English

Fujitsu Software BS2000

openNet Server

BCAM

User Guide

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Table of Contents

BCAM V25.0B User Guide and Reference Manual. 14
1 Preface 15
1.1 Objectives and target groups of this manual 16
1.2 Summary of contents 17
1.3 Changes since the last edition of the manual 18
1.3.1 New functionality 19
1.4 Notational conventions 21
1.5 Licensing conditions 22
2 BCAM - An overview 23
2.1 Communication architecture 25
2.1.1 The OSI architecture 26
2.1.2 The Internet architecture (TCP/IP) 29
2.1.3 openNet Server (BS2000) in the system environment 32
2.1.4 Overview of the transport services supported 34
2.2 Network types 35
2.2.1 LAN 36
2.2.2 WAN 37
2.3 Network components 38
2.3.1 Server 39
2.3.1.1 BS2000 server 40
2.3.1.2 Virtual host 41
2.3.1.3 End system 42
2.3.2 Interworking devices 43
2.3.2.1 Bridge 44
2.3.2.2 Switch 45
2.3.2.3 Layer 3 switch 46
2.3.2.4 Hub 47
2.3.2.5 Router 48
2.3.3 Lines 49
2.3.4 Routes 50
2.3.5 Connection types to the LAN 51
2.3.5.1 LAN channel adapter (HNC) 52
2.3.5.2 LAN controller 53
2.4 Addressing in computer networks 54
2.4.1 Structure of LAN addresses 55
2.4.1.1 Ethernet addresses 56
2.4.1.2 Network addresses 57

2.4.2 TCP/IP addresses . . . 58
2.4.2.1 IPv4 addresses . . . 59
2.4.2.2 IPv6 addresses . . . 63
2.4.2.3 Port number . . . 65
2.4.3 OSI addresses . . . 66
2.4.3.1 Internet address . . . 67
2.4.3.2 Transport selector . . . 68
2.5 SNMP management in computer networks . . . 69
2.6 Delivery unit openNet Server . . . 70
2.6.1 Components of the delivery unit openNet Server . . . 71
2.6.2 Subsystems . . . 72
3 Generating a network configuration . . . 73
3.1 Overview of the generation types . . . 74
3.1.1 History: static generation with RDF (Resource Definition File) . . . 75
3.1.2 Dynamic generation using BCAM commands . . . 76
3.1.3 Automatic end system creation (AEC) . . . 77
3.2 Differences between network definition methods . . . 78
3.3 Dynamic generation . . . 79
3.3.1 Dynamic generation with BCAM commands . . . 80
3.3.2 Creating SOF and command files . . . 81
3.3.2.1 Checklist for configuring the files . . . 82
3.3.2.2 Branching instructions in SOF files . . . 84
4 Operation . . . 85
4.1 Effective range of a BCAM command . . . 86
4.2 Operand settings . . . 92
4.3 BCAM mapping function . . . 98
4.4 Command events . . . 99
4.4.1 Acknowledgments and messages . . . 100
4.4.2 Command return codes . . . 101
4.5 Command sequences . . . 102
4.5.1 BCAM commands from command files . . . 103
4.5.2 Branching instructions . . . 104
4.5.2.1 Command result-specific branching instructions . . . 105
4.5.2.2 Host-specific branching instructions . . . 106
4.5.2.3 System-specific branching instructions . . . 107
4.5.3 Command file structure . . . 109
4.6 Startup . . . 110
4.6.1 Event monitoring using BCAM job variables . . . 111
4.6.2 BCAM early start with the BCAM BS2000 parameter service . . . 113
4.6.3 Operation of routes . . . 114
4.6.4 Operation of virtual hosts . . . 116

4.7 Online backup of a BCAM configuration 118
4.7.1 Resources for generating a BCAM configuration file 119
4.7.2 Generating a BCAM configuration file 121
4.7.3 Practical applications 123
4.8 SE server support 125
4.9 Manual interventions 126
4.9.1 Executing modifying BCAM commands 127
4.9.2 Modifying object attributes in a dialog using an EDIT command 129
4.9.3 Modifying route configuration 131
4.10 Address conflicts 137
4.10.1 Address Conflict Detection IPv4 (ACD) 138
4.10.2 Duplicate Address Detection IPv6 (DAD) 139
4.10.3 Handling address conflicts 140
4.11 BCAM-Exit (36) 141
4.11.1 Register input 142
4.11.2 System exit function 01 143
4.11.2.1 Parameter area 144
4.11.2.2 Return information 145
4.11.3 System exit function 02 146
4.11.3.1 Parameter area 147
4.11.3.2 Return information 151
5 Diagnosis 152
5.1 Preparatory steps 153
5.2 Creating diagnostic documentation 154
5.3 The DCM-DIAG diagnostic tool 155
5.4 Diagnostic system ASTRID 162
5.4.1 Starting ASTRID 163
5.4.2 Controlling ASTRID outputs 164
5.4.3 ASTRID commands 166
5.4.3.1 ALL 167
5.4.3.2 ADDRCB 169
5.4.3.3 APID 170
5.4.3.4 AVLTREE 171
5.4.3.5 BKPT 172
5.4.3.6 BROWSE 173
5.4.3.7 CID 174
5.4.3.8 CLEAR 175
5.4.3.9 CONSOLE 176
5.4.3.10 DCMBASE 177
5.4.3.11 DIAG 182
5.4.3.12 END / E 183

5.4.3.13 EVID 184
5.4.3.14 FILE 185
5.4.3.15 HELP 186
5.4.3.16 INFOCB 187
5.4.3.17 MAP 188
5.4.3.18 MIB 189
5.4.3.19 MODE 190
5.4.3.20 NAME 192
5.4.3.21 ND 195
5.4.3.22 NET / L3 196
5.4.3.23 POOL 197
5.4.3.24 PORT / L2 198
5.4.3.25 RD 200
5.4.3.26 RS 201
5.4.3.27 SLST 206
5.4.3.28 SM2 207
5.4.3.29 SOUT 208
5.4.3.30 STD 209
5.4.3.31 TOTAL 210
5.4.3.32 TRACE / TRC 212
5.4.3.33 TRANS / L4 216
5.4.3.34 TSKID 219
5.5 TEDDY 220
5.5.1 Description of TEDDY commands 221
5.5.1.1 BROWSE 222
5.5.1.2 DATIN 223
5.5.1.3 DISP 224
5.5.1.4 END 226
5.5.1.5 HELP 227
5.5.1.6 LIST 228
5.5.1.7 PRINT 229
5.5.1.8 SLST 230
5.5.1.9 TRACE 231
5.6 Diagnostic tool TRACEROUTE 234
5.7 Diagnostic tool PING4 for IP 235
5.8 Diagnostic tool PING6 for IPv6 236
5.9 NETSTAT 237
5.9.1 NETSTAT BS2000 238
5.9.2 NETSTAT POSIX 254
5.9.2.1 Installation 255
5.9.2.2 Uninstallation 256

5.9.2.3 Program call 257
5.10 Logging events to SAT 260
6 BCAM control files 262
6.1 Processor file 264
6.2 Socket host file 266
6.3 FQDN file 267
6.4 Services file 269
6.5 Application file 270
7 BCAM functions 273
7.1 Automatic end system creation (AEC) 274
7.1.1 Open and controlled server operation 275
7.1.2 Controlling automatic end system creation 277
7.1.2.1 General control using BCAM options 278
7.1.2.2 Control procedure 280
7.1.3 Identifying automatically created end systems 281
7.1.4 Firewall entries in BCAM 282
7.1.5 Releasing routing table entries 283
7.2 Redundant network topology 284
7.2.1 Redundant network topology to increase fault tolerance 285
7.2.2 Failure of components 286
7.2.2.1 Failure of a channel adapter 287
7.2.2.2 Failure of an IP router 288
7.2.2.3 Failure of an IPv6 / ISO9542 router 289
7.2.3 Definition of (line) redundancy 290
7.2.3.1 Redundant lines to a node 291
7.2.3.2 Groups of redundant lines to a node 292
7.2.4 Parameter settings for redundancy 293
7.2.4.1 Basic settings using BCAM options 294
7.2.4.2 Line definitions and settings 295
7.2.4.3 Changing the line settings 296
7.2.4.4 Administering the redundant lines 297
7.2.5 Principle of line monitoring 298
7.2.6 Switching routes when a line fails 300
7.3 Host redundancy 301
7.3.1 Definition of a virtual host 302
7.3.2 Definition of an application file 303
7.3.3 Failure of a BCAM host 304
7.4 VLAN support in BCAM 305
7.4.1 VLAN support (IEEE 802.1Q) - VLAN-tagged Ethernet frame 306
7.4.2 VLAN support taking HNC 91853 as an example 307
7.4.3 BCAM commands for VLAN support 308

7.5 Link aggregation 309
7.5.1 Link aggregation support 310
7.5.2 Definition of a link aggregation 312
7.6 Supporting Fully Qualified Domain Names (FQDNs) 313
7.6.1 Obtaining the FQDN names 314
7.6.2 Settings for using DNS 315
7.6.2.1 Local use of the LWRESD 316
7.6.2.2 Remote use of the LWRESD 317
7.6.3 Displaying the FQDN names 318
7.6.4 Examples for determining BCAM and DNS names and diagnostics 319
7.7 BCAM mapping function 320
7.7.1 GENERATE-BCMAP-FILE 321
8 BCAM commands 322
8.1 Syntax of the command description 327
8.2 Overview of the BCAM commands 341
8.3 ACTIVATE-LINE / AVLN: Activate line 344
8.4 ACTIVATE-LINK-AGGREGATION / AVLAG: Activate link aggregation 346
8.5 ACTIVATE-OWN-ADDRESS / AVOAD: Activate own address 347
8.6 ACTIVATE-VLAN-DEVICE/ AVVLDV: Activate VLAN device 349
8.7 ACTIVATE-VLAN-LINE / AVVLLN: Activate VLAN line 351
8.8 ADD-OWN-ADDRESS / ADOAD: Add local address 353
8.9 BCACT: Activate communication components 355
8.9.1 BCACT: Activate host 356
8.9.2 BCACT: Activate processor 358
8.9.3 BCACT: Activate line 360
8.9.4 BCACT: Activate LAN node 362
8.9.5 BCACT: Activate route 364
8.10 BCAPPL: Activate or deactivate application 366
8.11 BCCONN: Shut down connections 369
8.12 BCCONP: Connection proposal for application 372
8.13 BCDAC: Deactivate communication components 373
8.13.1 BCDAC: Deactivate virtual host 374
8.13.2 BCDAC: Deactivate line 376
8.13.3 BCDAC: Deactivate LAN node 377
8.13.4 BCDAC: Deactivate processor 379
8.13.5 BCDAC: Deactivate route 380
8.14 BCEND: Terminate BCAM in BS2000 system 381
8.15 BCGEN: Modify processor names and addresses 384
8.16 BCIN: Initialize/generate communication components 388
8.16.1 BCIN: Initialize communication components 389

8.16.1.1 BCIN: Initialize host 390
8.16.1.2 BCIN: Initialize line 392
8.16.1.3 BCIN: Initialize processor 394
8.16.1.4 BCIN: Initialize LAN node 397
8.16.1.5 BCIN: Initialize route 400
8.16.2 BCIN: Dynamically generate communication components 402
8.16.2.1 BCIN: Dynamically generate LAN node 404
8.16.2.2 BCIN: Dynamically generate LAN processor 411
8.16.2.3 BCIN: Dynamically generate LAN router processor 421
8.16.2.4 BCIN: Dynamically generate tunnel router processor 429
8.17 BCMAP: Control BCAM mapping function 434
8.17.1 BCMAP: Define mapping entries 435
8.17.2 BCMAP: Delete mapping entries 442
8.17.3 BCMAP: Modify mapping entries 448
8.17.4 BCMAP: Display mapping entries 452
8.17.5 BCMAP: Manage mapping function 459
8.18 BCMOD: Modify limit values specified with DCSTART 461
8.19 BCMON: Control BCAM monitoring 471
8.20 BCOPTION: Change mode options 481
8.21 BCOUT: Close down communication components 498
8.21.1 BCOUT: Close down virtual host 499
8.21.2 BCOUT: Close down line 502
8.21.3 BCOUT: Close down LAN node 503
8.21.4 BCOUT: Close down processor 505
8.21.5 BCOUT: Close down route 507
8.22 BCSET: Set diagnostics and maintenance parameters 509
8.22.1 BCSET: Change trace lengths 510
8.22.2 BCSET: Switch on trace selection 513
8.22.3 BCSET: Switch off trace selection 521
8.22.4 BCSET: Set diagnostic operands 529
8.23 BCSHOW: Display BCAM information 534
8.23.1 BCSHOW: BCAM info on hosts 535
8.23.2 BCSHOW: BCAM info on lines 543
8.23.3 BCSHOW: BCAM info on LAN nodes 550
8.23.4 BCSHOW: BCAM info on processors 557
8.23.5 BCSHOW: BCAM info on routes 564
8.23.6 BCSHOW: BCAM info on applications 572
8.23.7 BCSHOW: BCAM info on global values 580
8.24 BCSWP: Switch PORT 582
8.25 BCTIMES: Define BCAM time intervals 584
8.26 CALL-BCAM-COMMANDS: Process commands from a file 589

8.27 CREATE-LINE / CRLN: Create line 591
8.28 CREATE-LINK-AGGREGATION / CRLAG: Create link aggregation 596
8.29 CREATE-NODE / CRND: Create LAN/VLAN node 597
8.30 CREATE-PROCESSOR / CRPRR: Create processor 600
8.31 CREATE-ROUTE / CRRT: Create route 603
8.31.1 CREATE-ROUTE: Create LAN node route 604
8.31.2 CREATE-ROUTE: Create ROUTER route 612
8.31.3 CREATE-ROUTE: Create tunnel route 619
8.32 CREATE-VIRTUAL-HOST / CRVTHT: Create virtual host 622
8.33 CREATE-VLAN-DEVICE / CRVLDV: Create VLAN device 625
8.34 CREATE-VLAN-LINE / CRVLLN: Create VLAN line 628
8.35 DCDIAG: Control DCAM traces 634
8.36 DCOPT: Predefine DCSTART parameters 642
8.37 DCSTART: Start the data communication system in BS2000 657
8.38 DEACTIVATE-LINE/ DVLN: Deactivate line 675
8.39 DEACTIVATE-LINK-AGGREGATION / DVLAG: Deactivate link aggregation . . 677
8.40 DEACTIVATE-OWN-ADDRESS / DVOAD: Deactivate own- address 678
8.41 DEACTIVATE-VLAN-DEVICE/ DVVLDV: Deactivate VLAN device 680
8.42 DEACTIVATE-VLAN-LINE/ DVVLLN: Deactivate VLAN line 682
8.43 DELETE-PROCESSOR / DLPRR: Delete processor 683
8.44 DELETE-ROUTE / DLRT: Delete route 684
8.45 EDIT-BCAM-OBJECT / EDBCOB: Edit BCAM objects 687
8.46 EDIT-BCAM-OPTIONS / EDBCO: Edit BCAM options 689
8.47 EDIT-HOST-ATTRIBUTES / EDHTA: Edit BCAM host attributes 691
8.48 EDIT-LINE/ EDLN: Edit BCAM line 692
8.49 EDIT-ROUTE-ATTRIBUTES / EDRTA: Edit BCAM route attributes 693
8.50 EDIT-VLAN-DEVICE/ EDVLDV: Edit BCAM VLAN device 694
8.51 EDIT-VLAN-LINE/ EDVLLN: Edit BCAM VLAN line 695
8.52 GENERATE-BCAM-CMD-FILE / GBCF: Output the BCAM configuration to a file 696
8.53 GENERATE-BCMAP-FILE: Convert mapping save file to command file . . 699
8.54 MODIFY-ADDRESS-ASSIGNMENT / MDADA: Modify address assignment . . . 700
8.55 MODIFY-BCAM-OPTIONS / MDBCO: Modify BCAM options 711
8.56 MODIFY-DNS-ACCESS / MDDNA: Modify DNS access in BCAM 726
8.57 MODIFY-HOST-ATTRIBUTES / MDHTA: Modify HOST attributes 732
8.58 MODIFY-LINE / MDLN: Modify line 734
8.59 MODIFY-OWN-ADDRESS / MDOAD: Reassign own address 740
8.60 MODIFY-ROUTE / MDROUTE: Modify routes 742
8.61 MODIFY-ROUTE-ATTRIBUTES / MDRTA: Modify route attributes 756

