            |0                            |-                            |-
|        Invalid Is-Include         |0                            |0                            |-                            |-
|        Invalid Is-Exclude         |0                            |0                            |-                            |-
|        Invalid Allow              |0                            |0                            |-                            |-
|        Invalid Block              |0                            |0                            |-                            |-
+-----------------------------------+-----------------------------+-----------------------------+-----------------------------+---------------
|Queries General                    |0                            |0                            |0                            |0
|        Group Specific             |0                            |0                            |0                            |0
|        Group and Source Specific  |0                            |0                            |0                            |0
+-----------------------------------+-----------------------------+-----------------------------+-----------------------------+---------------
qPress 'q' to quit or 'r' to reset
```

Table 755. "show" command output table parameters

Parameter	Description
Packets: Rx/Tx Total and Partial	Indicates the number of transmitted and received packets: • **Total:** sum of all packets

counters displayed	• **Dropped:** sum of all dropped packets • **Valid:** sum of all valid (compliant with the IGMP standards) packets • **Invalid:** sum of all invalid (non-compliant with the IGMP standards) packets
V2: Rx/Tx Total and Partial counters displayed	Indicates the number of transmitted and received IGMPv2 packets of type • **Join** • **Invalid Join** • **Leave**
V3: Rx/Tx Total and Partial counters displayed	Number of Transmitted and Received IGMPv3 packets of type: • **Membership Report** • **Invalid Membership Report** • **To-Include** • **To-exclude** • **Is-Include** • **Is-Exclude** • **Allow** • **Block** • **Invalid To-Include** • **Invalid To-Exclude** • **Invalid Is-Include** • **Invalid Is-Exclude** • **Invalid Allow** • **Invalid Block**
Queries: Rx/Tx Total and Partial counters displayed	Number of transmitted and Received Queries • **General:** of type General queries • **Group Specific:** of type Group specific queries • **Group and Source Specific:** of type Group and Source specific queries

"synchronism" node

Figure 874."synchronism" node tree

```
/cli/synchronism> tree
+ synchronism[]
  + global[@config, @show, @showconfig]
    + sources[@availableValues, @config, @show, @showconfig]
  + ptp[@config, @show, @showconfig]
    + port[@availableValues, @config, @create, @remove, @show, @showconfig]
      + ip-access-list[@config, @create, @remove, @show]
  + status[]
    + global[@command, @show]
```

```
        + sources[@command, @show]
      + ptp[@show]
```

"global" sub-node

"config" command

Table 756. "config" command information

Name	config
Description	Configures synchronism global parameters
Full path	/synchronism/global/config
Mandatory Parameters	No
Screen Output	No

Figure 875. CLI on line help on "config" command usage in this node context

```
/cli/synchronism/global> config ?

Usage:
 CONFIG        Configure synchronism global parameters

  [OPTIONAL]
  --free-run-source                 Activate or deactivate the free-run source
                                    (enable|disable)
  --holdover-msg-delay              Set the Holdover message delay (500..2000 ms)
  --min-quality-before-squelch      Set the Minimum quality before squelch
  --quality-level-mode              Enables synchronism quality level (enable|disable)
  --reversibility-level-mode        Enables revertive switching mode when recovering
                                    from a failure (enable|disable)
  --reversibility-time              Set the Reversibility time (0..3600 sec.)
  --send-val-after-quality-unknown  Set the value to be sent in case Quality Unknown is
                                    received
  --switching-msg-delay             Set the Switching message delay (180..500 ms)
```

"show" command

Table 757. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/synchronism/global/show
Mandatory Parameters	This command has no parameters

Screen Output	Tables Figure 877.Table parameters description in Table 758

Figure 876. CLI on line help on "show" command usage in this node context

```
/cli/synchronism/global> show ?

Usage:
  SHOW          Show the current configuration
```

Figure 877.Output of "show" command in this node context"

```
/cli/synchronism/global> show
+-----------------------------------------------+
|Synchronism Global Information                 |
+-----------------------------------+-----------+
|Parameter                          |Value      |
+-----------------------------------+-----------+
|Quality level mode                 |Enabled    |
|Reversibility level mode           |Disabled   |
|Reversibility time              (s)|0          |
|Holdover message delay         (ms)|1200       |
|Switching message delay        (ms)|350        |
|Minimum quality before Squelch     |SEC        |
|Send value after quality unknown   |DNU        |
|Number of junctions                |2          |
|Source free-run                    |Disabled   |
+-----------------------------------+-----------+
```

Table 758. "show" command output table parameters

Parameter	Description
Quality level-mode	Configured Synchronism quality level. If enabled the user can set the equipment synchronization to take into account the SSM synchronization sources (Synchronization Status Message)
Reversibility-level-Mode	Configured reversal switching mode when recovering from a failure. If Enabled: the status machine of the equipment only considers for synchronization source, a source that does not show timing flaws and where the Reversibility Time has expired. If the quality/priority of this source (depending on the current configuration of the Quality Level Mode) is higher than the current source, the equipment will use this quality/priority source. Otherwise the source is not changed. If Disabled: a source that has been previously considered invalid will only be used for synchronization, if the current source fails and if there is no other source with a higher quality/priority
Reversibility-time (s)	Configured reversibility time - time, in seconds: after this period of time, the fault condition disappears and the invalid source will be reconsidered for synchronization. This time is considered after the Wait-To-Restore time has elapsed
Holdover-message delay	Configured Holdover message delay - time, in milliseconds, considered in the

(ms)	case where the equipment is in Holdover mode. This state is due to a fault condition in the selected synchronization source and when there is no other available source.
Switching message delay (ms)	Configured switching message delay in milliseconds, applicable in the case where changing to another synchronization source is carried out with a different Quality Level value. This delay sets the elapsed time between the trigger of the new synchronization source and a change in the output Quality Level.
Minimum quality before Squelch	Configured Minimum quality before squelch value. The equipment will squelch the synchronization source if there is no other source with a quality level equal to or better than the selected source.
Send value after quality unknown	Configured value to be sent if Quality Unknown is received. The equipment will make the SSM output with the respective Quality Level configured if there is no synchronization source with a Quality Level other than Quality Unknown
Number of junctions	Number of junctions that can be used for as synchronism source
Source free-run	Source free-run If enabled the system always synchronizes with its internal clock (array unit PLL).

"showconfig" command

Table 759. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/synchronism/global/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 878. CLI on line help on "showconfig" command usage in this node context

```
/cli/synchronism/global> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"sources" sub-node

"availableValues" command

Table 760. "availableValues" command information

Name	availableValues
Description	Shows the available values for configurable parameters. Can filter by source ID.

Full path	/synchronism/global/sources/availableValues
Mandatory Parameters	No
Screen Output	Table, Figure 880. Table parameters description in Table 761

Figure 879. CLI on line help on "availableValues" command usage in this node context

```
/cli/synchronism/global/sources> availableValues ?

Usage:
  AVAILABLEVALUES Show the available values for configurable parameters. Can filter by
source ID.

  [OPTIONAL]
  --ID                Identifies a table entry by ID, in this context.
```

Figure 880. Output of "availableValues" command in this node context

```
/cli/synchronism/global/sources> availableValues
+-------------------------------------------------------------------+
|Synchronism Global Sources - Show Available Values                 |
+---+----------+----------+---------------------------------------+
|   |          |Possible Values for Argument                       |
+---+----------+----------+---------------------------------------+
|ID |Source    |SA bits   |Interface                              |
+---+----------+----------+---------------------------------------+
|1  |J1        |4..8      |(0) 2 Mbps 75 Ohm                      |
|   |          |--        |(1) 2 MHz  75 Ohm                      |
|   |          |4..8      |(2) 2 Mbps 120 Ohm                     |
|   |          |--        |(3) 2 MHz  120 Ohm                     |
+---+----------+----------+---------------------------------------+
|2  |J2        |4..8      |(0) 2 Mbps 75 Ohm                      |
|   |          |--        |(1) 2 MHz  75 Ohm                      |
|   |          |4..8      |(2) 2 Mbps 120 Ohm                     |
|   |          |--        |(3) 2 MHz  120 Ohm                     |
+---+----------+----------+---------------------------------------+
|18 |Slot 17   |--        |Eth 1                                  |
|   |          |--        |Eth 2                                  |
|   |          |--        |Eth 3                                  |
|   |          |--        |Eth 4                                  |
+---+----------+----------+---------------------------------------+
|21 |PTP       |--        |Not Configurable                       |
+---+----------+----------+---------------------------------------+
```