8.62 MODIFY-ROUTE-PATH / MDRTP: Modify route path 764
8.63 MODIFY-VLAN-ASSIGNMENT / MDVLA: Modify VLAN assignment 767
8.64 MODIFY-VLAN-DEVICE / MDVLDV: Modify VLAN device 771
8.65 MODIFY-VLAN-LINE / MDVLLN: Modify VLAN line 774
8.66 PICK-BCAM-INFO / PKBCI: Finding information in the output 779
8.67 PREP-BCAM-INFO-MSG / PPBCIM: Find information in prepared BCAM notification output 781
8.68 SET-COMMUNICATION-TRACE: Control DCM-DIAG 783
8.69 SHOW-ADDRESS-ASSIGNMENT / SHADA: Show information about BCAM gateway tables 786
8.70 SHOW-AEC-OPTIONS / SHAECO: Show information on automatic end system creation 790
8.71 SHOW-APPLICATION / SHAP: Output information on applications 794
8.72 SHOW-APPLICATION-BASICS / SHAPBA: Output information on applications 798
8.73 SHOW-BCAM-ADDRESS / SHBCAD: Show information on addresses . . . 800
8.74 SHOW-BCAM-ATTRIBUTES / SHBCAM: Show mode parameters 802
8.75 SHOW-BCAM-DEVICE-VALUES / SHBDV: Show information on BCAM device values 813
8.76 SHOW-BCAM-ENVIRONMENT / SHBCENV: Show BCAM environment of a processor 815
8.77 SHOW-BCAM-FIREWALL / SHBCFW: Show BCAM firewall entries 817
8.78 SHOW-BCAM-INFO-ADDRESS / SHBCIA: Show BCAM information on an address 819
8.79 SHOW-BCAM-INFO-BASIC / SHBCIB: Show BCAM basic information . . . 820
8.80 SHOW-BCAM-INFO-CONFIG / SHBCIC: Show BCAM configuration information 821
8.81 SHOW-BCAM-INFO-NAME / SHBCIN: Show BCAM information on a name . . 822
8.82 SHOW-BCAM-INFO-TOOLS / SHBCIT: Show BCAM information on BCAM tools 823
8.83 SHOW-BCAM-IP-RANGE / SHBIR: Show information on BCAM IP ranges 824
8.84 SHOW-BCAM-NAMES / SHBCNA: Show information on BCAM names . . . 826
8.85 SHOW-BCAM-OBJECTS / SHBCOB: Show BCAM objects in compact form . . 829
8.86 SHOW-BCAM-OPTIONS / SHBCO: Show BCAM options information 832
8.87 SHOW-BCAM-PARAMETERS / SHBCP: Show BCAM parameter information . 838
8.88 SHOW-BCAM-ROUTER / SHBCRTR: Show BCAM routers 842
8.89 SHOW-BCAM-SERVER-PORTS / SHBCPT: Show BCAM server port information 844

8.90 SHOW-BCAM-START-PARAMETERS / SHBCSRP: Show BCAM start parameter information 846
8.91 SHOW-BCAM-TIMER / SHBCTI: Show BCAM timer information 853
8.92 SHOW-CONNECTION / SHCN: Show connection information 856
8.93 SHOW-CONNECTION-BY-NAME / SHCNN: Show connection information about names 864
8.94 SHOW-DNS-ACCESS / SHDNA: Show information about DNS access in BCAM 866
8.95 SHOW-HOST / SHHT: Show host information 870
8.96 SHOW-HOST-ATTRIBUTES / SHHTA: Show host attribute information . . . 872
8.97 SHOW-LINE / SHLN: Show lines 875
8.98 SHOW-LINE-ATTRIBUTES / SHLNA: Show line information 878
8.99 SHOW-LINK-AGGREGATION / SHLAG: Show link aggregation 885
8.100 SHOW-LINK-AGGREGATION-ATTR / SHLAGA: Show attributes of a link aggregation 887
8.101 SHOW-MAPPING-ENTRIES / SHMPE: Show BCAM mappings 889
8.102 SHOW-MAPPING-STATUS / SHMPS: Show mapping information 897
8.103 SHOW-NET-STATISTICS / NETSTAT: Show network connection information 900
8.104 SHOW-NODE / SHND: Show LAN node information 901
8.105 SHOW-NODE-ATTRIBUTES / SHNDA: Show LAN node information 903
8.106 SHOW-OWN-ADDRESS / SHOAD: Show local address 906
8.107 SHOW-PROCESSOR / SHPRR: Show processor information 909
8.108 SHOW-PROCESSOR-ATTRIBUTES / SHPRA: Show processor information . 911
8.109 SHOW-ROUTE / SHROUTE: Show route attributes 914
8.110 SHOW-ROUTE-ATTRIBUTES / SHRTA: Show route attributes 917
8.111 SHOW-ROUTE-PATH / SHRTP: Show route path 926
8.112 SHOW-TSAP-OPEN / SHTO: Show information on TSAP 929
8.113 SHOW-VLAN-ASSIGNMENT / SHVLA: Show information on VLAN assignments in BCAM 933
8.114 SHOW-VLAN-DEVICE / SHVLDV: Show VLAN device information 936
8.115 SHOW-VLAN-DEVICE-ATTRIBUTES / SHVLDVA: Show information on VLAN device 938
8.116 SHOW-VLAN-LINE / SHVLLN: Show VLAN lines 942
8.117 SHOW-VLAN-LINE-ATTRIBUTES/ SHVLLNA: Show information on VLAN lines 946
9 DNS Resolver connection 952
9.1 Installing LWRESD 953
9.2 Configuring LWRESD 955
9.3 Controlling LWRESD 959
9.3.1 (RE)START-LWRESD - (Stopping and) Starting LWRESD 960

9.3.2 STOP-LWRESD - Stopping LWRESD 961
9.3.3 DUMP-LWRESD-CACHE - Outputting LWRESD cache to a file 962
9.3.4 FLUSH-LWRESD-CACHE - Emptying the LWRESD cache 963
9.3.5 MODIFY-LWRESD-OPTIONS - Setting LWRESD options 964
9.3.6 RELOAD-LWRESD - Loading LWRESD with new configuration data 965
9.3.7 SHOW-LWRESD-PARAMETERS - Displaying LWRESD operating parameters . 966
9.4 Controlling LWRESD with ASTI 967
9.5 An LWRESD for the real host and virtual hosts 968
9.6 LWRESD client in BCAM 969
9.6.1 Required DNS entries 970
9.6.2 Name mapping in BCAM 971
9.7 LWRESD client in SOCKETS(BS2000) 972
9.8 DIG diagnostic program 973
9.8.1 Starting DIG 974
9.8.2 DIG statements 975
9.9 Diagnostic program NSLOOKUP 978
9.9.1 Starting NSLOOKUP 979
9.9.2 NSLOOKUP statements 980
10 Messages 981
11 Examples 982
11.1 Examples of dynamic generation 983
11.1.1 Standard host HOST 984
11.1.2 ISO end system connected directly to a LAN (LAN1#5) 985
11.1.3 Local and remotely accessible end systems (LAN1#6) 986
11.1.4 Local and remote IPv6, and IPv6 systems accessible via an IPv4 tunnel (LAN6#1) 989
11.1.5 Several routes via a LAN 991
11.2 Examples of automatic end system creation 993
11.2.1 End system on a local LAN segment 994
11.2.2 Automatic IPv6 end system creation (LAN6#1) 995
11.2.3 End systems on a subnetwork which are accessible via a router 997
11.2.4 End systems accessible via the default router 998
11.2.5 Channel adapter redundancy 1000
11.2.6 Example for CIDR 1002
11.2.7 Example of a minimum configuration for OSPF 1004
11.3 Examples of redundancy 1006
11.3.1 Example of channel adapter and router redundancy 1007
11.3.2 Example of redundancy with the group concept 1009
11.3.3 Example of host redundancy 1011
11.4 Example with branching instructions 1013

11.4.1 Example of multiple VMs in one SOF 1014
11.5 Examples of VLAN support in BCAM 1018
11.5.1 Definition of a LAN 1019
11.5.1.1 Definition of a LAN node 1020
11.5.1.2 Definition of a local processor on the LAN 1021
11.5.1.3 Definition of a router on the LAN 1023
11.5.1.4 Definition of a remote processor on the LAN 1024
11.5.2 Definition of a VLAN 1026
11.5.2.1 Definition of a VLAN device 1027
11.5.2.2 Definition of a VLAN node 1028
11.5.2.3 Definition of a local processor on the VLAN 1029
11.5.2.4 Definition of a router on the VLAN 1031
11.5.2.5 Definition of a remote processor on the VLAN 1032
11.5.3 Definition of multiple VLANs 1034
11.5.3.1 Definition of two VLANs with different VLAN devices 1035
11.5.3.2 Definition of two VLANs on one VLAN device 1037
11.5.4 Definition of redundant configurations 1039
11.5.4.1 Definition of channel adapter redundancy for a normal LAN 1040
11.5.4.2 Definition of channel adapter and router redundancy for a normal LAN . 1041
11.5.4.3 Definition of channel adapter redundancy for a tagged VLAN 1043
11.5.4.4 Definition of channel adapter redundancy for a VLAN mixed topology (untagged only) 1046
11.5.4.5 Definition of channel adapter redundancy for an untagged VLAN 1048
11.5.4.6 Definition of channel adapter and router redundancy for a VLAN 1050
11.6 Examples of link aggregations 1052
11.6.1 Definition of a link aggregation with one line 1053
11.6.2 Definition of a link aggregation with multiple VLAN lines 1055
12 Appendix 1057
12.1 Changes of BCAM V22.0A compared to BCAM V21.0A 1058
12.2 Changes of BCAM V23.0A compared to BCAM V22.0A 1063
12.2.1 General changes 1064
12.2.2 New functionality 1065
12.3 Changes of BCAM V24.0A compared to BCAM V23.0A 1069
12.3.1 General changes 1070
12.3.2 New functionality 1071
13 Glossary 1073
14 Abbreviations 1084
15 Important standards 1089
16 Related publications 1095

BCAM V25.0B User Guide and Reference Manual.

Comments... Suggestions... Corrections...

The User Documentation Department would like to know your opinion on this manual. Your feedback helps us to optimize our documentation to suit your individual needs.

Feel free to send us your comments by e-mail to: bs2000services@fujitsu.com

Certified documentation according to DIN EN ISO 9001:2015

To ensure a consistently high quality standard and user-friendliness, this documentation was created to meet the regulations of a quality management system which complies with the requirements of the standard DIN EN ISO 9001:2015.

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Preface

BCAM forms the basis for the data communication system for BS2000 hosts. It supports connections to LANs and, via routers, to WANs in accordance with the CCITT, ISO and TCP/IP recommendations and standards.
BCAM is used for generating network configurations, administration, and control of data communication from, to and within BS2000 hosts and to partner systems of other vendors.

Objectives and target groups of this manual

This manual is intended for network planners, generators, and administrators, who require information on the options available in BCAM, and on integrating BCAM in LAN networks and/or open networks with an ISO and TCP /IP architecture. It provides information on static and dynamic generation of a network configuration, on supported BCAM functions, and on the operation of BCAM. In addition, the tools required for diagnosis are also presented.

Summary of contents

The BCAM V25.0 manual contains the following chapters:

- chapter "BCAM - An overview" contains the fundamentals of ISO and TCP/IP architectures, and describes the associated protocols and services. The various addressing concepts and the communication components supported by BCAM are also described.
- chapter "Generating a network configuration" contains information on static and dynamic BCAM generation and on automatic end system creation.
- chapter "Operation" provides a description of how to operate BCAM and details the necessary administration steps.
- chapter "Diagnosis" contains information on the diagnostic tools.
- chapter "BCAM control files" contains information on the interface of the BCAM control files.
- chapter "BCAM functions" contains information on BCAM functions, such as the support of automatic end system creation (AEC), VLAN, link aggregation and FQDN.
- chapter "BCAM commands" contains a description of the BCAM commands.
- chapter "DNS Resolver connection" contains information on the DNS Resolver connection.
- chapter "Messages" contains information on BCAM messages and generally on openNet Server messages.
- chapter "Examples" contains information on examples of network configurations.
- chapter "Appendix" contains the modification protocols of the previous two BCAM versions.
- A list of abbreviations, a glossary, and an overview of important standards can be found at the end of the manual.

Readme file

The functional changes to the current product version and revisions to this manual are described in the product-specific Readme file.

Readme files are available to you online in addition to the product manuals under the various products at http://bs2manuals.ts.fujitsu.com. You will also find the Readme files on the Softbook DVD.

Information under BS2000

The `/SHOW-INSTALLATION-PATH INSTALLATION-UNIT=<product>` command shows the user ID under which the product's files are stored.

Additional product information

Current information, version and hardware dependencies, and instructions for installing and using a product version are contained in the associated Release Notice. These Release Notices are available online at http://bs2manuals.ts.fujitsu.com.

Changes since the last edition of the manual

The manual for BCAM V25.0 contains the following changes compared to the description of BCAM V24.0.