Table 761. "availableValues" command output table parameters

Parameter	Description
ID	Identifies a synchronism source by ID

Source	Identifies a synchronism source by Name
SA bits	Indicates the available values for the SA bits
Interface	Identifies the synchronism interface by ID and Name

"config" command

Table 762. "config" command information

Name	config
Description	Configures synchronism sources information.
Full path	/synchronism/sources/config
Mandatory Parameters	--ID
Screen Output	No

Figure 881. CLI on line help on "config" command usage in this node context

```
/cli/synchronism/global/sources> config ?

Usage:
 CONFIG        Configure synchronism sources information.

  <MANDATORY>
  --ID                    Identifies a table entry by ID, in this context.

  [OPTIONAL]
  --QL-SSM                Set the Quality-Level for this particular clock source
  --active                Enables clock source activation (enable|disable)
  --hold-off-time         If a source goes down, wait 'n' (ms) before removing it from the clock
                          selection (300..1800 ms)
  --interface             Set the interface of the card to be used as clock source.
                          (@availableValues)
  --priority              Set the clock source priority value (1..253)
  --sa-bit-RX             Configure SA bit used for reception of SSM packets(4..8)
  --sa-bit-TX             Configure SA bit used for transmission of SSM packets(4..8)
  --wait-to-restore       Amount of time before including a new clock source in clock
                          selection (0..12 min.)
```

"show" command

Table 763. "show" command information

Name	show
Description	Show the current sources configuration.
Full path	/synchronism/global/show

Mandatory Parameters	This command has no parameters
Screen Output	Tables Figure 883.Table parameters description in Table 764

Figure 882. CLI on line help on "show" command usage in this node context

```
/cli/synchronism/global/sources> show ?

Usage:
  SHOW          Show the current sources configuration
```

Figure 883.Output of "show" command in this node context

```
/cli/synchronism/global/sources> show
+-------------------------------------------------------------------------------------------------------------------------------------------------------+
|Synchronism Global Sources                                                                                                                             |
+---+----------+----------+---------------+----------+----------+----------+----------+--------------------+-------------------------------+
|ID |Source    |Active    |Interface      |Priority  |QL_SSM    |SA-bit-TX |SA-bit-RX |Hold Off Time (ms)  |Wait to Restore Time (min)     |
+---+----------+----------+---------------+----------+----------+----------+----------+--------------------+-------------------------------+
|1  |J1        |disable   |2 Mbps 75 Ohm  |1         |received  |8         |8         |1000                |5                              |
|2  |J2        |disable   |2 Mbps 75 Ohm  |1         |received  |8         |8         |1000                |5                              |
|18 |Slot 17   |disable   |Eth 1          |1         |received  |--        |--        |1000                |5                              |
|21 |PTP       |disable   |--             |1         |received  |--        |--        |1000                |5                              |
+---+----------+----------+---------------+----------+----------+----------+----------+--------------------+-------------------------------+
```

Table 764. "show" command output table parameters

Parameter	Description
ID	Table entry Identifier
Source	Lists all possible interfaces (slots and junctions) for synchronization
Active	Allows a given synchronization source to be enabled or disabled.
Interface	This column allows selection of an n Ethernet interface, within a certain module, which can be used as a possible synchronization source. In the case of the junctions, it is possible to configure if this operates at 2MHz or 2Mbits
Priority	Allows setting the source priority. The lower the priority value, the greater the preference of this source over the others. Note that, for sources having equal priority, the concept of reversibility has no meaning.
QL-SSM	Quality Level; The user can select the intended SSM value for the source. This value overrides the value received by the equipment. When the SSM value is overridden, the following precautions should be taken: In case of interface LOS, this source is not used. If the received value is DNU, the equipment will continue to use this synchronization source.
SA-bit-Tx	Allows setting the value of the transmission Sa bit in the case of 2Mbps (only for the synchronization junctions);
SA-bit-Rx	Allows setting the value of the reception Sa bit in the case of 2Mbps (only for the synchronization junctions)
Hold-Off time (ms)	The Hold-Off time ensures that the activation, even if short, of the signal failure has no influence on the synchronization source selection process. This value can vary between 300ms and 1800ms
Wait-To-Restore time (min)	The Wait-To-Restore time ensures that a prior fault in the synchronization source will only be considered valid for this selection process if it is maintained without failure for a specified period of time. This parameter can have values ranging from 0 to 12 minutes with 1 minute resolution. The default value is 5 minutes.

“showconfig” command

Table 765. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/synchronism/global/sources/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 884. CLI on line help on “showconfig” command usage in this node context

```
/cli/synchronism/sources/global> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

“ptp” sub-node

“config” command

Table 766. "config" command information

Name	config
Description	Configures global PTP parameters
Full path	/synchronism/ptp/config
Mandatory Parameters	No
Screen Output	No

Figure 885. CLI on line help on “config” command usage in this node context

```
/cli/synchronism/ptp> config ?

Usage CONFIG:
  CONFIG                  Configure global PTP parameters

   [OPTIONAL]
   --alternate-master          Enables the alternate master flag (enable|disable)
   --bmca                     Enables Best Master Clock Algorithm (enable|disable)
   --clock-accuracy            Specify the clock Quality accuracy type
   --clock-class              Specify the default clock Quality class(0..255)
   --clock-type               Set the clock type (ordinary|boundary)
   --priority-1               Override criteria for best master clock selection (1..253)
```

```
  --priority-2              Specify a particular switch priority when criteria matches (1..253)
  --slave-only              Enables slave only configuration of the PTP machine (enable|disable)
  --telecom-profile         Enables Telecom profile configuration of the PTP machine
(enable|disable)
  --two-step-clock          Enables Two-step clock configuration of the PTP machine
(enable|disable)
  --unicast-negotiation     Enables Unicast negotiation configuration of the PTP machine
(enable|disable)
```

"show" command

Table 767. "show" command information

Name	show
Description	Shows the current global PTP configuration
Full path	/synchronism/ptp/show
Mandatory Parameters	This command has no parameters
Screen Output	Tables Figure 887.Table parameters description in Table 768

Figure 886. CLI on line help on "show" command usage in this node context

```
/cli/synchronism/ptp> show ?

Usage:
  SHOW          Show the current global PTP configuration
```

Figure 887.Output of ”show” command in this node context

```
/cli/synchronism/ptp> show
+----------------------------------------+
|Synchronism PTP Information             |
+--------------------+-------------------+
|Parameter           |Value              |
+--------------------+-------------------+
|Clock Type          |boundary           |
|Clock Class         |255                |
|Clock Accuracy      |unknown            |
|Priority 1          |128                |
|Priority 2          |128                |
|Slave Only          |Disabled           |
|TwoStep Clock       |Disabled           |
+--------------------+-------------------+
|Telecom Profile     |Disabled           |
|Unicast Negotiation |Enabled            |
|BMCA                |Disabled           |
|Alternate Master    |Disabled           |
+--------------------+-------------------+
```

Table 768. “show” command output table parameters

Parameter	Description
Clock Type	Indicates Clock Type
Clock Class	Indicates clock class
Clock Accuracy	Indicates clock accuracy
Priority1	Indicates override criteria for best master clock selection
Priority 2	Indicates the particular switch priority when criteria matches
Slave Only	Indicates if slave only configuration of the PTP machine is enabled
Two Step Clock	Indicates if two-clock configuration of the PTP machine is enabled
Telecom Profile	Indicates if Telecom profile is enabled
Unicast Negotiation	Indicates if Unicast negotiation is enabled
BMCA	Indicates if BMCA is enabled
Alternate Master	Indicates if alternate master is enabled

“showconfig” command

Table 769. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/synchronism/ptp/showconfig
Mandatory	This command has no parameters

Parameters	
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 888. CLI on line help on "showconfig" command usage in this node context

```
/cli/synchronism/ptp> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"port" sub-node

"availableValues" command

Table 770. "availableValues " command information

Name	availableValues
Description	Shows the available values for configurable arguments.
Full path	/synchronism/ptp/port/availableValues
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 890.Table parameters description Table 771

Figure 889. CLI on line help on "availableValues" command usage in this node context

```
/cli/synchronism/ptp/port> availableValues ?

Usage:
  AVAILABLEVALUES Show the available values for configurable arguments.
```

Figure 890.Output of "availableValues" command in this node context

```
/cli/synchronism/ptp/port> availableValues
+-------------------------------------------------------+
|Available Values for Synchronism PTP Port Entities     |
+-----+-------------------------------------------------+
|Slot |Port                                             |
+-----+-------------------------------------------------+
|5    |Eth 1, Eth 2, Eth 3, Eth 4, Eth 5, Eth 6, Eth 7, E|
|11   |Eth 1, Eth 2, Eth 3, Eth 4, Eth 5, Eth 6, Eth 7, E|
|17   |Eth 1, Eth 2, Eth 3, Eth 4                       |
+-----+-------------------------------------------------+
```

Table 771. "availableValues" command output table parameters

Parameter	Description
Slot	Indicates the slot
Port	Indicates the ME4620 OLT interface

"config" command

Table 772. "config" command information

Name	config
Description	Configures a specific PTP port.
Full path	/synchronism/ptp/port/config
Mandatory Parameters	--ID
Screen Output	No

Figure 891. CLI on line help on "config" command usage in this node context

```
/cli/synchronism/ptp/port> config ?

Usage CONFIG:
  CONFIG                    Configure a specific PTP port.

   <MANDATORY>
   --ID                     Identifies a table entry by ID, in this context.

   [OPTIONAL]
   --admin                  Administrative State. Enable/disable, in this context. (enable|disable)
   --announce-interval      Set the Announce message transmission interval
   --announce-receipt-timeout   Set the Announce receipt timeout associated with this clock
port(2..255 sec.)
   --delay-mechanism        Specify the delay mechanism used (end2end)
   --local-priority         Set the priority for this clock port
   --min-delay-req-interval Set the delay-request minimum interval
   --peer-ip                Specify the PTP clock port Peer IP address
   --peer-ip-mask           Specify the PTP clock port Peer IP Mask (0..32)
   --pkt-size               Set the PTP config port packet size (86..1500 Bytes)
   --port                   Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)
   --role                   Specify the PTP clock port role (slave|master)
   --self-ip                Specify the PTP clock port Self IP address
   --self-ip-mask           Specify the PTP clock port Self IP Mask (0..32)
   --slot                   Identifies a slot. (not used for LAG)
   --sync-interval          Set the synchronism message transmission interval
   --vlan                   Choose a VLAN ID.
```

"create" command

Table 773. "create" command information

Name	create
Description	Creates a new PTP port.
Full path	/synchronism/ptp/port/create
Mandatory Parameters	--port
Screen Output	No

Figure 892. CLI on line help on "create" command usage in this node context

```
/cli/synchronism/ptp/port> create ?

Usage CREATE:
 CREATE                    Create a new PTP port.

  <MANDATORY>
  --port                   Identifies an interface on the OLT. (e.g.: pon.2; eth.3; lag.1)

  [OPTIONAL]
  --admin                  Administrative State. Enable/disable, in this context. (enable|disable)
  --announce-interval      Set the Announce message transmission interval
  --announce-receipt-timeout  Set the Announce receipt timeout associated with this clock
port(2..255 sec.)
  --delay-mechanism        Specify the delay mechanism used (end2end)
  --local-priority         Set the priority for this clock port
  --min-delay-req-interval  Set the delay-request minimum interval
  --peer-ip                Specify the PTP clock port Peer IP address
  --peer-ip-mask           Specify the PTP clock port Peer IP Mask (0..32)
  --pkt-size               Set the PTP config port packet size (86..1500 Bytes)
  --role                   Specify the PTP clock port role (slave|master)
  --self-ip                Specify the PTP clock port Self IP address
  --self-ip-mask           Specify the PTP clock port Self IP Mask (0..32)
  --slot                   Identifies a slot. (not used for LAG)
  --sync-interval          Set the synchronism message transmission interval
  --vlan                   Choose a VLAN ID.
```

"remove" command

Table 774. "remove" command information

Name	remove
Description	Removes an existing PTP port
Full path	/synchronism/ptp/port/remove
Mandatory Parameters	--ID

Screen Output	No

Figure 893. CLI on line help on “remove” command usage in this node context

```
/cli/synchronism/ptp/port> remove ?

Usage:
  REMOVE        Remove an existing PTP port.

   <MANDATORY>
   --ID                    Identifies a table entry by ID, in this context.
```

“show” command

Table 775. "show" command information

Name	show
Description	Shows the current PTP port configuration.
Full path	/synchronism/ptp/port/show
Mandatory Parameters	No
Screen Output	Table Figure 895.Table parameters description in Table 776.

Figure 894. CLI on line help on “show” command usage in this node context

```
/cli/synchronism/ptp/port> show ?

Usage:
  SHOW          Show the current PTP port configuration

   [OPTIONAL]
   --ID                   Identifies a table entry by ID, in this context.
```

Figure 895.Output of ”show” command in this node context

```
/cli/synchronism/ptp/port> show
+-------------------------------------------------------------------------------------------------+
|Synchronism PTP Port                                                                             |
+---+-------+----------+------+----------------+-------------+----------------+-------------+
|ID |Admin  |NNI-STAG  |Role  |Self IP         |Self IP Mask |Peer IP         |Peer IP Mask |
+---+-------+----------+------+----------------+-------------+----------------+-------------+
+---+-------+----------+------+----------------+-------------+----------------+-------------+
```

Table 776. "show" command output table parameters

Parameter	Description
ID	Identifies a PTP port by ID
Admin	Indicates PTP port administrative state
NNI-STAG	Indicates Outer VLAN ID (service) on the network-facing (Ethernet) interface.
Role	Indicates if the PTP port acts as a slave or as a master
Self IP	Indicates the origin PTP port IP address
Self IP Mask	Indicates the origin PTP port IP Mask
Peer IP	Indicates the destination PTP port IP address
Peer IP Mask	Indicates the destination PTP port IP Mask

"showconfig" command

Table 777. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/synchronism/ptp/port/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 896. CLI on line help on "showconfig" command usage in this node context

```
/cli/synchronism/ptp/port> showconfig ?

Usage:
  SHOWCONFIG      Print the command list that enforces the current configuration
```

"ip-access-list" sub-node

"config" command

Table 778. "config" command information

Name	config
Description	Configure.
Full path	/synchronism/ptp/port/ip-access-list/config
Mandatory Parameters	--ID
Screen Output	No

Figure 897. CLI on line help on "config" command usage in this node context

```
/cli/synchronism/ptp/port/ip-access-list> config ?

Usage CONFIG:
  CONFIG                 Configure

  <MANDATORY>
  --ID                   Identifies a table entry by ID, in this context.

  [OPTIONAL]
  --admin                Administrative State. Enable/disable, in this context. (enable|disable)
  --gw-ip                Set the gateway IP address
  --ip-address           IPv4 address
  --ip-mask              IPv4 Subnet Mask
  --olt-ptp-port-ID      Identify one OLT PTP port instance by ID.
  --role                 Set the access list entry role (allow|deny)
```

"create" command

Table 779. "create" command information

Name	create
Description	Creates.
Full path	/synchronism/ptp/port/ip-access-list/create
Mandatory Parameters	--olt-ptp-port-ID
Screen Output	No

Figure 898. CLI on line help on "create" command usage in this node context

```
/cli/synchronism/ptp/port/ip-access-list> create ?

Usage CREATE:
  CREATE                 Create

  <MANDATORY>
  --olt-ptp-port-ID      Identify one OLT PTP port instance by ID.

  [OPTIONAL]
  --ID                   Identifies a table entry by ID, in this context.
  --admin                Administrative State. Enable/disable, in this context. (enable|disable)
  --gw-ip                Set the gateway IP address
  --ip-address           IPv4 address
  --ip-mask              IPv4 Subnet Mask
  --role                 Set the access list entry role (allow|deny)
```

"remove" command

Table 780. "remove" command information

Name	remove
Description	Removes
Full path	/synchronism/ptp/port/ip-access-list/remove
Mandatory Parameters	--ID
Screen Output	No

Figure 899. CLI on line help on "remove" command usage in this node context

```
/cli/synchronism/ptp/port/ip-access-list> remove ?

Usage REMOVE:
  REMOVE                    Remove

   <MANDATORY>
   --ID                     Identifies a table entry by ID, in this context.
```

"show" command

Table 781. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/synchronism/ptp/port/ip-access-list/show
Mandatory Parameters	This command has no parameters
Screen Output	Table, Figure 901. Table parameters description in Table 782.