New functionality

Amended BCAM commands

- GENERATE-BCAM-CMD-FILE
  - The creation order of BCAM-Objects will be respected when generating a SOF-File.
  - Own addresses will be matched correctly to a virtual host when generating a SOF-File.
- NETSTAT
  - New operand ARGUMENTS.
  - NETSTAT -h can be used to Display information about all subcommands.
  - Added support for the Loopback-Interface.
  - The program can now be called via a CLI corresponding the UNIX CLI.
- PICK-BCAM-INFO
  - New operand OUTPUT. The output can now be written to a file.
  - Wildcards are now supported for the operand SEARCH.
- PREP-BCAM-INFO-MSG
  - New operand OUTPUT. The output can now be written to a file.
- SHOW-APPLICATION-BASICS
  - New operand OUTPUT. The output can now be written to a file.
- SHOW-BCAM-ADDRESS
  - Wildcards are now supported for the operand SEARCH.
  - New operand OUTPUT. The output can now be written to a file.
- SHOW-BCAM-FIREWALL
  - New operand OUTPUT. The output can now be written to a file.
  - New operand SEARCH. Wildcards are supported.
- SHOW-BCAM-OBJECTS
  - New parameter value REDUNDANCY-CMDS for INFORMATION.
  - It is now possible to interrupt the command.
  - Support for the activation of redundant configurations.
  - Wildcards are now supported for the operand SEARCH.
- SHOW-BCAM-ROUTER
  - New operand OUTPUT. The output can now be written to a file.
  - New operand SEARCH. Wildcards are supported.
- SHOW-CONNECTION-BY-NAME
  - New operand OUTPUT. The output can now be written to a file.
  - New operand SEARCH. Wildcards are supported.
  - New operand MAX-MSG-NUMBER. Limits the maximum count of results.

Changes to POSIX NETSTAT

- New options for calling POSIX NETSTAT: -dsr, -mn, -tl, -te, -tw.

Changes to NSLOOKUP

- A RESOLV-FILE can now be given for the command /START-NSLOOKUP.

Changes to SOCKETS

- New diagnosis program TRACEROUTE (in combination with SOCKETS V21.0).

Additional changes since BCAM V25.0A01:

- SHOW-ADDRESS-ASSIGNMENT
  - The command can now be executed with the privilege STD-PROCESSING.
- SHOW-HOST-ATTRIBUTES
  - The command can now be executed with the privilege STD-PROCESSING.
- SHOW-ROUTE-ATTRIBUTES
  - New operand value *OWN for the operand PROCESSOR in ROUTE-NAME.
  - The command can now be executed partially with the privilege STD-PROCESSING.
- New template SYSDAT.BCAM.SE.CMDF.MSCF which describes a secure MSCF connection.

Additional changes since BCAM V25.0B:

- CALL-BCAM-COMMANDS
  - New operand value *ERROR-ONLY for the operand SYNTAX-CHECK-ONLY.
- MODIFY-BCAM-OPTIONS
  - New operand value *SECURE-CONNECTION for the operand AVAILABILITY.
    For this, the functionality of the application file was also extended.
- NETSTAT
  - New function -tpo.
- SHOW-BCAM-OPTIONS
  - For the operand AVAILABILITY the status of the option *SECURE-CONNECTION is now also put out.
- SHOW-PROCESSOR-ATTRIBUTES
  - New operand value *OWN for the operand PROCESSOR.

Notational conventions

The following typographical elements are used in this manual:

i	For notes on particularly important information.
!	This symbol designates special information that points out the possibility that data can be lost or that other serious damage may occur.
`input`	Inputs and system outputs in examples are shown in typewriter font.

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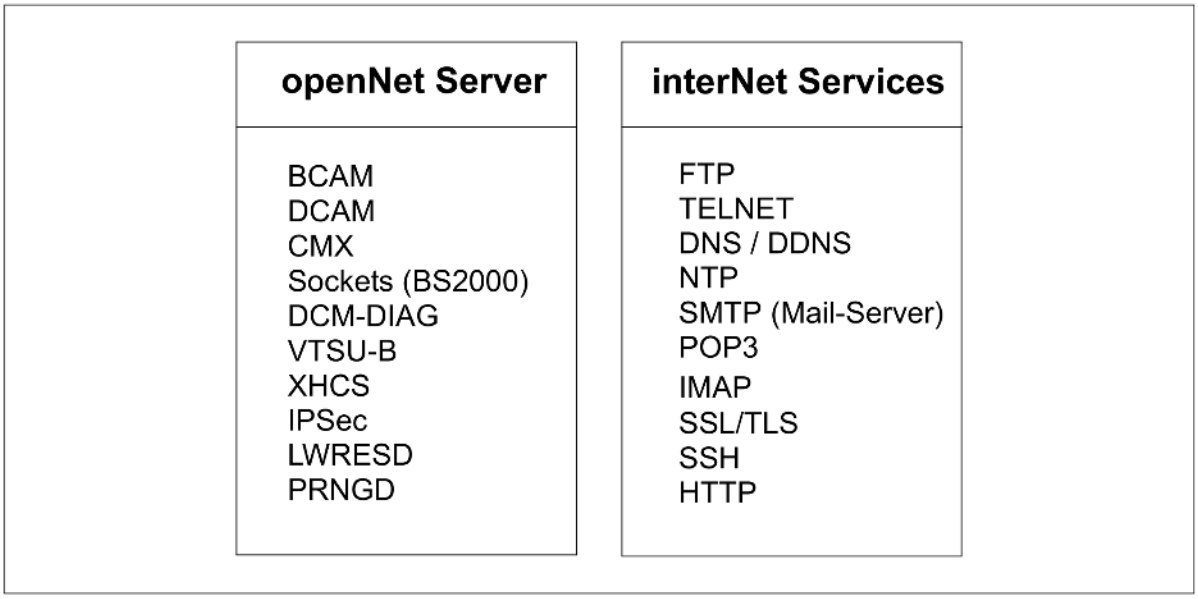
BCAM - An overview

openNet Server is the central communications manager in BS2000 and guarantees the consistent placement of BS2000 mainframes as future-oriented Internet Servers. The communications manager openNet Server offers communication services for all relevant networks, i.e. not only the Internet but also all services of the traditional transport service DCAM in BS2000.

openNet Server is supplemented by the delivery units interNet Services, interNet Value Edition and interNet Security, which provide the following important standard services:



The selectable units openNet Server and interNet Services.

The concept of the Internet Server is a product standard (X98PS) that was defined by The Open Group in 1998. This Product Standard includes the set of relevant Internet services for interoperability as well as the portability service for JAVA™. In addition, the standard also includes references to the required RFCs (Request for Comments) which must be supported for the individual services.

All the relevant services of X98PS are offered by the operating system BS2000 with the openNet Server, interNet Services, interNet Security, APACHE, NFS, JENV, SNMP management and the print service RSO. This package combines the processing power, reliability and security of BS2000 mainframes with all the main Internet standards.

Due to these comprehensive features, BS2000 was the first operating system to be certified with Internet Server Branding by The Open Group.

openNet Server supports IPv6. There is, in addition, a range of functions designed to increase the availability of applications and servers.

The following overview shows the services listed in X98PS and the products in which they are implemented:

Product	Service group	Service	
openNet Server	TCP/IP Communications Services	TCP UDP IPv4 IPv6 -	Transmission Control Protocol User Datagram Protocol Internet Protocol Version 4 Internet Protocol Version 6 Requirements for Internet Hosts
interNet Services APACHE	File Transfer Service	FTP	File Transfer Protocol
	Terminal Service	TELNET	
	Name Service	DNS DDNS	Domain Name Service Dynamic DNS
	Time Service	NTP	Network Time Protocol
	Security Service OpenSSL	SSL TLS	Secure Socket Layer Transport Layer Security
	Security Service OpenSSH	SSH	Secure Shell
	Mail Services	SMTP POP IMAP	Simple Mail Transfer Protocol Post Office Protocol Internet Message Access Protocol
	Hypertext Services	HTTP	HyperText Transfer Protocol
SNMP-AGENTS	Network Management	SNMP	Simple Network Management Protocol

More information on the X98PS Product Standard can be found on the Internet under:

http://www.opengroup.org/branding/prodstds/x98ps.htm.

BCAM (Basic Communication Access Method) is the basis of the data communication system for BS2000 mainframes. It supports connections to LANs and, via routers, to WANs in accordance with CCITT, ISO and TCP/IP standards.

BCAM enables the generation, administration, and control of data communication from and to, as well as within, BS2000 mainframes.

This chapter describes the standardizations required for teleprocessing, particularly in multivendor networks. The term multivendor network refers to a network comprising components from various manufacturers.
The section "Network types" lists the public and private networks in which communication can be implemented with BCAM. Details on the systems, devices, networks, lines and applications that can be used are presented in section "Network components".

Details on the names and addresses in computer networks that can be reached with BCAM are discussed in section "Addressing in computer networks".

Communication architecture

In order to exchange data, systems must be able to understand each other. Communication is therefore only possible if the systems involved in the communication are using the same data formats and comply with prearranged data exchange procedures. The data formats and communication rules are known as protocols.

The OSI Reference Model defined by ISO (International Organization for Standardization) is the most well-known communication architecture model, and represents the most comprehensive set of protocols.

The Internet architecture is by far the most widespread communication architecture.

BCAM supports the following communication architectures:

- OSI architecture (ISO protocols)
- Internet architecture (TCP/IP protocols)

The OSI architecture

The model for communication between open systems, the OSI Reference Model (Open Systems Interconnection), forms the basis for ISO standardization of data communication. The OSI model defines the structure of communication systems and serves as a basis for standardizing protocols and services. It defines the functions that must be provided by the components involved in communication.

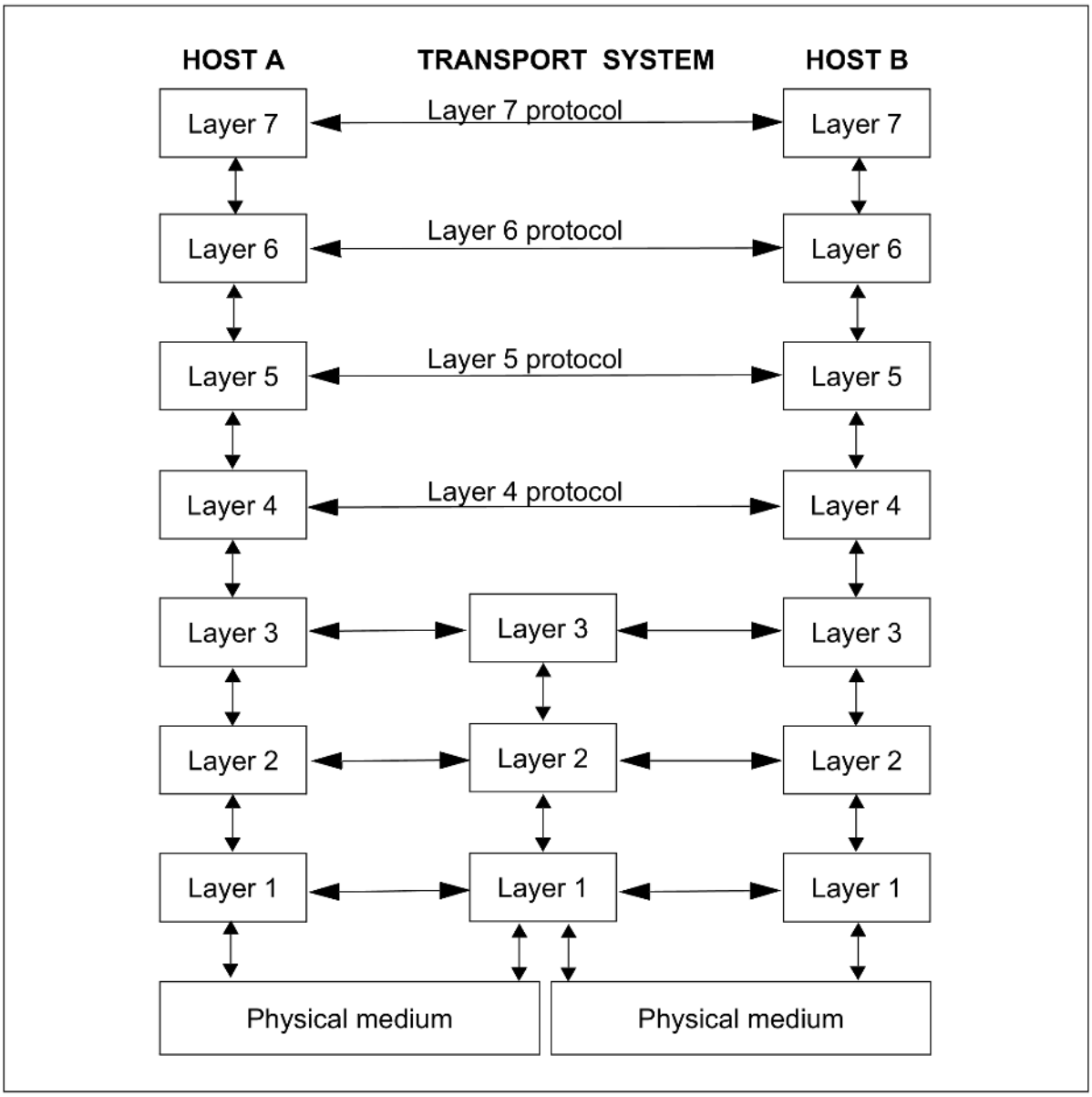
The OSI Reference Model comprises seven hierarchical layers, where each layer is assigned specific communication functions within the communication task.

Layer	Name	Function	
Layer 7	Application Layer	Coordinates and controls the execution of communication functions for an application	APPLICATION
Layer 6	Presentation Layer	Controls the presentation of information, thereby allowing user-independent and device-independent communication	
Layer 5	Session Layer	Controls the flow of communication	
Layer 4	Transport Layer	Controls the reliable exchange of data between two communicating partners (applications)	TRANSPORT
Layer 3	Network Layer	Controls the exchange of data between two end systems (computers)	
Layer 2	Data Link Layer	Secures transmission on the individual link sections of the overall communication path (procedures)	
Layer 1	Physical Layer	Sets up the physical connection (via the medium used for transmission)	

OSI reference model

Each layer makes use of the service provided by the underlying layer and offers a service to the layer above it. Only the Physical Layer needs to provide its own service in conjunction with the physical medium. The active elements within a layer that provide the functions are known as instances.

Each layer is defined by the service it provides and the protocol that uses its instances. During communication, the various computers interact on the same layer using common protocols.



Communication in the OSI Reference Model

In general, the functionality of each layer in the OSI Reference Model can be provided by various protocols. It is essential for communication that the partner instances are using the same protocol. For this purpose, profiles are defined. A profile is a precise definition of which protocol or which protocol variant is to be implemented on which layer. Profiles are defined by national or international organizations or syndicates.

OSI Layer	Function	ISO service/protocol
Layer 7	Application Layer	
Layer 6	Presentation Layer	ISO 8822 / ISO 8823
Layer 5	Session Layer	ISO 8326 / ISO 8327
Layer 4	Transport Layer	ISO 8072 / ISO 8073 CL.0 /2 /4 /
Layer 3	Network Layer	ISO 8348 / ISO 9542 * ISO 8208 / ISO 8473 /
Layer 2	Data Link Layer	ISO 8802/2, LLC1/2
Layer 1	Physical Layer	

ISO services and protocols in the OSI architecture

The protocols marked with * are administration protocols

The Internet architecture (TCP/IP)

The Internet architecture is also frequently referred to as the TCP/IP architecture, after its most well-known protocols. TCP/IP protocols are the most widely used communication protocols in networks.
Like the OSI architecture, the Internet architecture has a definite layer structure in the transport system; the Application Layer, on the other hand, is more function- or serviceoriented, like the NEA architecture.