Figure 900. CLI on line help on "show" command usage in this node context

```
/cli/synchronism/ptp/port/ip-access-list> show ?

Usage:
  SHOW          Show the current configuration
```

Figure 901.Output of ”show” command in this node context

```
/cli/synchronism/ptp/port/ip-access-list> show
+-------------------------------------------------------------------------------+
|PTP Port IP Access List                                                        |
+---+-------------+----------+------------+------------+------------+------------+
|ID |Admin        |PTP Port  |IP          |Mask        |GW          |Role        |
+---+-------------+----------+------------+------------+------------+------------+
+---+-------------+----------+------------+------------+------------+------------+
```

Table 782. “show” command output table parameters

Parameter	Description
ID	Identifies a PTP port by ID
Admin	Indicates PTP port administrative state
PTP Port	PTP port Identifier
IP	IPv4 port address
Mask	Ipv4 sub network mask
Gw	Gateway IPv4 address
Role	Indicates the access list entry role (allow|deny)

“status” sub-node

“global” sub-node

“command” command

Table 783. "command" command information

Name	command
Description	Executes a command on a given source.
Full path	/synchronism/status/global/command
Mandatory Parameters	--type
Screen Output	No

Figure 902. CLI on line help on “config” command usage in this node context

```
/cli/synchronism/status/global> command ?

Usage COMMAND:
  COMMAND                    Execute a command on a given source.

   <MANDATORY>
   --type                    choose the command type. 'clear' commands don't need the 'slot'
argument. (manual-switch|force-switch|clear)
```

[OPTIONAL]	
--slot	Identifies a slot. (not used for LAG)

"show" command

Table 784. "show" command information

Name	show
Description	Shows the global status information
Full path	/synchronism/status/global/show
Mandatory Parameters	This command has no parameters.
Screen Output	Table, Figure 904. Table parameters description in Table 785

Figure 903. CLI on line help on "show" command usage in this node context

```
/cli/synchronism/status/global> show ?

Usage:
  SHOW          Show the global status information
```

Figure 904. Output of "show" command in this node context

```
/cli/synchronism/status> global/show
+-------------------------------------------------------------------------------------------------------------------------------+
|Synchronism Status Global                                                                                                      |
+-------------+-------------+----------------+--------------------+----------+-----------------------------------------+
|Quality Level|Active Source|Nbr Of Junctions|PLL Status          |Lock Alarm|Available Commands                       |
+-------------+-------------+----------------+--------------------+----------+-----------------------------------------+
|enabled      |--           |2               |freerun             |Not locked|manual-switch / force-switch / clear     |
+-------------+-------------+----------------+--------------------+----------+-----------------------------------------+
```

Table 785. "show" command output table parameters

Parameter	Description
Quality level	May be enabled or disabled
Active Source	Synchronization source (slot or junction number) of the respective PLL;
Nr. of Junctions	Number of synchronism junctions
PLL Status	Equipment system PLL is controlled by a state machine according to G.781 recommendation and can have one of the following status: **Hold Over**: The PLL will switch to this status if it ceases to be a valid synchronization source. This status provides a stable synchronization clock based on the original clock memorization; **Free Run**: The PLL is synchronized by the local clock; **Normal**: The PLL is synchronized by the programmed synchronization source
Lock alarm	This alarm is triggered when the PLL is not locked
Available Commands	There are several external commands that are available to the user, for example for maintenance purposes commands. These commands are independent and have

	different impacts on the selection processes. Enabling and disabling external commands associated with the synchronization selection process is defined below. Only one of these external commands is enabled by the selection process at a time. It is possible to carry out the following commands in the active synchronism sources, • **Clear** • **Manual Switch** • **Force Switch**

"sources" sub-node

"command" command

Table 786. "command" command information

Name	command
Description	Executes a command on a synchronism source.
Full path	/synchronism/status/global/sources/command
Mandatory Parameters	--ID --type
Screen Output	No

Figure 905. CLI on line help on "command" command usage in this node context

```
/cli/synchronism/status/global/sources> command ?

Usage:
 COMMAND       Execute a command on a synchronism source.

  <MANDATORY>
  --ID              Identifies a table entry by ID, in this context.
  --type            Enable/clear a lockout configuration on the specified clock source
                    (clear|lockout)
```

"show" command

Table 787. "show" command information

Name	show
Description	Shows the status information
Full path	/synchronism/status/global/sources/show
Mandatory Parameters	This command has no parameters.
Screen Output	Table, Figure 907. Table parameters description in Table 788

Figure 906. CLI on line help on "show" command usage in this node context

```
/cli/synchronism/status/global/sources> show ?

Usage:
  SHOW          Show the status information.
```

Figure 907. Output of "show" command in this node context

```
/cli/synchronism/status> global/sources/show
+-------------------------------------------------------------------+
|Synchronism Status Sources                                         |
+---+----------+----------+----------+----------+-----------------+
|ID |Source    |SSM RX    |SSM Used  |Signal Fail|Attenuation (dB)|
+---+----------+----------+----------+----------+-----------------+
+---+----------+----------+----------+----------+-----------------+
```

Table 788. "show" command output table parameters

Parameter	Description
ID	Indicates synchronization source
Source	Indicates synchronization source (slot or junction number)
SSM Rx	This column identifies the received SSM (Synchronization Status Message);
SSM Used	This column identifies the used SSM
Signal Fail	Signal failure of the respective synchronism source
Attenuation	Attenuation (measured in dB) associated with each of the existing synchronism junctions

"ptp" sub-node

"show" command

Table 789. "show" command information

Name	show
Description	Shows the current status information
Full path	/synchronism/status/ptp/show
Mandatory Parameters	This command has no parameters.
Screen Output	Table, Figure 909. Table parameters description in Table 790

Figure 908. CLI on line help on “show” command usage in this node context

```
/cli/synchronism/status/ptp> show ?

Usage:
  SHOW          Show the current status information
```

Figure 909. Output of ”show” command in this node context

```
/cli/synchronism/status> ptp/show
+-------------------------------------------------------------------------+
|Synchronism PTP Status                                                   |
+-----------------------------------------------+-------------------------+
|Parameter                                      |Value                    |
+-----------------------------------------------+-------------------------+
|Clock                                          |                         |
|   PLL Status                                  |--                       |
|   Packets Received                            |0                        |
|   Packets Sent                                |0                        |
+-----------------------------------------------+-------------------------+
|Default DS                                     |                         |
|   Clock Identity                              |00:00:00:00:00:00:00:00  |
|   TwoSetpFlag                                 |False                    |
|   Priority1                                   |0                        |
|   Priority2                                   |0                        |
|   SlaveOnly                                   |False                    |
|   Clock Class                                 |0                        |
|   Clock Accuracy                              |0                        |
|   Offset Scaled Log Variance                  |0                        |
+-----------------------------------------------+-------------------------+
|Parent DS                                      |                         |
|   Clock Identity                              |00:00:00:00:00:00:00:00  |
|   Port Number                                 |0                        |
|   Observed Offset Scaled Phase Log Variance   |--                       |
|   Observed Clock Phase Change Rate            |--                       |
|   Grand Master Clock Identity                 |00:00:00:00:00:00:00:00  |
|   Grand Master Priority1                      |0                        |
|   Grand Master Priority2                      |0                        |
|   Grand Master Clock Class                    |0                        |
|   Grand Master Clock Accuracy                 |0                        |
|   Grand Master Offset Scaled Log Variance     |0                        |
+-----------------------------------------------+-------------------------+
```

Table 790. “show” command output table parameters

Parameter Group	Parameter	Description
Clock **Default DS**	PLL Status	
	Packets Received	
	Packets Sent	

	Clock Identity	
	TwoStepFlag	Two-step clock configuration of the PTP machine (enable|disable)
	Priority 1	Override criteria for best master clock selection (1..253)
	Priority 2	Particular switch priority when criteria matches (1..253)
	SlaveOnly	Slave only configuration of the PTP machine (enable|disable)
	Clock Class	Default clock Quality class(0..255)
	Clock Accuracy	Clock Quality accuracy type
	OffSet Scaled Log Variance	
Parent DS	Clock Identity	
	Port Number	
	Observed OffSet Scaled Log Variance	
	Observed Clock Phase Change Rate	
	Grand Master Clock Identity	
	Grand Master Priority 1	Override criteria for best master clock selection (1..253)
	Grand Master Priority 2	Particular switch priority when criteria matches (1..253)
	Grand Master Clock Class	Default clock Quality class(0..255)
	Grand Master Clock Accuracy	Clock Quality accuracy type
	Grand Master OffSet Scaled Log Variance	

"tacacs+" node

Figure 910."tacacs+" node tree

```
/cli/tacacs+> tree
+ tacacs+[@config, @show, @showconfig]
  + server[@config, @create, @remove, @show, @showconfig]
  + server-group[@config, @show, @showconfig]
```

"tacacs+" node and sub-nodes tcacas+/server and tcacas+/server-group aggregate the commands that allow the configuration of the TACACS+ server list for use by the equipment.

- "tacacs+" node allows the configuration of the equipment for its authentication on the TCACAS+ server; Commands on this node allow to handle shared authentication and encryption key and the connection timeout value.
- Sub-node tcacas+/server allows managing tcacas+ servers related information on the equipment, so that they CAN be used by the equipment.

  In order for the equipment to use a TCACAS+ server, the server IP address and the ports for sending authentication and accounting requests must be specified as well as the shared authentication and encryption secret key and the connection timeout value.

  Servers must be created/configured with these parameters on tacacs+/server.

- Sub-node tcacas+/server-group allows managing tcacas+ server-group related information on the equipment, so that they CAN be used by the equipment. Currently there is only one server-group that is used to specify the server list and priorities for authenticating users that try to log into the equipment (if TCACAS+ is enabled for the application where the user is trying to login).

  The TCACAS+ server-group cannot be removed.

Current configuration on each node/sub-node can be viewed by using command show.

Current configuration on each node/sub-node can be changed by using config command.

The group of commands and corresponding parameters and respective values to be used in order to perform /replicate the current configuration is displayed by using the command showconfig on the corresponding node/sub-node.

Notes

- This node and respective sub-nodes only handle TACACS+ server(s) connection and login related configuration ON THE EQUIPMENT for its use by the equipment.
- This node and respective sub-nodes DO NOT configure TACACS+ servers themselves
- This node and respective sub-nodes DO NOT configure equipment applications and or users for usage of TACACS+ by AAA
- This node and respective sub-nodes DO NOT SET(enable) TACACS+ for usage by the equipment
- Setting (enable) AAA method for equipment and applications (WebTI and CLI) is handled on the following nodes and sub-nodes:

  applications/aaa node

  applications/aaa/cli/aaa

  applications/aaa/webti/aaa

"config" command

Table 791. "config" command information

Name	config
Description	Configures Global TACACS+ parameters.
Full path	/tacacs+/config
Mandatory Parameters	No
Screen Output	No

Figure 911. CLI on line help on "config" command usage in this node context

```
/cli/tacacs+> config ?

Usage CONFIG:
```

```
CONFIG                  Configure Global TACACS+ parameters.

[OPTIONAL]
--secret-key             Global encryption key for TACACS+ communications. (STRING 128)
--timeout               Connection timeout value, in seconds.(1..30)
```

“show” command

This command displays information on the current files configuration, in the format of a table.

Table 792. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/tacacs+/show
Mandatory Parameters	No
Screen Output	Table Figure 913. Table parameters are described in Table 792.

Figure 912. CLI on line help on “show” command usage in this node context

```
/cli/tacacs+> show ?

Usage SHOW:
  SHOW                  Show the current configuration
```

Figure 913.Output of ”show” command without arguments in this node context

```
/cli/tacacs+> show
+-----------------------------------------------------------------------------------------------------------------------------------------------------------------+
|TACACS+ Global Configuration                                                                                                                                     |
+----------+------------------------------------------------------------------------------------------------------------------------------------------------------+
|Timeout(s)|Secret Key                                                                                                                                            |
+----------+------------------------------------------------------------------------------------------------------------------------------------------------------+
|5         |uss5HiIcIewx9tkq6XPH9AAhFKBAF03IGtaPJp1d1FPoPkecws7LsAZXmCReBRC4JcNGSPDigsrEkTZzuFs2FGRMq8mjOUy5FfccCZY9YM9WIifHbJpKlHp6wx7wx7w  |
+----------+------------------------------------------------------------------------------------------------------------------------------------------------------+
```

Table 793. “show” command output table parameters

Parameter	Description
Timeout (s)	Indicates configured connection (between the equipment and the TACACS+ server) timeout value, in seconds.(1..30)
Secret Key	Global authentication and encryption key for TACACS+ communications between the equipment and the TACACS+ server. (STRING 128). The key must match the encryption used on the TACACS+ server.

“showconfig” command

Table 794. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/tacacs+/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 914. CLI on line help on “showconfig” command usage in this node context

```
/cli/tacacs+> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG              Print the command list that enforces the current configuration
```

“server” sub-node

This node allows managing Radius server configuration parameters.

“config” command

Table 795. "config" command information

Name	config
Description	Configures parameters for a given TACACS+ server.
Full path	/tacacs+/server/config
Mandatory Parameters	No
Screen Output	No

Figure 915. CLI on line help on “config” command usage in this node context

```
/cli/tacacs+/server> config ?

Usage CONFIG:
  CONFIG                  Configure parameters for a given TACACS+ server.

  [OPTIONAL]
  --ID                  Identifies a table entry by ID, in this context.
  --admin                 Administrative State. Enable/disable, in this context. (enable|disable)
  --ip-address            IPv4 address
  --ip-port             Identifies the IP port number to use. (1..65535)
```

--name	Server name (STRING 30)

“create” command

Table 796. "create" command information

Name	create
Description	Create a new TACACS+ server.
Full path	/tacacs+/server/create
Mandatory Parameters	--name
Screen Output	No

Figure 916. CLI on line help on “create” command usage in this node context

```
/cli/tacacs+/server> create ?

Usage CREATE:
  CREATE                Create a new TACACS+ server.

   <MANDATORY>
   --name               Server name (STRING 30)

   [OPTIONAL]
   --ID                 Identifies a table entry by ID, in this context.
   --admin              Administrative State. Enable/disable, in this context. (enable|disable)
   --ip-address          IPv4 address
    --ip-port           Identifies the IP port number to use. (1..65535)
```

“remove” command

Table 797. "remove" command information

Name	remove
Description	Removes a TACACS+ server.
Full path	/tacacs+/server/remove
Mandatory Parameters	No
Screen Output	No

Figure 917. CLI on line help on “remove” command usage in this node context

```
/cli/tacacs+/server> remove ?

Usage REMOVE:
  REMOVE                Remove a TACACS+ server.
```

```
  [OPTIONAL]
  --ID                Identifies a table entry by ID, in this context.
   --name               Server name (STRING 30)
```

“show” command

Table 798. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/tacacs+/server/show
Mandatory Parameters	No
Screen Output	Table Figure 919. Table parameters are described in Table 799.

Figure 918. CLI on line help on “show” command usage in this node context

```
/cli/tacacs+/server> show ?

Usage SHOW:
  SHOW                Show the current configuration

  [OPTIONAL]
  --ID                Identifies a table entry by ID, in this context.
   --name               Server name (STRING 30)
```

Figure 919.Output of ”show” command without arguments in this node context

```
/cli/tacacs+/server> show
+-------------------------------------------------------------------------------+
|TACACS+ Server List                                                            |
+-----+----------+---------------------------------+---------------+----------+
|ID   |Admin     |Name                             |IP             |Port      |
+-----+----------+---------------------------------+---------------+----------+
+-----+----------+---------------------------------+---------------+----------+
```

Table 799. “show” command output table parameters

Parameter	Description
ID	Identifies a table entry by ID, in this context
Admin	Indicates administrative state.(enable|disable)
Name	TACACS+ Server name (STRING 30)
IP	TACACS+ server IP address
Port	Authentication port (1..65535). default value is 49

“showconfig” command

Table 800. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/tacacs+/server/showconfig
Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 920. CLI on line help on “showconfig” command usage in this node context

```
/cli/tacacs+/server> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG              Print the command list that enforces the current configuration
```

“server-group” sub-node

This node allows managing TACACS+ server-group configuration parameters.

“config” command

Table 801. "config" command information

Name	config
Description	Configures parameters for a given TACACS+ server.
Full path	/tacacs+/server-group/config
Mandatory Parameters	No
Screen Output	No

Figure 921. CLI on line help on “config” command usage in this node context

```
//cli/tacacs+/server-group> config ?

Usage CONFIG:
 CONFIG                  Configure parameters for a given TACACS+ server.

  [OPTIONAL]
  --ID                  Identifies a table entry by ID, in this context.
  --name                 Server Group name (STRING 30)
  --priority            Server Priority. (none|1..16)
  --server-id            Specify a server by ID. Use 'none' to clear a priority.
```

--server-name	Specify a server by Name

“show” command

Table 802. "show" command information

Name	show
Description	Shows the current configuration.
Full path	/tacacs+/server-group/show
Mandatory Parameters	No
Screen Output	Tables, Figure 923 and Figure 924. Table parameters are described in Table 803.