IPv6 represents a further development of the TCP/IP architecture and provides a basis for high-performance, easy-to-administer, scalable communications during the coming decades.

Practical experience of IPv4 has made it possible to eliminate shortcomings and implement additional features. Alongside the extension of the address space, the packet format has also been simplified.

The setting up and administration of IPv6 networks has also been simplified.

Particular attention has also been paid to ensuring a smooth transition from IPv4 networks to IPv6 networks.

You can obtain the RFCs listed below, which provide the basis of the IPv6 functionality, at http://www.rfc-editor.org/.

- Thomson, S., T. Narten, T. Jinmei, IPv6 Stateless Address Autoconfiguration, RFC 4862, September 2007.
- Nichols, K., S. Blake, F. Baker, and D. Black, Definition of the Differentiated Services Field (DS Field) in the IPv4 and IPv6 Headers, RFC 2474, December 1998.
- Ramakrishnan, K., S. Floyd, and D. Black, The Addition of Explicit Congestion Notification (ECN) to IP, RFC 3168, September 2001.
- Conta, A., S. Deering M. Gupta, Internet Control Message Protocol (ICMPv6) for the Internet Protocol Version 6 (IPv6) Specification, RFC 4443, March 2006.
- Hinden, R., S. Deering, Internet Protocol, Version 6 Addressing Architecture, RFC 4291, February 2006.
- Hinden, R., S. Deering, Internet Protocol, Version 6 (IPv6) Specification, RFC 2460, December 1998.
- Narten, T., Nordmark, E., and W. Simpson, H. Soliman, Neighbor Discovery for IP Version 6 (IPv6), RFC 4861, September 2007.
- McCann, J., S. Deering, and J. Mogul, Path MTU Discovery for IPv6, RFC 1981, August 1996.
- Abley. J, Savola, P. Neville-Neil, G. Deprecation of Type 0 Routing Headers in IPv6, RFC 5095, December 2007

OSI Layer	Function	Internet protocols
Layer 5 - 7	Application Layer	TELNET, FTP, SMTP
Layer 4	Transport Layer	TCP, UDP
Layer 3	Network Layer	IP, ARP *, ICMP * IPv6, ICMPv6*
Layer 2	Subnetwork Layer	SNAP, LLC1/2
Layer 1		

Protocols of the Internet architecture

The protocols marked with * are administration protocols

Subnetwork Layer

The CSMA/CD (Carrier Sense Multiple Access / Collision Detection) procedure is used in the Subnetwork Layer, e. g. in Ethernet. This means that all stations are connected to a shared bus and have the same access authorization to the line. Before transmission, the station checks whether the LAN is free. If the station identifies that the network is free, it begins the transmission. If a number of stations begin transmission at the same time, collisions will occur. In this case, the stations start transmitting again at different dimes. The send time of the individual station is determined by a random generator. The 48-bit Ethernet address is used for addressing within the subnetwork.

Network Layer

IP (Internet Protocol) is the most important protocol in the Network Layer. The main task of IP is system addressing. IP provides connectionless transmission of datagrams between two systems without error recovery. The addressing occurs via the world-wide unique 32-bit Internet address. For a detailed explanation of addressing, refer to section "IPv4 addresses".

In the further developed IPv6 protocol, addressing is performed via the world-wide unique 128-bit IPv6 address. For a detailed explanation of addressing, refer to section "IPv6 addresses".

ARP (Address Resolution Protocol) is used to map an Internet address onto an Ethernet address. This function can only be offered for systems which are found in the same physical subnetwork. RARP (Reverse Address Resolution Protocol) has the opposite function for the gateway to the network layer. However, RARP is no longer of any practical significance

ICMP (Internet Control Message Protocol) sends error and control messages to other hosts, and controls the communication of Internet software between network computers.

ICMPv6 (Internet Control Message Protocol) contains additional mechanisms for the detection of end systems and routers, for end system and router failure detection (“Neighbor Discovery”) and for the automatic generation of local IPv6 addresses (“Autoconfiguration”).

IP Security

If you use the optional IPSec V1.n and CRYPT V1.n, you can use the security extensions of the IP protocol, which can be used in every application.

Authentication Header (AH) provides access to functions for protection against corrupt data (authenticity).

Encapsulated Security Payload (ESP) provides access to:

- functions for protection against corrupt data (integrity)
- mechanisms for data encryption (confidentiality).

Transport Layer

TCP is the connection-oriented protocol of the Transport Layer. TCP provides data for security and the mechanisms for flow control.

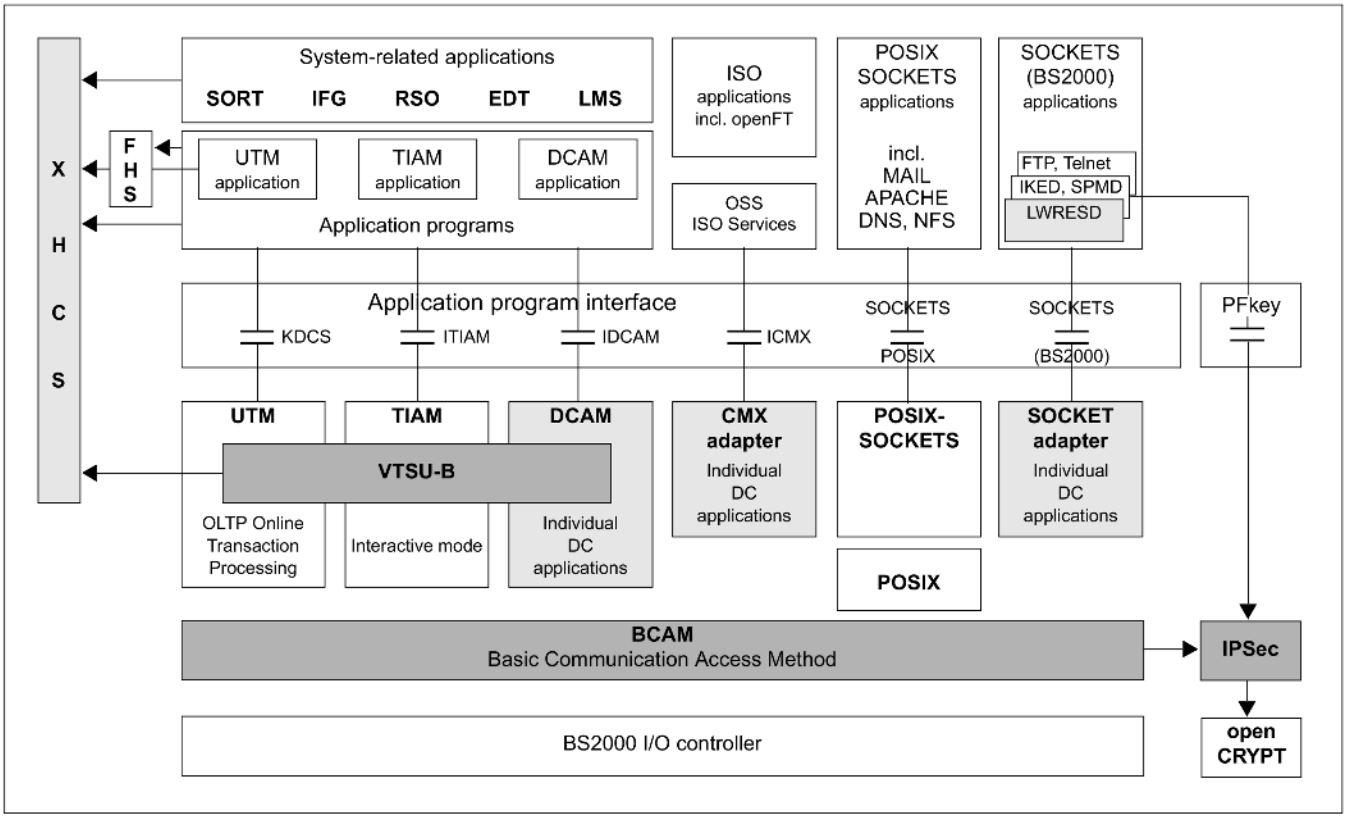
BCAM provides additional support of ECN protocol functions (Explicit Congestion Notification) according to RFC 3168.
With these compatible protocol extensions in TCP and IP, router end systems can detect jam situations at an early stage. In this way the loss of segments can be prevented and performance can be considerably improved.
ECN support is activated in BCAM (as required in RFC 3168) by default. The use of the function is handled between the partner systems during TCP connection establishment.If required, a route-specific or global shutdown can be carried out using the MODIFY-ROUTE-ATTRIBUTES command.

UDP is the connectionless protocol of the Transport Layer. Data losses and transmission errors are not detected or reported by this protocol.

TCP and UDP use unambiguous port numbers for addressing.

openNet Server (BS2000) in the system environment

The figure below provides an overview of the transport system interfaces of BCAM and how BCAM is embedded in the system environment of BS2000.



openNet Server (BS2000) in the system environment

openNet Server offers the following transport system interfaces:

- SOCKETS
  Interface for the TCP/IP transport service.
  The Sockets interface Version 2.0 and higher permits communication in accordance with the IPv6 conventions (RFC 2553).
- ICMX (Communication Manager for Unix platforms)
  In BS2000: program-to-program communication interface for the ISO transport service
- IDCAM (Data Communication Access Method)
  Program-to-terminal or program-to-program communication for the ISO and NEA transport services
- ITIAM (Terminal Interactive Access Method)
  Interfaces for interactive input/output for communication in interactive mode
- IKDCS (Compatible Data Communication System)
  Interface for transaction-oriented applications with the functions for controlling messages, programs and transactions and also data management functions. IKDCS is not part of openNet Server.

When the communication partner is a terminal or a terminal emulation program, services and functions of Virtual Terminal Support (VTSU) are also available. VTSU is used for logical support of terminals and terminal printers.

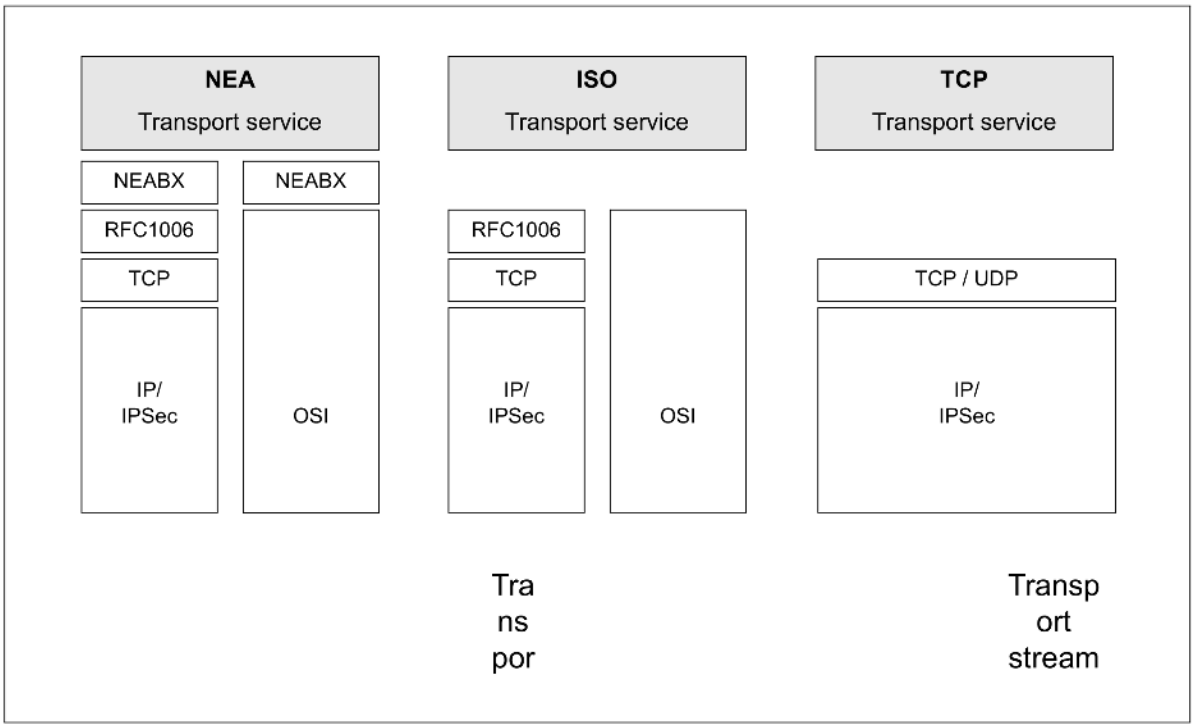
The product XHCS supports extended international standards for compatible fonts which can consequently also be communicated between systems. XHCS stands for an end-toend concept for character handling in BS2000. XHCS permits various fonts and encodings which can be switched between dynamically and provides all components which perform character processing with central mechanisms for identifying and interpreting the current font. XHCS supports ISO (7-bit and 8-bit), EBCDIC and Unicode fonts.

openNet Server also supports IPSec, which uses *C*RYPT to support a range of security mechanisms.

LWRESD (Light Weight RESolver Daemon) implements a central DNS Resolver port for BCAM and SOCKETS-BS2000. POSIX-SOCKETS is indirectly connected to the DNS Resolver port via the SOCKETS-BS2000 subsystem. The program is based on the BIND product and has been ported to BS2000. You can thus obtain information from a DNS server.

Overview of the transport services supported

The figure below provides an overview of the transport services which are supported and which network connections are provided through these.



Transport services supported

Connection-oriented and connectionless protocols

With regard to functionality, there are two types of protocols, namely connection-oriented and connectionless.

In the case of connection-oriented protocols (for example TCP in the TCP/IP architecture), a connection with two connection endpoints is established via the exchange of messages between two partners. When the data is transferred, facilities such as flow control, error code and error recovery may be available depending on the protocol. The connection is established either via the application or, in the case of a non-recoverable error, via the protocol.

Connectionless protocols (e.g. IP and UDP), by contrast, do not establish any connection points. The data is transferred via datagrams. There is issued no flow control and no error code if a datagram is lost. The type of protocol used depends on the desired application. This means that some protocols on the Application Layer permit connectionless transfers, whereas others require connection-oriented protocols.

Network types

A group of computers is called a network. The computers in the network communicate with each other and exchange data over long distances. When computers with the same communication architectures are interlinked, this is known as an homogeneous network.

A heterogeneous network is one in which computers communicate using various protocols. Computer networks are characterized by the distance to be covered and the type of cabling, the utilization of public services, the transmission speed, and the type of protocols, i.e. the totality of rules and regulations that must be observed when transmitting information.
The most important distinctions between networks are the transmission speeds, the technology used, and the distance to be covered between the computers.
Using these criteria, networks are classified as LANs (local area networks) and WANs (wide area networks). LANs and WANs are described in further detail below.

LAN

LANs (local area networks) connect systems that are located on the same site and are linked via a uniform transport medium. In recent years, some LAN technologies have become established as industry standards, e.g. Ethernet or Token Ring, all of which differ in topology, access methods and addressing.

However, one characteristic common to all LANs is the high transmission speed.

BCAM supports LANs in accordance with ISO and TCP/IP and TCP/IPv6.
BCAM also supports virtual LANs (IEEE 802,1Q), called VLANs for short. Further information is provided in the section “VLAN support in BCAM”.

WAN

WANs (wide area networks) connect systems that are linked over long distances. In this case, the sovereignty of the telecommunications authorities in the individual states is always an issue, regardless of whether connection takes place directly over national equipment or via private wide area networks.

Below are some of the most well-known and most frequently used WANs:

- Circuit-switched networks, e.g. public switched telephone networks, ISDN, direct dial connections
- Mobile telephone networks (e.g. GSM). From the BCAM viewpoint these are regarded as WANs.

Network components

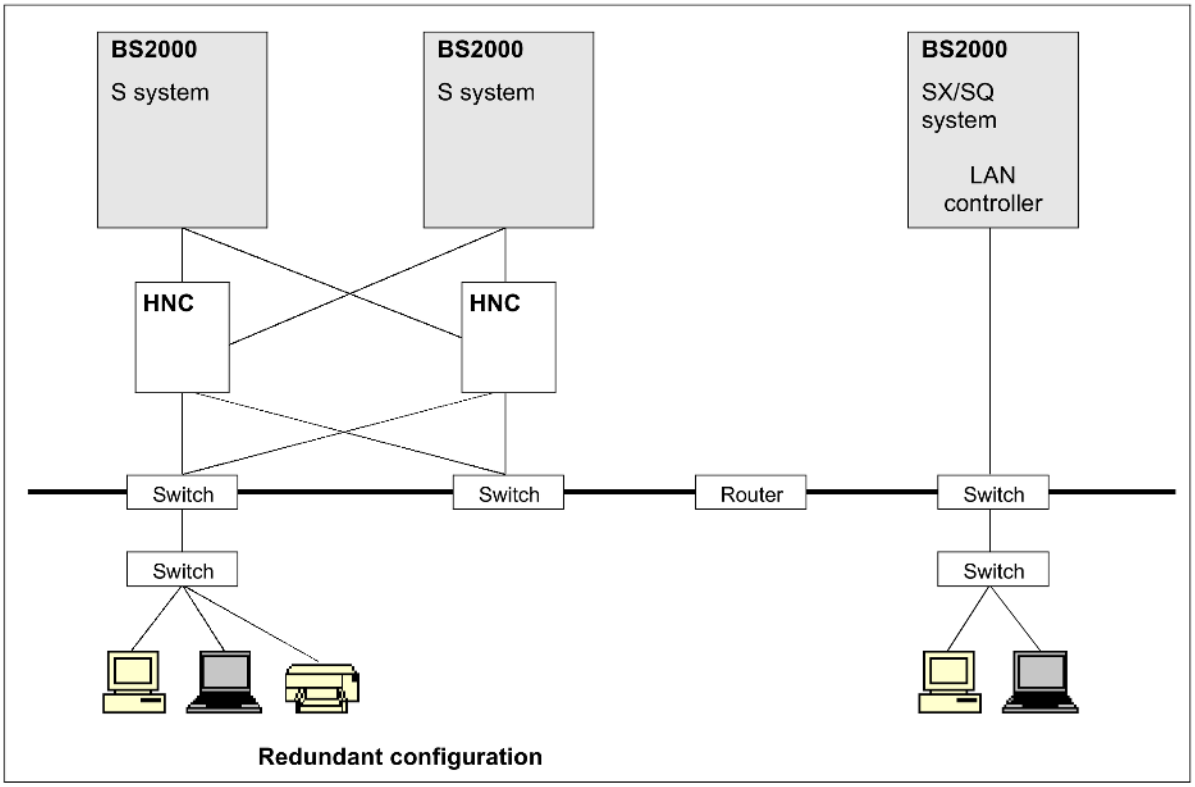
As described in the chapter "Generating a network configuration", the local system must be notified of all important components in the network.

Dynamic generation is performed using BCAM commands. The AEC functionality also permits automatic extension of the configuration. The methods mentioned can be combined. It is also possible to perform static generation using a KOGS source (KOGS = configuration-oriented generator language). This is to be recommended only when KOGS sources still exist and still need to be used.

An overview of the groups of components which must be defined using the specified means is provided below. You will find all the information required for the various generations in the chapter "Generating a network configuration". You will find associated examples in the chapter "Examples". Where it makes sense, KOGS macros are also presented in the examples of static generation.

KOGS generations do not support IPv6 fully. VLAN and link aggregations are not supported by this method. The KOGS generations will no longer be updated.

Example of a simple network



Components of a simple network

Server

Servers are systems containing applications. Another characteristic of servers is that their hardware and software are designed for data storage and data processing. In addition, servers generally represent data sources and/or data sinks.

BS2000 server

The BS2000 server is the computer on which the BCAM data communication system is installed. This system may represent a standard host and a number of additional virtual hosts. A host communicates with the connected servers and communication computers via BCAM ports (Basic Communication Access Method). BCAM offers ports for connecting LAN networks (Ethernet, Fast Ethernet and Gigabit Ethernet) via LAN channel adapter (HNC) or integrated LAN board.

Virtual host

BCAM supports multiple hosts (local end systems). The first host generated is the standard host; the second and all subsequent hosts are referred to as virtual hosts. Each host possesses its own network address (es). The number of virtual hosts is therefore limited only by the addressing options.

End system

End systems (this term stems from the ISO environment) are servers in which the users of transport services reside. Examples of end systems are BS2000 hosts, Unix system based hosts, external hosts or PCs. End systems can also function as TRANSIT systems.

Interworking devices

Bridges, hubs, routers and switches are used as interworking devices. They permit subnets and backbone networks to be created and transitions from LANs to WANs. In virtual LANs (VLANs) the traffic flows (unicast, multicast and broadcast traffic) can be configured with network management systems. Bridges and hubs operate at address level (Layer 2), router on the Network Layer (Layer 3).

The switch technology has been significantly enhanced in recent years. Today switches not only replace bridges and hubs, but are also available as very powerful switches on Layer 3 and Layer 4 and take the place of classical routers. Despite greater bandwidths, the assignment of bandwidth and prioritization of data streams is becoming increasingly important in order to optimize transmission costs and prevent bottlenecks for higher-priority applications. Owing to the wide distribution of the Internet and also of intranets and extranets, further development of interworking devices will concentrate primarily on TCP/IP products. Routers and switches are generally used in current networks.

A distinction is made between a:

- bridge
- switch
- Layer 3 switch
- hub
- router

Bridge

A bridge is required if a connection is to be established between adjacent LAN segments. The bridge checks the addresses of messages in the LAN, and forwards the messages accordingly. The function of the bridge is assigned in Layer 2 of the OSI Reference Model. Bridges that cooperate with each other in order to traverse other networks (e.g. a WAN network) are referred to as remote bridges.

Switch

A switch is a multiport bridge that routes data traffic via a number of different ports to multiple network segments. It is used to subdivide a network segment into a number of smaller segments (microsegmentation) in order to increase the overall network bandwidth without boosting infrastructure requirements. The function of a switch belongs to the Datalink Layer of the OSI Reference Model.

Switches are hardware-implemented and therefore operate more efficiently than bridges which possess software-based functionality.

Layer 3 switch

Layer 3 switches have some router functionality and are used in conjunction with VLANs to permit VLAN structures to be established and administered in physical networks.

Hub

A hub is a connection device that physically connects workstations. It thus combines the workstations within a common network segment. The function of a hub belongs to the Physical Layer of the OSI Reference Model.

A hub regenerates electrical signals from transmitting workstations and also acts as a repeater. It is a shared device via which all current users – irrespective of their number – can share the available bandwidth.

Router

A router also connects LAN segments, but by using network and routing protocols (Layer 3). A router can also be used to connect BS2000 systems to WANs or networks such as GSM via a LAN.

Lines

In order to communicate, the systems installed in a network require a physical medium via which data is transported, possibly with the aid of electrical or optical signals. Examples of such media include copper cables (two-wire/four-wire connection) or optical fibers.
The physical properties of the line and the software implemented for message transfer determine the transmission characteristics of a line. The transmission speeds attained on the physical medium depend on the line types used and their connections to computers.

Routes

The logical data path between two computers is called the route. The route is defined by the pair of network addresses of the communication partners. A logical path through the network is the key factor here; the physical conditions are less important.

Connection types to the LAN

- LAN channel adapter (HNC)
- LAN controller

LAN channel adapter (HNC)

BCAM allows BS2000 systems to be connected to Ethernet LANs and supports the parallel implementation of ISO and TCP/IP protocols for these connections.

The new generation High-Speed Net Connect HNC offers CSMA/CD connections. These connections can also be made available to several hosts in parallel.

LAN controller

In the case of a Solaris-/Linux-based IO processor, the connection to the LAN is implemented by means of integrated Communication Controllers.

This network access product offers ideal configuration options for different applications (networks, transport services).

Addressing in computer networks

Computer networks can be very complex. Local subnetworks are often linked to each other or to a central computer center via WANs.

To allow all systems to communicate, a uniform and unique addressing mechanism for objects (i.e. systems, devices, and applications) is required throughout the entire network. However, this addressing mechanism depends on the protocols used. For this reason, BCAM supports the implementation of NEA, ISO, and TCP/IP addresses. The most important common denominator of these addressing schemes is the ability to create a hierarchical structure. This structure can have an organizational, application-related, technical, or geographic basis. The individual levels of this structure represent a subnetwork (group of end systems), an end system, and a station or application.

Processor name

The processor name identifies a computer in a network. The processor name must be unique throughout the network. The symbolic name of a computer can contain both the old addressing pattern and special functions of this computer.

Application name (station name)

The application name (previously station name) uniquely identifies a station or application within a processor. Applications can only be addressed symbolically at user interfaces. Because the application name is only unique within the processor, the logical or symbolic processor address is added to ensure uniqueness throughout the network, e.g. $DIALOG, HOST0011. The application name can comprise up to eight alphanumeric characters. System applications in the BS2000 host are identified by a $ character in the first position; for user applications, the $ character is not permitted in the first position of the name.

Structure of LAN addresses

Addressing in local area networks is subject to technical and protocol-related influences. Characteristics common to all, however, are the implementation of Ethernet addresses and the division into networks and subnetworks.

Ethernet addresses

Within a subnetwork, computers are addressed using the Ethernet address (MAC address). Each computer fitted with a LAN board has an Ethernet address. The 6-byte Ethernet address uniquely identifies a LAN board worldwide.

Network addresses

Although the Ethernet address is always unique throughout the world, a specific computer in a large LAN subdivided into subnetworks can be addressed much more easily and quickly by means of a structure in its Internet address (network address). Internet addresses are used both in LANs, in accordance with the ISO standard, and in TCP/IP networks. However, the format and conversion of Ethernet addresses into network addresses and vice versa are different.

TCP/IP addresses

The TCP/IP addressing is carried out via IP addresses, port numbers and socket host names.

IPv4 addresses

The IPv4 address (also referred to as IP address below for short) – also sometimes referred to in technical publications as the Internet address or, to differentiate it from IPv6, as IPv4 – is a processor address that is unique throughout the network. The 32-bit IP address consists of four fields in “dotted decimal notation”, i.e. each is separated by a dot (e.g., 164.13.58.63), and is split into

- the network ID and
- the host ID.

Bit 1	**8**	**9**	**16**	**17**	**24**	**25**	**32**	**Address type**
0	Network ID	Host ID						**Class A**
10	Network ID			Host ID				**Class B**
110	Network ID					Host ID		**Class C**
1110	Multicast address							**Class D**

IPv4 address types

Address types

Depending on the type and size of the network, TCP/IP offers four different unicast address types with network IDs and host IDs which may sometimes be of different lengths. To provide routing support, bits 1-3 of the network ID define how the address is split into the network ID and host ID. This results in a maximum of 16 million addressable hosts for address type A, whereas 254 addressable hosts are available for type C. The multicast addressing for addressing a group of end systems uses address type D. This address type makes it possible to define logical processor groups by using the IGMP protocol.

Broadcast addressing

IP also permits broadcast addressing in order to address all the end systems. It is possible either to address all the IP computers (“Limited Broadcast”: 255.255.255.255), or to address all the IP computers within a given network (“Directed Net Broadcast”: e.g. 139.22.255.255).

Subnet mask

The host ID can be optionally split again to support the routing function in larger subnetworks. This division can have an organizational or geographic basis, for example. The host ID is subdivided into the subnet ID and host ID by specifying the IP subnetwork mask (see, for example, the command BCIN IPSNMASK – generating LAN nodes dynamically – or CREATE-NODE < >,IP-SUBNET-MASK=...). Specification of the subnetwork mask defines the implementation of subnetwork routing in this network, as well as providing information on the number of possible subnetworks and the computers they contain.

Bit 1 8	9 16	17 24	25 32	Add. type
0	Network ID	Subnet ID	Host ID	**Class A**
10	Network ID		Subnet ID	Host ID	**Class B**
110	Network ID			Subnet ID/Host ID	**Class C**
1110	Multicast address				**Class D**

IPv4 address with specification of subnet ID in accordance with RFC 950

Since Ethernet addresses are used within a subnetwork, the TCP/IP protocols ARP (Address Resolution Protocol) and RARP (Reverse ARP) are available to assign IP addresses to Ethernet addresses and vice versa. Both these protocols periodically

update the Routing Information Base (RIB) with the appropriate address entries.

Predefined IPv4 addresses

IPv4 address	Meaning
127.0.0.1	Loopback address

Supported input/output formats

You can enter the IPv4 addresses in “dotted decimal notation”.

IPv4 addresses are always output in “dotted decimal notation”.

Classless Inter-Domain Routing CIDR

The 32 bits of an IPv4 address are subdivided into the network and the host part. Originally eight bits were envisaged for the network part; this was sufficient to represent 256 networks, each with approx. 16 million hosts.

It soon became clear that a few networks containing a very large number of hosts could not meet the real requirements. Many networks which tended to have fewer hosts reflected the real situation better. As a result, the network part of the IP addresses was divided into three classes (A, B and C) which differ in the length of the network part and consequently in the number of addressable hosts. But this did not solve the dilemma of the lack of IP addresses; it merely shifted it to a new level.
As class C networks with 256 hosts are not suitable for most larger organizations, these organizations must be assigned a class B address space. The 16384 class B networks were then also quickly assigned.