Figure 922. CLI on line help on “show” command usage in this node context

```
/cli/tacacs+/server-group> show ?

Usage SHOW:
  SHOW                  Show the current configuration

  [OPTIONAL]
   --ID                 Identifies a table entry by ID, in this context.
```

Figure 923.Output of ”show” command without arguments in this node context

```
/cli/tacacs+/server-group> show
+-----------------------------------------------+
|TACACS+ Server Group List                      |
+-----+----------+--------------------------------+
|ID   |Admin     |Name                            |
+-----+----------+--------------------------------+
|1    |enable    |login                           |
+-----+----------+--------------------------------+
```

Figure 924.Output of ”show” command , with argument ID, in this node context

```
/cli/tacacs+/server-group> show --ID=1
+--------------------------------------+
|TACACS+ Server Group -- (1) login     |
+--------------------+-----------------+
|Parameter           |Value            |
+--------------------+-----------------+
|Admin               |enable           |
+--------------------+-----------------+

+-------------------------------------------------------------------------+
|TACACS+ Server List for group (1) login                                  |
+---------+-----------------------------------+----------------+--------+
|Server ID|Server Name                        |Server IP       |Priority|
+---------+-----------------------------------+----------------+--------+
+---------+-----------------------------------+----------------+--------+
```

Table 803. “show” command output table parameters

Parameter	Description
ID	Identifies a table entry by ID, in this context
Admin	Indicates administrative state.(enable|disable)
Name	Server Group name (STRING 30)
Server ID	Identifies a server by ID
Server Name	Identifies a server by ID
Server IP	Server IP Address
Priority	Server Priority. (none|1..16)

“showconfig” command

Table 804. "showconfig" command information

Name	showconfig
Description	Prints the command list that enforces the current configuration
Full path	/tacacs+/server-group/showconfig

Mandatory Parameters	This command has no parameters
Screen Output	Full command(s) path and used arguments and values to reach the current configuration.

Figure 925. CLI on line help on "showconfig" command usage in this node context

```
/cli/tacacs+> showconfig ?

Usage SHOWCONFIG:
  SHOWCONFIG              Print the command list that enforces the current configuration
```

"users" node

Figure 926. "users" node tree

```
/cli/users> tree
+ users[@config, @create, @remove, @show, @status]
```

"config" command

Table 805. "config" command information

Name	config
Description	Configures an existing user login
Full path	/users/config
Mandatory Parameters	--change-passwd[=STRING] --login
Screen Output	No

Figure 927. CLI on line help on "config" command usage in this node context

```
/cli/users> config ?

Usage:
 CONFIG       Configure an existing user login.

  <MANDATORY>
  --change-passwd[=STRING]          Trigger a password change
  --login                           User's login (STRING 31)

  [OPTIONAL]
  --auto-removal                    User's auto-removal (enable|disable)
  --expire-time                     User's expire time (hours)
  --permissions                     User's permissions
```

--renew	Renew expired user (enable)

“create” command

This command is only available for users with administrator’s permissions.

Table 806. "create" command information

Name	create
Description	Creates a new user login.
Full path	/services/create
Mandatory Parameters	--login --permissions
Screen Output	No

Figure 928. CLI on line help on “create” command usage in this node context

```
/cli/users> create ?

Usage:
  CREATE        Create a new user login.

   <MANDATORY>
   --login                 User's login (STRING 31)
   --permissions           User's permissions

   [OPTIONAL]
   --auto-removal          User's auto-removal (enable|disable)
   --expire-time           User's expire time (hours)
```

“remove” command

This command is only available for users with administrator’s permissions.

Table 807. "remove" command information

Name	remove
Description	Removes an existing user login
Full path	/users/remove
Mandatory Parameters	--login
Screen Output	No

Figure 929. CLI on line help on “remove” command usage in this node context

```
/cli/users> remove ?

Usage:
  REMOVE        Remove an existing user login.

   <MANDATORY>
   --login                User's login (STRING 31)
```

“show” command

This command is only available for users with administrator’s permissions

Table 808. "show" command information

Name	show
Description	Shows the current users login configuration.
Full path	/users/show
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 931.Table parameters description in Table 809.

Figure 930. CLI on line help on “show” command usage in this node context

```
/cli/users> show ?

Usage:
  SHOW          Show the current users login configuration.
```

Figure 931.Output of ”show” command in this node context

```
/cli/users> show
+-----------------------------------------------------------------+
|Users Configurations                                             |
+---------------+---------------+---------------+---------------+
|Login          |Permissions    |Auto-Removal   |Timeout        |
+---------------+---------------+---------------+---------------+
|admin          |administrator  |--             |--             |
|standard       |poweruser      |--             |--             |
|guestuser      |guest          |--             |--             |
+---------------+---------------+---------------+---------------+
```

Table 809. "show" command output table parameters

Parameter	Description
Login	Identifies a user by Users' login
Permissions	Indicates the user's permissions
Auto-Removal	Indicates if user's auto-removal feature is enabled or disabled
Timeout	Indicates the user's login expire time

"status" command

Table 810. "status" command information

Name	status
Description	Shows the current users login configuration.
Full path	/users/status
Mandatory Parameters	This command has no parameters
Screen Output	Table Figure 933.Table parameters description in Table 811.

Figure 932. CLI on line help on "status" command usage in this node context

```
/cli/users> status ?

Usage:
  STATUS        Show the current users login status.
```

Figure 933.Output of "status" command in this node context

```
/cli/users> status
+-----------------------------------------------+
|Users Status                                   |
+---------------+---------+--------------------+
|Login          |Active   |Remaining Time      |
+---------------+---------+--------------------+
|admin          |active   |--                  |
|standard       |active   |--                  |
|guestuser      |active   |--                  |
+---------------+---------+--------------------+
```

Table 811. "status" command output table parameters

Parameter	Description
Login	Identifies a user by Users' login
Active	Indicates if the user is active
Remaining Time	Indicates the remaining time till the user's login expires

“utils” node

Figure 934. ”utils” node tree

```
/cli/utils> tree
+ utils[@ping, @tcpdump, @telnet, @traceroute]
```

“ping” command

Table 812. "ping" command information

Name	ping
Description	Executes ping
Full path	/utils/ping
Mandatory Parameters	--dst-ip
Screen Output	Yes

Figure 935. CLI on line help on “ping” command usage in this node context

```
/cli/utils> ping ?

Usage PING:
 PING                  Execute Ping

  <MANDATORY>
  --dst-ip              Set Destination IP Address

  [OPTIONAL]
  --count               Count
```

“tcpdump” command

Table 813. "tcpdump" command information

Name	tcpdump
Description	Executes tcpdump
Full path	/utils/tcpdump
Mandatory Parameters	No
Screen Output	Yes

Figure 936. CLI on line help on "tcpdump" command usage in this node context

```
/cli/utils> tcpdump ?

Usage TCPDUMP:
  TCPDUMP                    Execute Tcpdump

  [OPTIONAL]
  --dns-resolv               Translate IP addresses (and port numbers) using DNS (true/false)
  --filter                   Filter by protocol, IP, ports, etc. Syntax is equal to linux tcpdump
  --src-interface            Set Source Interface
  --verbosity                Verbosity level (-1 .. 3)
```

"telnet" command

Table 814. "telnet" command information

Name	telnet
Description	Executes telnet connection
Full path	/utils/telnet
Mandatory Parameters	--dst-ip
Screen Output	Yes

Figure 937. CLI on line help on "telnet" command usage in this node context

```
/cli/utils> telnet ?

Usage TELNET:
  TELNET                     Execute Telnet connection

  <MANDATORY>
  --dst-ip                   Set Destination IP Address

  [OPTIONAL]
  --dst-port                 Set Destination Port
```

"traceroute" command

Table 815. "traceroute" command information

Name	traceroute
Description	Executes traceroute
Full path	/utils/traceroute
Mandatory Parameters	--dst-ip

Screen Output	Yes

Figure 938. CLI on line help on "traceroute" command usage in this node context

```
/cli/utils> traceroute ?

Usage TRACEROUTE:
  TRACEROUTE                Execute Traceroute

  <MANDATORY>
  --dst-ip                  Set Destination IP Address

  [OPTIONAL]
  --dns-resolv              Translate IP addresses (and port numbers) using DNS (true/false)
  --src-interface           Set Source Interface
  --src-ip                  Set Source IP Address
```

Chapter 7
TROUBLESHOOTING

This chapter describes the most common problems on the ME4620 OLT equipment configuration and operation and the procedures to handle with those via the WEBTI (local management interface).

COMMON PROBLEM HANDLING

Table 816. Common problem handling

Problem description	Possible Cause(s)	Procedure
The ONU is an ONT-RGW , the VoIP interface was selected at ME4620 OLT ONU configuration tables, but VoIP is not working properly at the client side	If the ONU is an ONT-RGW, VoIP is not configured at the ME4620 OLT but it is configured at the ONT-RGW GUI (Graphical User Interface);	Please refer to Cisco ME4600 Gateway Family user manual for the VoIP service configuration.
While making a service configuration at the ONT-RGW, the ME4620 OLT ONU configuration table is not available	The most common cause for this issue is the interface associated to the service was one of the ETH ONT-RGW interfaces	Any service configured at the ONT-RGW must have as associated interface the VEIP (Virtual Ethernet Interface Port) ME4620 OLT configuration tables for this ONT-RGW at the Services tables, for the service not working, select the view link at the details column to view the service configuration details, at the port configuration verify is VEIP is the associated port; if not correct it.
An ONU equipment just added is shown in status absent a few seconds afterwards	--	Use refresh button to force the update of the window
A configured multicast service is not working	• A an unicast service associated to the multicast service (with the same UNI-C-VLAN used for the Multicast service) must always be configured for the IGMP messages • The Multicast Group List was not configured • The IGMP Proxy is not enabled.	• At the Configuration menus item services, verify at the services table that a unicast service exists configured with the same UNI-C-TAG as the multicast service, with IGMP flag selected and that is administratively up. If such service does not exist or not correctly configured change its configuration and save it. • Go to Configuration, Multicast, Group List and add the multicast groups needed for that service • Go to Configuration, Multicast, Proxy and enable it.
You have just upgraded the OS of your ME4620 OLT and are trying to configure admin up or down an uplink port and receive the following error message: 0703010A::NULL message received from client applications	--	Close the browser and clean the cache.

EQUIPMENT ERROR CODES

Table 817. Equipment Error Codes List

Equipment Error Code (hexadecimal)	Description
0x08030001	Unavailable resources for counter activation
0x08030006	Unavailable resources for the service in the ME4620 OLT
0x08030100	Service has active probe or counter
0x08XXXXXX 0x69XXXXXX	Equipment firmware error (XX means any value)
0x07XXXXXX	Internal Equipment Error (IPC Error) (XX means any value)
0x0A03000E	Invalid Operational State
0x0A030113	The proposed serial number already exists.
0x0A030114	ONTs list is updating
0x0A030115	The serial number is invalid.
0x0A030117	The password is being used by another ONU
0x0A030118	Register type is invalid.
0x0D030100	The minimum distance is greater than the maximum
0x0D030101	The difference between minimum and maximum distance is greater than allowed
0x0D030102	There are ONTs connected to the PON port which do not allow it to be disabled
0x0D030103	FEC Downstream is not enabled on the PON port
0x0D030104	FEC Upstream is not enabled on the ONT
0x0D030105	The PON port has ONTs with services
0x0D030106	The PON port is used in unstacked services with different MAC Bridge type
0x0D030107	The PON port is in VLAN mapping mode
0x0D030108	The PON port is in VLAN + P-Bit mapping mode
0x0D034320	Invalid protection group administrative state
0x0D034321	Invalid protection group mode
0x0D034322	Invalid protection group reversibility
0x0D034323	Invalid protection group 'wait to restore' value
0x0D034324	Invalid protection group 'hold-off timer' value
0x0D034325	Invalid protection group primary port
0x0D034326	Invalid protection group protection port
0x0D034327	Protection group primary port is not active
0x0D034328	Protection group protection port is active
0x0D034330	The ports of the protection group cannot be the same
0x0D034331	The protection group is active
0x0D034332	The protection group is not active
0x0D034333	The protection group entity ID already exists
0x0D034334	Port in use by a protection group
0x0D034335	Protection port has ONUs

0x0D034336	Protection port has services
0x0D034337	The protection and working ports of the protection group belong to the same card
0x0D034338	The protection is being activated/deactivated or synchronizing
0x0D034339	The protection information is not synchronized
0x0D034891	Service is in use on a Multicast Channel
0x0D03489A	There is at least one ACL associated to the service
0x0D0348A0	There is at least one probe associated to the service
0x1D030303	Incompatible hardware version
0x1D034880	Invalid ID
0x1D034881	Invalid Admin
0x1D034882	Invalid Type
0x1D034883	Invalid Client Port
0x1D034884	Not enough resources to active ONU counter. Max nbr reached
0x1D034886	The respective ME4620 OLT service is not admin enabled
0x1D034890	Only inactive services can be removed
0x1D034891	UNI-C-Tag already in use by another service in this ONU
0x1D034893	Only one multicast service is allowed per ONU
0x1D034894	Network Service already associated with another Client Service (same ONU).
0x1D034895	NNI C-Tag is in use by another ONU
0x1D034896	NNI C-Tag < min
0x1D034897	NNI C-Tag > max
0x1D034898	MAX service num
0x1D034899	(multicast) NNI C-Tag cannot be zero
0x1D03489A	The NNI C-TAG can't be 0 for unicast stacked services
0x1D03489B	service has attached ONU interface(s)
0x1D03489C	ME4620 OLT service does not include this ONU interface
0x1D03489D	service has attached interfaces(s)
0x1D03489F	Reached Maximum nbr of downstream services for this Slot
0x1D0348B0	max Upstream BW
0x1D0348BA	VoIP services can only have VoIP interfaces
0x1D0348BB	VoIP services must have at least one VoIP interface
0x1D0348BC	The unicast service associated is admin disabled 0x1D0348BD The multicast service associated is admin enabled
0x1D0348BE	Invalid DHCP configurations
0x1D0348BF	Invalid remote-id string
0x1D0348C0	Unable to configure more than one unicast IGMP service per ONU
0x1D0348C1	No unicast IGMP service for this ONU
0x1D0348C2	No active unicast IGMP service for this ONU
0x1D0348C3	IP Management can only be configured for unicast services
0x1D0348C4	Requested ONU cannot have more than one service with IP Management
0x1D0348C5	Encryption flag cannot be used in multicast services
0x1D0348C6	All multicast services must be deactivated prior to deactivating the unicast IGMP service

0x1D0348C7	Unable to remove service Bridge master until the remaing Bridge services are removed
0x1D0348C8	Unable to configure a downstream traffic profile on unstacked services
0x1D0348C9	NNI C-Tag is used by another Client Service associated with a Network Service with the same NNI S-Tag
0x1D0348CA	The selected ethernet profile does not exist
0x1D0348CB	The selected upstream profile does not exist
0x1D0348CC	The service has no T-CONTs mapping
0x1D0348CD	The service has T-CONTs mapping
0x1D0348CE	Invalid PCP profile
0x1D035010	Duplicated Client Service referencing the same Unstacked Network Service on this Interface
0x1D035011	Requested NNI C-Tag does not match the remaining ONUs associated with the same N:1 Bridge OltService
0x1D035012	EthernetProfileId MUST match for all OntServices that belong to the same ONU and N:1 Bridge OltService
0x1D035013	EthernetProfileId MUST match for all OntServices that belong to the same card and 1:1 Bridge OltService
0x1D035014	Client Service has no interface associated
0x1D035015	Unstacked Services: Duplicated UNI C-TAG --Stacked Services: UNI C-TAG cannot duplicate NNI C-TAG
0x1D035016	Duplicated UNI-CTAG for the chosen service type
0x1D035020	The network service has no IGMP
0x1D035021	IGMP override flag cannot be done on active service 0x1D035030 Maximum number of MACs out of range
0x1D035031	Maximum number of MACs not supported for service type
0x1D035032	Extended VLAN tagging is active in a service port
0x1D035033	The service is referenced by Extended VLAN tagging rules
0x1D039211	The upstream profile can't be changed with upstream profiles
0x1D039212	The type of the upstream traffic profile is invalid
0x1D039213	Invalid parameter for upstream traffic profile
0x1D039214	Empty String for Profile name
0x1D039215	The specified ONU profile ID does not exist
0x1D039216	The specified ONU profile ID is not ADMIN Enabled
0x1D039230	Invalid T-CONT admin state
0x1D039231	Invalid upstream profile
0x1D039240	The T-CONT is active
0x1D039241	The internal ALLOC ID pool is exhausted
0x1D039242	The T-CONT is being used by a service
0x1D039250	Invalid T-CONT ID
0x1D039251	Invalid client service ID for T-CONT mapping
0x1D039252	Invalid priority for T-CONT mapping
0x1D039260	The specified priority does not exist on the P-Bit profile of the PON
0x1D039261	The Service has an upstream profile
0x1D039262	Invalid T-CONT admin state
0x1D03A400	Invalid rule admin state
0x1D03A401	Invalid outer priority filter