Bit 1	**8**	**9**	**16**	**17**	**24**	**25**	**32**	**Address type**
0	Network ID 128 networks	Host ID 16777216 hosts						**Class A**
10	Network ID 16384 networks			Host ID 65536 hosts				**Class B**
110	Network ID 2097152 networks					Host ID 256 hosts		**Class C**
1110	Multicast address							**Class D**

IPv4 address types (Classful Routing)

The number of networks and hosts can be calculated using the formula 2**n, where n specifies the number of bits used. However, the number of networks and hosts are the highest figures which can theoretically be achieved. In fact certain bit combinations are not available to be used freely for special applications. For example, in a class A network the local host (loopback) addresses must be handled separately. Consequently this network must be deducted from the theoretical figure. In the case of the hosts, the network and broadcast addresses cannot be specified. In a class A network, for instance, only 126 networks and 16777214 hosts can therefore be specified freely.

Classless Inter-Domain Routing (CIDR) cancels this division into classes. A network is defined by the number of consecutive left-justified bit positions in an IP address. The term prefix length is consequently used. The notation is defined by appending /n to the IP address. 32 minus n bits are available for addressing hosts within a network. The address space which is derived from the prefix is referred to as a CIDR block. The reserved IP addresses mentioned above also apply within a CIDR block. Because of the exceptions the “approximate” values were taken as the number of networks and hosts.

Bit 1	**n**	**n+1**	**32**	**Address type**
Network ID ~ 2**n networks		Host ID ~ 2**(32-n) hosts		**Classless**
1110	Multicast address			

IPv4 address types (Classless Inter-Domain Routing)

Let us take the address 192.168.200.5 as an example. This is an IP address of a class C network which contains a maximum of 254 hosts. This network can be further subdivided by means of a subnet mask. However, a class C network cannot contain more than 254 hosts.

The sample IP address would have the following notation in the CIDR: 192.168.200.5/24.

As specified by the definition of Classless Inter-Domain Routing, the division of the IP address space into network classes is canceled. The prefix length determines the network ID and consequently the number of host addresses available in the subnet.

When the prefix length is reduced, the number of hosts which can be assigned to a network increases. If the 254 hosts corresponding precisely to a prefix length of 24 are not enough, a reduced prefix length must be used. A prefix length of 23 results in double the number of hosts being assigned, a prefix length of 22 four times the number.

Classless network configuration must be executed in all network components, in particular the routers.

CIDR block, IPv4 prefix

The format of the CIDR block or IPv4 prefix can be defined as follows:

a.b.c.d/n (also <IPv4-address>/<IPv4-prefix-length>)

where:

- a,b,c,d (0..255) and 0<=n<=32, in general n > 8
- the IPv4 address notation is in dotted format
- /n defines the prefix length

The groups of IPv4 addresses can be defined using this description.

An IPv4 address belongs to the same CIDR block if its IPv4 prefix matches the predefined IPv4 prefix, i.e. if the first n bits of the binary IPv4 address match.

The same strategy for IPv6 prefixes exists for IPv6 addresses.

As always, exceptions from the rule are possible. Information on which organizations these /8 CIDR blocks are assigned to is consequently provided in Related publications.

IPv6 addresses

The IPv6 address is a computer address that is unique in the network. The 128-bit long IPv6 address takes the form of eight colon-separated address fields each of which contains 2 bytes of the IPv6 address in hexadecimal form (“colon notation”), e.g.:

```
FEDC:BA98:7654:3210:FEDC:BA98:7654:3210
```

Leading zeros can be omitted. Thus, for example

```
1080:0000:0000:0000:0008:0800:200C:417A
```

and

```
1080:0:0:0:8:800:200C:417A
```

are equivalent.

The string “::” continues to represent a continuous series of “0000” strings.
This may occur at most once within an IPv6 address.
Thus the above example could also be represented as follows:

```
1080::8:800:200C:417A
```

Unlike IPv4, IPv6 does not support broadcast addressing. Instead, multicast addresses, which always start with X’ FF‘, are used for many protocol functions (e.g. “Neighbor Discovery”).

Predefined IPv6 addresses

IPv6 address	Meaning
::1	Loopback address
::<IPv4-address>	IPv4-compatible IPv6 address (tunnelling) Only “dotted decimal notation” is permitted in order to represent the IPv4 address.
::FFFF:<IPv4-address>	IPv4-mapped IPv6 address (pure IPv4 node) Only “dotted decimal notation” is permitted in order to represent the IPv4 address.
FF02::1	“Link-Local” multicast address: all routers and end systems at a subnetwork

IPv6 address prefixes

The left-hand part of the IPv6 address consists of a variable-length IPv6 address prefix. The length of the IPv6 address prefix is represented as follows:

```
IPv6-address/IPv6-prefix length
```

Here the prefix length is specified as a number of bits in decimal form.

The address

```
12AB:0000:0000:CD30:0123:4567:89AB:CDEF
```

with the 60-bit IPv6 prefix

```
12AB00000000CD3
```

can therefore be represented as

```
12AB::CD30:123:4567:89AB:CDEF/60
```

Predefined IPv6 address prefixes

Prefix	Name	Comment
FE80/10	Link-Local prefix	Communication within a subnet
FEC0/10	Site-Local prefix	Communication within a range
FF02::1:FF/104	Solicited Node Multicast Address	The multicast address assigned to every IPv6 unicast address

Supported input/output formats

IPv6 addresses must be entered in “colon notation”. In the case of local IPv6 addresses, it is also necessary to specify the prefix length.
In both cases, leading zeros can be omitted.
When specifying “IPv4-compatible IPv6 addresses”, any leading zeros must be omitted and the IPv4 address must be specified in “dotted decimal notation”.

BCAM always outputs IPv6 address in “colon notation”. It also outputs local IPv6 addresses together with their prefix but suppresses leading zeros.

Port number

In LANs based on the TCP/IP standard, the 2-byte port number is used to uniquely address a specific application within a computer. Only the combination of port number (socket) and processor number (IP address) uniquely identifies the sender or receiver of a message within a network.

0	**1024**	**65535**
“Well-known” port numbers		Dynamically allocated

Division of port numbers in accordance with TCP/IP

Addressing socket applications

Socket applications are addressed by means of their port numbers. The port numbers lie within the value range of 0 to 65535 and are split into three areas. The default BCAM values listed in the following table can be modified using a command (see FREEPORT# and PRIVPORT# in the commands BCMOD, DCOPT, and DCSTART). Port numbers for userown applications should be placed in the area between PRIVPORT# and FREEPORT#.

0	**PRIVPORT# 2050**	**FREEPORT# 4096**	**65535**
Fixed port numbers for privileged applications (services)	Fixed port numbers for nonprivileged applications(services)		Dynamically allocated port numbers

Default distribution of port numbers in BCAM

OSI addresses

OSI addressing takes place via Internet addresses and transport selectors.

Internet address

IDP		DSP		
AFI	IDI	Subnet-ID	System-ID	N-Selektor

Format of an OSI network address

The Internet address (network address) comprises the components IDP (AFI, IDI) and DSP. IDP (Initial Domain Part) describes the type and structure of the address, where AFI (Authority and Format Identifier) defines the structure and length of the address itself. IDI (Initial Domain Identifier) describes the addressing area, as well as the institution responsible for assigning the DSP.

Finally, the DSP (Domain Specific Part) contains the network address itself, divided into subnet ID, host ID, and N-selector. The Internet address is up to 20 bytes in length. Routing information can be obtained from the RIB (Routing Information Base). The RIB contains the assignment of network and subnetwork address. The RIB is set up and updated either dynamically or administratively.

Since Ethernet addresses are used within a subnetwork, the ISO protocols ISO9542 and ISO8473 are available for the assignment of Ethernet addresses to OSI addresses and vice versa. Both these protocols periodically update the Routing Information Base (RIB) with the appropriate address entries.

Transport selector

Transport selectors (TSEL) are symbolic addresses that are specified as partner addresses when the connection is established.

SNMP management in computer networks

SNMP stands for **S**imple **N**etwork **M**anagement **P**rotocol and was developed as a protocol for network management services in the TCP/IP Internet.

Scope of application

The supervision and administration of LAN components such as bridges, routers, hubs etc. in heterogeneous networks with TCP/IP protocols was originally the only task of SNMP. Now the area of application of SNMP has been extended to include system and application management. Similar to TCP/IP, where the term does not only refer to the protocol itself, but the entire network, SNMP does not only stand for the protocol, but for the entire corresponding management system.

BCAM supports SNMP management via a private FJ-BCAM-MIB.

SNMP management architecture

The central component of an SNMP installation is the management platform. The management platform enables a clear display of the managed components and convenient operation. The network with all its systems and applications can be monitored and controlled from the management platform. SNMP is not tied to a specific management platform. The SNMP manager, also known as the management station, resides on the management platform. The SNMP manager is an application that communicates with partner applications, the SNMP agents, via SNMP over a TCP/IP network. Each managed component has an agent that provides the SNMP manager with up-to-date information about this component. The initiative for controlling the activities lies primarily within the SNMP manager, which keeps the burden on the managed components with management tasks low.

A detailed presentation can be found in the **Manual SNMP Management (NET-SNMP) for BS2000**.

Delivery unit openNet Server

- Components of the delivery unit openNet Server
- Subsystems

Components of the delivery unit openNet Server

The delivery unit openNet Server is supplied with SOLIS and is generally installed on your system using IMON. The delivery unit openNet Server consists of the following software:

- BCAM
- BCAM-DIAG
- BCAM-GEN
- CMX(BS2000)
- DCAM
- DCM-DIAG
- IPSEC
- LWRESD
- PLUS
- PRNGD
- SOCKETS
- VTSU-B
- VTSUTRAC
- XHCS-SYS

Subsystems

The subsystem BCAM is loaded during the system startup. The DCAM access method is dynamically loaded as a subsystem. The following subsystems are part of the openNet Server package:

- BCAM
- BCAM-CMD
- BCAM-COS
- BCAM-SM2
- CMX-TP
- CMX-TU
- CMX-11
- DCAM
- DCAM-COS
- DCM-DIAG
- IPSEC
- PRNGD
- SOC-TP
- SOC6
- SOC6-X8
- VTSU-B
- VTSUTRAC
- XHCS-SYS

Generating a network configuration

This chapter describes the options for generating a BCAM configuration and examines the various parameters. The main configuration variants are explained on the basis of examples in chapter “Examples”.

Overview of the generation types

Before use, each BCAM host in a computer network must be adapted to its working environment. In BCAM, this process is known as generation. For this purpose, the system environment, i.e. the network configuration, for each system in the communications network is described.

The system is thus provided with information on

- its position in the network
- its network connections
- the accessible partner systems

Information on the network configuration enables the system to receive, send, or forward data. Configuration is the process of specifying the physical and logical properties of lines, networks, and systems, as well as the addresses of communication partners. This information is stored in BCAM tables.

History: static generation with RDF (Resource Definition File)

In the case of static generation, the network configuration was defined using the configuration oriented generation language KOGS.

The static generation is still supported for historical reasons, in so far that an existing RDF file is still being accepted in certain cases. This method should not be used for current generations, as the alternative methods offer more definition possibilities.

Dynamic generation using BCAM commands

In the case of dynamic generation the network configuration or parts of it are generated using BCAM commands.

The commands which are needed to write the configuration can be stored in a Start Option File (SOF) which is executed when BCAM starts. You can use BCAM commands to enter changes to the network configuration directly in the relevant BCAM tables during ongoing operation. Alternatively, you can also define these commands in a BCAM command file which can then be executed at any time after BCAM startup.

Automatic end system creation (AEC)

In the case of automatic end system creation the network configuration of a partner system is automatically generated directly at the time a communication association is created.

The processor and route entries are created for this purpose if the partner system is reached using the IP, IPv6 or ISO8473 protocol. Which entries may be generated is determined on the one hand by corresponding BCAM options for automatic end system creation and on the other hand via BCAM control files and/or DNS.

Automatic end system creation is a function provided by BCAM which is described in detail in the section “Automatic end system creation (AEC)”.

Differences between network definition methods

	Dynamic generation		Automatic configuration extension
	Dynamic BCIN	**CREATE commands**	**AEC**
Host	-	+	-
Node	+	+	-
Line	+	+	-
Alternate line	+	+	-
Link aggregation	-	+	-
VLAN device	-	+	-
Alternate VLAN device	-	+	-
VLAN line	-	+	-
Alternate VLAN line	-	+	-
Route	+	+	+
Processor	+	+	+

Differences between network definition methods

Explanation

The plus character (+) in the matrix means that a network component can be defined using a network definition method. In the case of a real host, for example, a host can only be defined by means of the RDF or the DCOPT /DCSTART command, and in the case of a virtual host, using the CREATE-VIRTUAL-HOST command.

The minus character (-) in the matrix means that the network component in question cannot be defined by the corresponding network definition method. For example, a node cannot be defined via automatic end system creation.

Dynamic generation

- Dynamic generation with BCAM commands
- Creating SOF and command files
  - Checklist for configuring the files
  - Branching instructions in SOF files

Dynamic generation with BCAM commands

You have the option of using BCAM commands for the dynamic generation of communication components that have not yet been entered in BCAM tables. With dynamic generation by means of an BCAM command, the new communication component is entered in the BCAM tables during operation. These entries remain there until a BCEND command is issued.

To provide dynamically generated communication components for further DCSTART commands, you must use the SOF file and/or BCAM command files.

Non-RDF mode

Using the dynamic generation, BCAM offers the option of starting the host communication system without the RDF. Non-RDF mode is initiated using the DCRDF=*NONE parameter of the DCSTART command. The other parameters are either specified directly in the DCSTART command or stored in the DCOPT command in a SOF (Start Option File). The parameter values defined in the DCSTART command have priority over the values specified in the DCOPT command.

Definition of a host in non-RDF mode

```
/DCSTART HOST=HOST,DCRDF=*NONE,   –
/   MAXTSDU=65530, ..........
```

Various examples of dynamic generation are provided in the section "Examples of dynamic generation".

Creating SOF and command files

A few rules have been developed for when a SOF file (special command file) and command files are used for startup, and these should be observed. These rules have evolved from the “old RDF processing” and from experience in various configurations and scenarios.

The rules can be entered in a checklist and used to check an existing configuration. A configuration should be changed to ensure that these rules are observed.

Checklist for configuring the files

The checklist below shows which commands and settings should be specified in which order, and which operands may need to be used to do this:

- In a SOF file the first command must be the DCOPT command.

  Only host- or system-specific branching instructions can also be included ahead of a DCOPT command.

  The default settings should be used as far as possible. In this way the memory sizes of PAGMEM and RESMEM are set in accordance with the system configuration. When these values were set explicitly in the past and the default values were not used, this frequently led to problems when the BCAM version was changed and the SOF file was not adjusted. One possible result was that it was impossible to establish a connection.

  Files and job variables which have to be defined on the home pubset must be specified individually.
- Next the following commands can be specified, with exceptions:
  - Options: MODIFY-BCAM-OPTIONS/BCOPTION
  - Parameter: BCMOD

  However, not all the operands must be set so early on. For example, the options which relate to automatic end system creation or redundancy should be not be set yet.
- CREATE commands (definition) before MODIFY commands (modifications) or ACTIVATE commands (activation). In some cases the modification should be made after activations.
  - CREATE commands:
    HOST before NODE before PROCESSOR before ROUTE commands, i.e. initially all the necessary definitions are specified.
  - All the modifications required should be performed using MODIFY commands.