0x1D03A402	Invalid inner priority filter
0x1D03A403	Invalid inner VID filter
0x1D03A404	Invalid outer VID filter
0x1D03A405	Invalid inner TPID filter
0x1D03A406	Invalid outer TPID filter
0x1D03A407	Invalid ethertype filter
0x1D03A408	Invalid number of tags to remove
0x1D03A409	Invalid inner priority action
0x1D03A40A	Invalid outer priority action
0x1D03A40B	Invalid inner VID action
0x1D03A40C	Invalid outer VID action
0x1D03A40D	Invalid inner TPID action
0x1D03A40E	Invalid outer TPID action
0x1D03A40F	Invalid client service
0x1D03A410	The rule is active
0x1D03A411	Duplicate filter
0x1D03A420	Invalid enable value
0x1D03A421	Invalid association type
0x1D03A422	Invalid associated entity ID
0x1D03A423	Invalid input TPID
0x1D03A424	Invalid output TPID
0x1D03A425	Invalid DSCP to P-Bit mapping profile
0x1D03A430	The port has services
0x1E034893	For unicast/multicat services the pair service type/uni-vlan has to be unique in the ME4620 OLT
0x1E0348DD	Stacked services can only have one uplink port
0x1E034901	UNI C-Tag already in use in the NNI S-Tag of a non-multicast network service
0x1E034902	UNI C-Tag already in use in the NNI S-Tag of a multicast network service
0x1E039213	Invalid parameters in the configuration Upstream profile
0x21030300	Static groups end point value not valid
0x21030301	Cannot change static group end point - there is at least one static active group list entry.
0x50034896	Only 32 bits mask is allowed in static groups
0x5D030101	Invalid Downlink interface
0x5D030102	Multicast service interface is not mapped in any of the associated unicast services interfaces
0x5D030103	Unicast service interface is a member of a UC/MC association
0x5D030104	Invalid interface Role
0x5D030105	Invalid Admin State
0x5D030106	Invalid uplink interface
0x5D030107	Invalid downlink interface
0x5D030108	Interface and NNI S-TAG already used in synchronism
0x5D034850	The service must contain at least one uplink interface
0x5D034850	The service must contain at least one uplink interface

0x5D034851	The service must contain at least two interfaces (uplink+downlink)
0x5D034852	Stacked services cannot have multiple uplink interfaces
0x5D034853	Unable add this interface because an active PTP entry with the same NNI S-TAG already exists
0x5D034854	Selected port belongs to an invalid card for this service type
0x5D034854	Selected port belongs to an invalid card for this service type
0x5D034860	Stacked services for this service type, must contain only one uplink port
0x5D034861	Selected port belongs to a Static Probe
0x54030103	There is already an entry with the same service/mac
0x5A030103	Invalid IP address for active probe
0x60030104	Unknown parameter in the circuit ID string
0x65030101	Invalid ACL id
0x65030102	Invalid ACL administrative state
0x65030103	Invalid ACL type
0x65030104	ACL is used on a rule
0x65030105	ACL is used on an interface
0x65030106	ACL is used on a service
0x65030107	Invalid ACL rule administrative state
0x65030108	Invalid ACL rule action
0x65030109	Invalid ACL rule ethernet type
0x65030110	Invalid ACL rule CoS
0x65030111	Invalid ACL rule IP protocol
0x65030112	Invalid ACL rule port
0x65030113	Invalid ACL rule DSCP
0x65030114	Invalid ACL rule precedence
0x65030115	Invalid ACL rule flow label
0x65030116	Maximum number of rules per ACL reached
0x65030117	Cannot remove/disable the last rule for an ACL with enabled associations
0x65030118	ACL interface association: invalid administrative state
0x65030119	ACL interface association: invalid direction
0x65030120	ACL interface association: invalid interface id
0x65030121	ACL interface association: invalid ACL id
0x65030122	ACL interface association: invalid interface id
0x65030123	ACL interface association: invalid ACL id
0x65030124	ACL service association: invalid administrative state
0x65030125	ACL service association: invalid direction
0x65030126	ACL service association: invalid ACL id
0x65030127	ACL service association: invalid network service id
0x65030128	ACL service association: service is not active
0x66030101	Invalid Interface for IP Source Guard
0x66030102	Invalid Admin State
0x66030103	Invalid IP Version
0x66030104	The associated Network Service must be enabled
0x66030105	Unknown Network Service.

0x66030106	Cannot change admin enabled entities
0x66030107	Interface must be active
0x66030108	Interface must be IP Source Guard Enabled (interface configuration)
0x66030109	Interface must belong the NS downlink port list
0x6603010A	Interface must belong the NS downlink card list.
0x6603010B	MAC cannot be full zeros

GLOSSARY OF TERMS AND ABBREVIATIONS

ACL	Access Control List
AES	Advanced Encryption Standard
ARP	Address Resolution Protocol
BMCA	Best Master Clock Algorithm
CCM	Continuity Check Message
CDP	Cisco Discovery Protocol
CFM	Connectivity Fault Management
C-Tag	Client Tag
CWDM	Coarse Wavelength Division Multiplexing
DBA	Dynamic Bandwidth Allocation
DHCP	Dynamic Host Configuration Protocol
DMAC	Destination MAC address
E1	European digital transmission format 1
ETH	Ethernet
ETSI	European Telecommunications Standards Institute
FEC	Forward Error Correction
FSAN	Full Service Access Network
GbE	Giga bit Ethernet
GEM	GPON Encapsulation Mode
GPON	Gigabit-capable Passive Optical Network
ICC	ITU-T Carrier Code

ID	Identification
IEEE	Institute of Electrical and Electronics Engineers
IGMP	Internet Group Management Protocol
IP	Internet Protocol
IPTV	Internet Protocol Television
L2	Layer 2 - Data Link Layer
LACP	Link Aggregation Control Protocol
LACPDU	Link Aggregation Control Protocol Data Unit
LAG	Link Aggregation Group
LC/PC	LC/PC Fiber Optic Connector
MAC	Media Access Control
MAID	Maintenance Association Identifier. An identifier for a Maintenance Association, unique over the OAM domain. The MAID has two parts: the MD Name and the Short MA Name. A MAID is equivalent to the ITUs term MEG ID.
MD	Maintenance Domain. The part of a network for which faults in connectivity can be managed.
ME	Maintenance Entity. A point-to-point relationship between two MEPs within a single MEG.
MEG	Maintenance Entity Group. Equivalent to a Maintenance Association (MA). A set of MEs that exist in the same administrative boundary, with the same MEG Level and MEG ID.
MEG ID	Maintenance Entity Group Identifier. Equivalent to the IEEE term Maintenance Association Identifier (MAID). An identifier for a MEG, unique over the domain that SOAM is to protect against the accidental concatenation of service instances.

MEP	Maintenance association End Point [IEEE 802.1ag], or equivalently MEG End Point [ITU-T Y.1731]. An actively managed SOAM entity associated with a specific service instance that can generate and receive SOAM PDUs and track any responses. It is an end point of a single MEG, and is an endpoint of a separate Maintenance Entity for each of the other MEPs in the same MEG.
MSA	Multi Source Agreement
MTU	Maximum Transmission Unit
ODN	Optical Distribution Network
OLT	Optical Line Terminal
OMCI	ONT Management Control Interface
ONT	Optical Network Terminal
ONU	Optical Network Unit
OSPF	Open Shortest Path First adaptive routing protocol
PON	Passive Optical Network
PDU	PDU Protocol Data Unit
PDV	Packet Delay Variation
QoS	Quality of Service
RF	Radio Frequency
RG	Residential Gateway
RIP	Routing Information Protocol
RMEP	Remote MEP
NG-PON	Next Generation Passive Optical Network
SC/APC	SC/APC Fiber Optic Connector
SC/PC	SC/PC Fiber Optic Connector
SDH	Synchronous Digital Hierarchy
SFP	Small Form-factor Pluggable transceiver

SONET	Synchronous Optical Networking
S-Tag	Service Tag
STP	Spanning Tree Protocol
TLS	Transparent LAN Services
T-CONT	Traffic Container
TWDM	Time domain and Wavelength Division Multiplexing
UMC	Unique MEG-ID code
USB	Universal Serial Bus
UTP	Unshielded Twisted Pair
VLAN	Virtual Local Area Network
VoIP	Voice over Internet Protocol
XFP	10 Gigabit Small Form Factor Pluggable transceiver
XGPON	Extra Large Gigabit Passive Optical Network