    > **CAUTION!**
    > When CREATE, MODIFY and ACTIVATE commands are mixed in redundant configurations, switching operations can take place early on.

- What switching operations should there be for lines in redundant configurations?

  You control switching operations using the AUTO-ROUTE-SWITCHING and ROUTE-RESWITCHING operands.
- Should lines be activated again?

  You control this using the SLOW-POLL operand.
- Which command is used for the definition of the router property ?

  Use the MODIFY-ADDRESS-ASSIGNMENT command instead of the MODIFY-ROUTE command.
- ACTIVATE commands:

  Activate LINES before NODE because a BCACT NODE=... triggers implicit line activation when the node is activated.
- Settings which affect redundant configurations.
- Settings which affect automatic end system creation.
- Settings which affect the BCAM messages which can be answered, such as BCA0999, BCA07B2, etc.
- Definition of the mapping entries.
- If necessary, start the $DIALOG application
- If necessary, start LWRESD (is started by BCAM by default).

Note

A SOF file can also be called during ongoing operation using the CALL-BCAM-COMMANDS command. In this case the introductory DCOPT command is ignored.

Branching instructions in SOF files

In BCAM V20.0A and higher, BCAM enables the physical host or VMs to be queried using branching instructions. The system type, CPU ID or SYS ID, for example, can be used to do this. Additional host- and system-specific branching instructions are provided for this purpose, see section "Branching instructions". The following options are consequently available:

- The complete network configuration for a host or multiple VMs is stored in the SOF. The branching instructions control which configuration definition is used. System-specific configurations are also taken into account by this control.
- The data does not need to be maintained in more than one file.
- The same host can be operated on two or more systems, e.g. a Business Server and a Backup Business Server (Business Server B), without modifying the SOF file.

The values used for control purposes can be determined in advance using the SHOW-SYSTEM-INFO command.

Example

An example in which the configuration of a data network with redundancy is defined in a SOF for multiple VMs is provided in the section "Example with branching instructions".

Note

Among other things, the line definition for the MU is specified in the SOF.

Different MU models which use different MNs or IP addresses may be used when the hardware hardware systems differ.

Depending on the system, different HNC configurations can also be used (e.g. multiple HNCs on the production system and only one HNC on the backup system).

All above-mentioned differences in the configuration must be activated on a system or VM-specific basis using branching instructions.

Operation

This chapter describes the operation of BCAM.

The table below lists which BCAM commands can be used for the various objects during ongoing operation.

Object	Start up (initialize)	Shut down	Activate	Deactivate	Manipulate
Host	BCIN HOST=	BCOUT HOST=	BCACT HOST=	BCDAC HOST=	MODIFY-HOST-ATTRIBUTES
Line	CREATE-LINE	DEACTIVATE-LINE	ACTIVATE-LINE	DEACTIVATE-LINE	MODIFY-LINE ADD-OWN-ADDRESS MODIFY-OWN-ADDRESS
	BCIN LINE=	BCOUT LINE=	BCACT LINE=	BCDAC LINE=,	BCSWP
VLAN device	CREATE-VLAN-DEVICE	DEACTIVATE-VLAN-DEVICE	ACTIVATE-VLAN-DEVICE	DEACTIVATE-VLAN-DEVICE	MODIFY-VLAN-DEVICE
VLAN line	CREATE-VLAN-LINE	DEACTIVATE-VLAN-LINE	ACTIVATE-VLAN-LINE	DEACTIVATE-VLAN-LINE	MODIFY-VLAN-LINE ADD-OWN-ADDRESS MODIFY-OWN-ADDRESS
LINK aggregation	CREATE-LINK-AGGREGATION	DEACTIVATE-LINK-AGGREGATION	ACTIVATE-LINK-AGGREGATION	DEACTIVATE-LINK-AGGREGATION	
LAN node	CREATE-NODE				
	BCIN NODE=	BCOUT NODE=	BCACT NODE=	BCDAC NODE=	
Route	BCIN ROUTE=	BCOUT ROUTE=	BCACT ROUTE=	BCDAC ROUTE=	MODIFY-ROUTE, MODIFY-ROUTE-ATTRIBUTES, MODIFY-ROUTE-PATH
Processor	BCIN PROCESSOR=	BCOUT PROCESSOR=	BCACT PROCESSOR=	BCDAC PROCESSOR=	BCGEN
Application			BCAPPL MODE= ACTIVATE	BCAPPL MODE= DEACTIVATE	BCCONN BCCONP

Object-related implementation of BCAM commands during operation

Effective range of a BCAM command

The BCAM commands

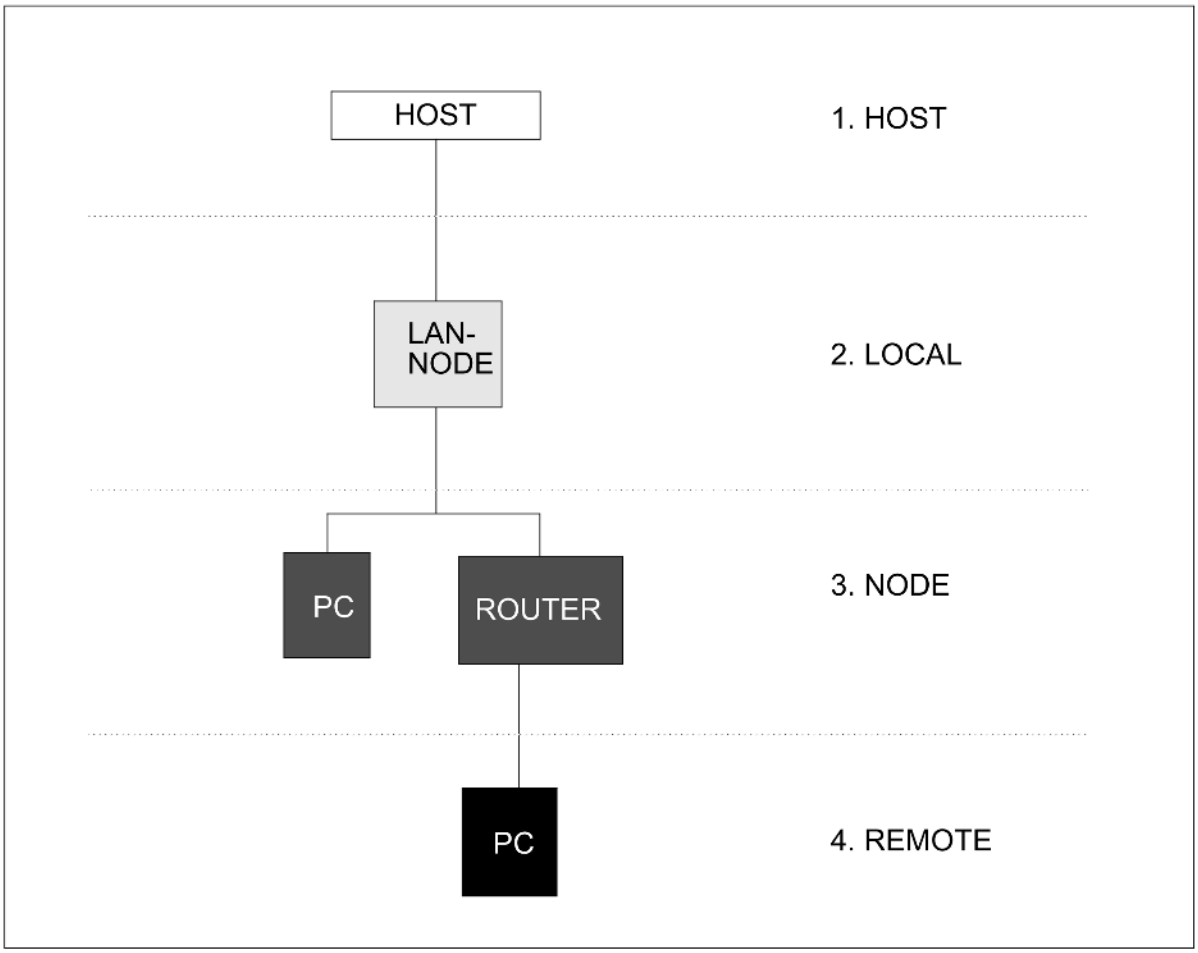
- BCACT
- BCDAC
- BCIN
- BCOUT
- DCOPT
- DCSTART

implement the activate, initialize, deactivate, and terminate functions for a single object or a set of objects. The objects are split into groups for this purpose.
To define the groups, the network is viewed as a tree-like structure with four hierarchical levels, see the figure see section "Effective range of a BCAM command". The host forms the root of the structure.

The more recent BCAM-SDF commands

- ACTIVATE-LINE
- ACTIVATE-LINK-AGGREGATION
- ACTIVATE-VLAN-DEVICE
- ACTIVATE-VLAN-LINE
- DEACTIVATE-LINE
- DEACTIVATE-LINK-AGGREGATION
- DEACTIVATE-VLAN-DEVICE
- DEACTIVATE-VLAN-LINE

on the other hand specifically affect the objects to be processed.



The commands are only executed for objects that are known to BCAM.
This means that various groups of objects can be addressed, depending on the object specified in the command. The object name, its designation, and the scope of the command are specified in the corresponding BCAM command. This defines the group of objects to which this command is to apply. If the command executes two functions, a hierarchical level must be specified for each individual function.

Example

```
/BCIN PROCESSOR=<processor-name>,INI=ALL,ACT=LOCAL
```

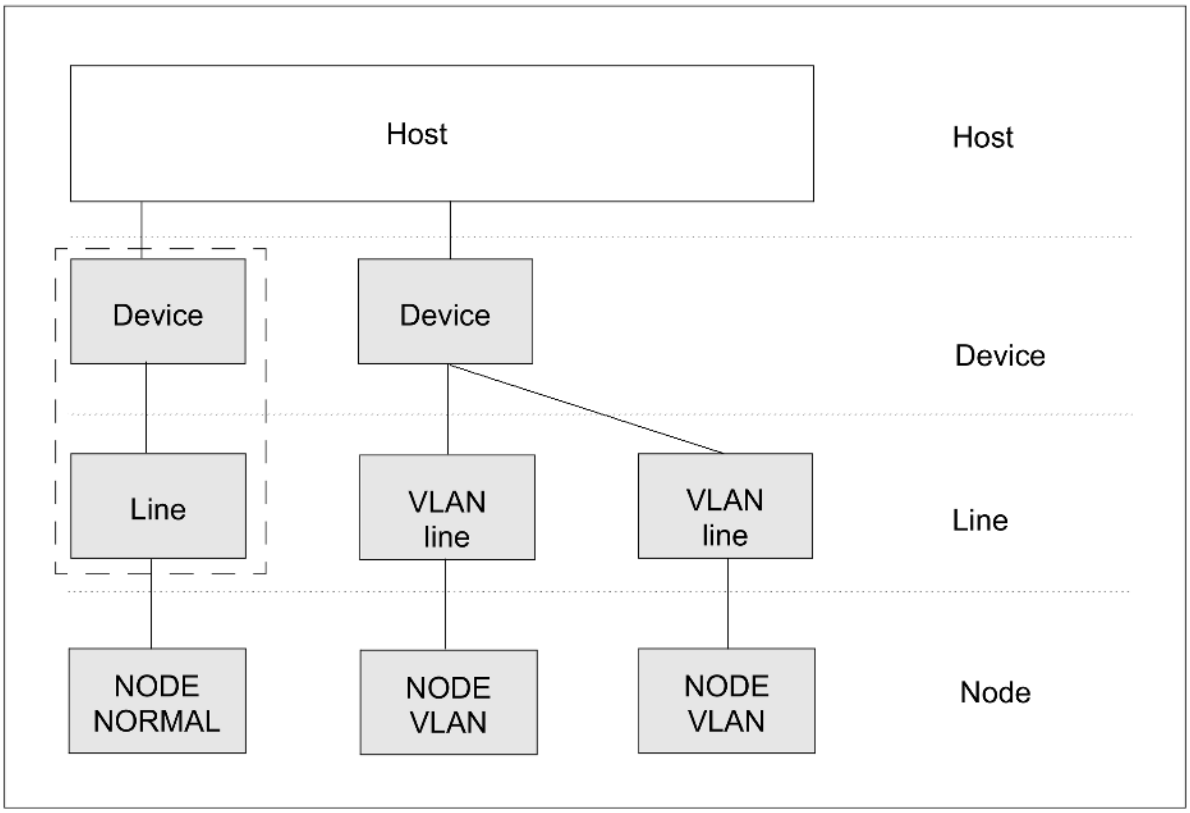
or

```
/BCACT NODE=<node-name>,ACT=ONLY
```

Each function executed is reported and acknowledged.

Object addressed in command	Parameter value	Scope of command
(Virtual) host	ONLY	• (Virtual) host
	LOCAL	• (Virtual) host • Line connections exclusively assigned to the host • Routes to locally connected end systems • Routes to locally connected front-end processors (FEPs) • Locally connected LAN nodes
	NODE	• (Virtual) host • Line connections exclusively assigned to the host • Routes to locally connected end systems • Routes to locally connected front-end processors (FEPs) • Locally connected LAN nodes • Routes to end systems directly connected to LAN nodes
	ALL	• (Virtual) host • Line connections exclusively assigned to the host • Routes to locally connected end systems • Routes to locally connected front-end processors (FEPs) • Locally connected LAN nodes • Routes to end systems directly connected to LAN nodes • Routes to end systems that can be reached via routers
LAN nodes	ONLY LOCAL	• LAN nodes • Associated line connections
	NODE	• LAN nodes • Associated line connections • Routes to end systems directly connected to LAN nodes

	ALL	• LAN nodes • Associated line connections • Routes to end systems directly connected to LAN nodes • Routes to end systems that can be reached via routers connected to the LAN nodes
Router	ONLY LOCAL	• Router • All routes to the router
	ALL	• Router • All routes to the router • Routes to end systems that can be reached via the router
Remote end system		• End system • All routes to the end system
Route		• Route • End system if the last or only route to the end system is addressed
Line connection		• Line connection



The BCAM-SDF commands are only executed for objects which are known to BCAM. Depending on the object specified in the command you can address different groups of objects in this way.
The name of the object is specified in the corresponding BCAM-SDF command.

Each function which is executed is reported and acknowledged.

Object addresses in command	Scope of command
Link aggregation	Link aggregation
Line connection	Activates: • Line connection Deactivates: • Line connection
VLAN device	Activates: • VLAN device Deactivates: • VLAN device • VLAN lines which are connected to the VLAN device
VLAN lines	Activates: • VLAN device • VLAN line Deactivates: • VLAN line • VLAN device if the last VLAN line to this VLAN device is concerned

Operand settings

Individual BCAM settings can be made with the DCSTART, DCOPT, BCMOD, BCOPTION, MODIFY-BCAM-OPTIONS and BCTIMES commands. These settings remain in effect for different periods of time and can be subdivided into two groups:

- The first group, which appears in the "BCAM session (1)" table below, includes operands that revert to their default values following a BCEND command and a new DCSTART. These operand settings are thus valid only for the current BCAM session.
- The second group, which appears in the "BS2000 session (2)" table that follows, includes operands that retain any set values which differ from the defaults even after a BCEND command.

Operand name	Function	Default setting
ACT	Activation of objects	ONLY
ADD-SERVER-PORTS	Addition of server port numbers	—
ADD-REMOTE-SERVER-PORTS	Addition of remote server port numbers	—
ARP-SUPERVISION	ARP supervision timer	300 sec
CMDFILE-CONTINUATION	Event-oriented processing of command files	POSITIVE-RESULT
CONFIGURATION	ISO9542 configuration timer	300 sec
CONN	Connection timer	30 sec
DATAGRAM	Datagram timer	90 sec
DCRDF	Name of the RDF file	$TSOS.DCRDF
DCSOF	Name of the SOF file	$TSOS.DCSOF
FREEPORT#	Lowest port number generated dynamically by BCAM	4096
INI	Initialization of objects	ONLY
INTF-LIFETIME	ISO8473 lifetime	30 sec
IP-LIFETIME	IP lifetime	32 sec
IPV6-SUPPORT	Support of IPv6, ICMPv6	ON
IPV6-AUTO-CONFIG	Support of IPv6 automatic configuration for lines	OFF
IPV6-VLAN-AUTO-CONF	Support of IPv6 automatic configuration for VLAN lines	OFF

IPV6-PREFIX-LEN-CTRL	Support of IPv6 prefix length control according to RFC 4291	ON
I-REASSEMBLY	Reassembly timer	30 sec
JV-BCAM-STATUS	Job variable for displaying the BCAM status	*none
LETT	Letter timer	0 (infinite)
LWRESD	Starts LWRESD	YES
MAXCNN	Max. number of connections that may be maintained by an application that is not predefined	20000
MAXNPA	Max. number of applications that are not predefined	20000
MAXNPT	Max. number of applications per task that are not predefined	20000
MAX-DNS-ACC-ENTRIES	Value set for the number of IP address ranges, IPv6 address prefixes and namespaces in DNS	4096
MAX-MSCF-DELAY	Timer for terminating MSCF on BCEND	60
MAX-TPDU-NUMBER	Flow control value in number of TPDUs	Dependent on the BS2000 MEMSIZE system value: • 10 if MEMSIZE <= 50MB • 20 if MEMSIZE <= 100MB • 30 if MEMSIZE <= 200MB • 40 if MEMSIZE <= 500MB • 50 if MEMSIZE <= 1000MB • 80 if MEMSIZE > 1000MB
MAXTSDU	Max. message length	4096
MAXTSDU-FOR-CREATE	Max. message length for automatically generated end systems	16384

MAX-VLAN-ASS-ENTRIES	Value set for the number of IP address ranges, IPv6 address prefixes for VLAN assignment	1024
PAGMEM	Max. size of pageable memory for data transfers	Dependent on the BS2000 MEMSIZE system value: • 3000 if MEMSIZE <= 50MB • 6000 if MEMSIZE <= 100MB • 12000 if MEMSIZE <= 200MB • 30000 if MEMSIZE <= 500MB • 60000, if MEMSIZE <= 1000MB • 100000 if MEMSIZE > 1000MB
PRIVPORT#	Lowest port number for unprivileged applications	2050
REMOTE-IP-NSDU	NSDU length for remote IP routes	556
REMOVE-SERVER-PORTS	Removal of server port numbers	—
REMOVE-REMOTE-SERVER-PORTS	Removal of remote server port numbers	—
RESMEM	Max. size of resident memory for data transfers	Dependent on the BS2000 MEMSIZE system value: • 5000 if MEMSIZE <= 50MB • 10000 if MEMSIZE <= 100MB • 20000 if MEMSIZE <= 200MB • 40000 if MEMSIZE <= 500MB • 60000 if MEMSIZE <= 1000MB • 100000 if MEMSIZE > 1000MB
RETRANSMISSION	Retransmission timer	10 sec

RETRY	BCAM restart following abnormal BCAM termination	NO
SOFTIME	SOF process monitoring	600 sec
SOKHOST	Socket host name	Name of the host
WARN	Warn timer	10 sec
WINDOW	Window timer	60 sec
#BITMAP	Number of bitmaps for administration of the data slot pool	Dependent on the BS2000 MEMSIZE system value: 1 if MEMSIZE <= 50MB 2 if MEMSIZE <= 100MB 3 if MEMSIZE <= 200MB 4 if MEMSIZE <= 500MB 5 if MEMSIZE <= 1000MB 6 if MEMSIZE > 1000MB

BCAM session (1)

Operand name	**Function**	**Default setting**
APPLICATION-TABLE	Assignment of application to host	$TSOS. SYSDAT.BCAM. APPLICATIONS
ARP	Active use of ARP	OFF
ARP-AT-ROUTE-ACTIVATION	Time for ARP requests on route activation	*ALWAYS
ARP-REQUEST-MAXIMUM	Max. number of periodic ARP requests per second	10
ARP-SWITCH	Switch to alternative router after ARP timeout	OFF
AUTOMATIC-ES-CREATE	Automatic end system creation	OFF
AUTO-ROUTE-SWITCHING	Modify routing information due to received routing protocols	*ON
BROADCAST	Receive broadcast data	OFF
CHECKSUM	Checksum option for ISO8473 DT-PDUs	OFF
CONFIGURATION-UPDATE	Routing table change due to routing protocols for IP	YES

DEVICE-LPDU-SIZE-USAGE	LPDU-SIZE supplied by the device must be used	*OFF
DNS-USAGE	Set the DNS usage	*OFF
ERROR-REPORT	Error report option for ISO8473 DT-PDUs	ON
FQDN-TABLE	Assign FQDN names to BCAM names and IP(v6) addresses	$TSOS. SYSDAT.BCAM. FQDN
IP-ROUTING	Routing of IP elements	OFF
IPV6	Support for IPv6, ICMPv6	ON
IPV6-AUTO-CONFIG	Support for ICMPv6 autoconfiguration	OFF
ISO8473-ROUTING	Routing of ISO-FULL-INTERNET elements	OFF
ISSO9542	ISO9542 routing protocol support	OFF
JOIN-MULTICAST-GROUP	Joining IP multicast groups	ON
LINE-CONTINUATION	Interpretation of the continuation character	ON
MAX-ISAM-POOL-SIZE	Maximum size of ISAM pool in PAM pages	1536
MAX-SLOT-PAGES	Maximum number of pages for control block pool	4608
MSG	Message output	ALL
MSG-REPLY	Asynchronous acknowledgment of BCA07B2 messages	OFF
MULTICAST	Receive multicast data	ON
NET-ENTRY-CHECK	Network entry check	ON
NET-ROUTER-USAGE	Evaluation of IP net router definitions when using IP subnet masks	ON
NSDU-MODIFICATION	NSDU length modification for switch operations	ON
OSPF-USAGE	Use OSPF Hello messages for router failure detection	ON
PERIODIC-FILE-ACCESS	Periodic read access to processor file via BCAF task	ON

PROCESSOR-TABLE	Assignment of processor name to network address	$TSOS.SYSDAT.BCAM.PROCESSORS
processor-table ACCESS	Access to processor file	UPDATE
RARP	Passive RARP support	OFF
REDIRECT-ON-QUERY	Evaluation of ISO9542 redirect messages for ISO8473 query configuration requests	OFF
ROUTER-REDUNDANCE	Search for alternative router	ON
SERVICES-TABLE	Assign services to port numbers	$TSOS.SYSDAT.BCAM.ETC.SERVICES
SHORT-HOLDING-TIME	Short ISO9542 timer values	OFF
SLOW-POLL	Automatic reactivation following a line failure	OFF
SNMP-WRITE	Execution of SNMP write accesses	ON
SOCKETHOST-TABLE	Assignment of socket host names to IP addresses	$TSOS.SYSDAT.BCAM.ETC.HOSTS
STOP-ROUTER-SEARCH	Abort criterion to end the search for an alternative router	ON
SWITCH-LOCAL-ROUTER	Check functioning of a local router	OFF

BS2000 session (2)

BCAM mapping function

The conventions for addressing partner systems depend on the transport system used (see section "Addressing in computer networks").

- NEA partners are symbolically addressed using the processor name and station or application name
- TCP/IP requires the IP address and port number for partner identification.

The BCAM mapping function enables communication with both ISO and TCP/IP partner systems. For example, in addition to the NEA-compliant attributes of processor name and station or application name, ISO and TCP/IP-compliant transport selectors and port numbers can be defined for an NEA application.

Command events

- Acknowledgments and messages
- Command return codes

Acknowledgments and messages

An acknowledgment procedure is implemented to ensure that BCAM commands can be processed by automatic operators.

Acceptance acknowledgment

The acceptance acknowledgment is created when BCAM accepts a command for processing or when acceptance is refused.

The following acceptance acknowledgments are defined:

- Positive acceptance acknowledgment

  ```
  BCA0765 /command-string/ACC
  ```

  A positive acceptance acknowledgment is created:

  1. with the BCSHOW command, provided the command was issued from a console and a value greater than 10 (the default value) has been specified in the MAXMSG# parameter
  2. with the CALL-BCAM-COMMANDS command
  3. with all commands from the SOF or from a command file, provided the option BCSET ACCEPT-MSG=ON has been activated beforehand

- Negative acceptance acknowledgment

  ```
  BCA0764 /command-string/REJ
  ```

  A negative acceptance acknowledgment is created in the event of an error for all commands entered via the console. No acknowledgment is created for commands read from the SOF. The cause of the error is indicated beforehand.

Processing acknowledgment

The processing acknowledgment is output at the end of command processing; the acknowledgement is followed by further information on command processing. The processing acknowledgement NBR0740 is delivered in both positive and negative cases. For reasons of compatibility, the message NBR0740 is sent first in a positive case and the news BCA0762 in a negative case.

The use of process acknowledgement is noted of the respective command. If a command is specified for a class of processors, all functions executed are acknowledged.

All BCAM commands which are entered on the console before a DCSTART command or which are not console commands are acknowledged with the message NBR0744.

Command return codes

The BCAM commands supply command return codes that you can query when using SDF-P. Each return code consists of a subcode1 (SC1), a subcode2 (SC2) and the maincode.

Subcode1

Subcode1 represents the error code and is a decimal number.
The possible error classes are:

- No error:
  the value of subcode1 is 0.
- Syntax error:
  the value of subcode1 is in the range 1 through 31.
- Internal error (system error):
  the value of subcode1 is 32.
- Error not assigned to any other class:
  the value of subcode1 is in the range 64 through 127. If the value of subcode1 is in this range, the maincode must be evaluated in order to ascertain the appropriate action.
- Command cannot be executed at this time:
  the value of subcode1 is in the range 128 through 130.

Subcode2

Subcode2 either contains information supplementary to that in subcode1 or is equal to 0.

Maincode

The maincode corresponds to the message key of the SYSOUT message. You can use the /HELP-MSG-INFORMATION command to fetch more detailed information. The chapter on Messages contains details on the meanings of the messages and the actions to be taken in response.

See the BS2000 Commands manuals for a detailed general description of the command return codes.

Each command description shows which command return codes are possible for the command in question and explains the meanings of the return codes.

Command sequences

It is advisable to store frequently recurring sequences of administration commands in files.

BCAM recognizes the following types of command file:

- Type 1 is a command file for the host which you can start at any time between DCSTART and BCEND by means of the CALL-BCAM-COMMANDS.
- Type 2 is a special form of the type 1 command file.
  It is known as an SOF (Start Option File) and is used only for BCAM start. The structure of the SOF files is identical to that of the type 1 command files. However, the first command (which is not a branching command) must always be DCOPT (DCOPT is ignored in normal command files).

BCAM administration processes the command files from beginning to end. This means that the current command must be fully processed before the next command is read from the command file.

Permitted statements

You can enter the following commands in a command file:

- BCAM commands:
  All apart from DCSTART
- TDADM commands:
  All apart from commands whose processing requires control data (e.g. CORP, CORR and MEA)
  RBAS command SID
  TDA command DETS
  WBC and GOTO are only permitted in host command sequences.
- BS2000 operator commands
  Operator commands are delivered to the system and are asynchronously processed there. Within the BCAM command file it is not possible to wait for command termination or to react to the command result. You must authorize BCAM to forward operator commands by assigning the routing code for the operator commands to the logical console BCAM. You can assign this routing codes by means of the SET-CODE statement in the parameter file as described in the BS2000 manual „Introduction to System Administration (Related publications)“.
- Branching instructions

BCAM commands from command files

Include operands in BCAM-SDF commands that use the format <text...> in the command files in single quotes. This is particularly important when specifying IPv6 addresses.

The ISP is used directly as a command processor for command files. The ISP cannot evaluate the text format that appears on the SDF interface; the command is aborted as a result.

The following BCAM-SDF commands are affected, which enable IPv6 addresses to be entered in their interface:

ADD-OWN-ADDRESS

CREATE-LINE

CREATE-ROUTE

CREATE-VLAN-LINE

DELETE-ROUTE

MODIFY-ADDRESS-ASSIGNMENT

MODIFY-OWN-ADDRESS

MODIFY-ROUTE-ATTRIBUTES

MODIFY-VLAN-ASSIGNMENT

SHOW-ROUTE-ATTRIBUTES

SHOW-ROUTE-PATH

Branching instructions

BCAM includes three classes of branching instructions.

- Host-specific branching instructions
- System-specific branching instructions
- Command result-specific branching instructions

Branching instructions of different classes can be internested with each other.

You must make the following setting if the branching instructions are to be effective:

BCOPTION CMDFILE-CONTINUATION=ALL-RESULTS

The CMDFILE-CONTINUATION mechanism has a higher priority than the branching instructions.

Command result-specific branching instructions

You use the command result-specific branching instructions to control the execution of a command file in accordance with errors which occur.

The command result-specific branching instructions can only be used after a DCOPT command.

The following branching instructions are available:

/IF-BCAM-ACK	The following commands are processed if the previous command was successful.
/IF-BCAM-NAK	The following commands are processed if the previous command was not successful.
/ELSE-BCAM	End of the IF branch. If the IF condition has not been fulfilled then command processing begins here.
/END-IF-BCAM	Terminates a branch that started with /IF-BCAM-...

You can define branches within a command file up to a nesting depth of eight.

Host-specific branching instructions

You use the host-specific branching instructions to control the execution of a command file in accordance with the specified host.

The host-specific branching instructions can be used before a DCOPT command if the host name is specified in the DCSTART command.

The following host-specific branching instructions are available:

/IF-BCAM-HOST	**HOST-NAME**=...,**CONDITION**=**EQ**/**NE** The following commands are processed if the condition for a host-specific branch has been fulfilled (equal to in the case of EQ, not equal to in the case of NE).
/END-IF-BCAM-HOST	Terminates a host-specific branch which has started. This instruction has no parameters.

The nesting depth of the host-specific branching instructions is limited to one.

IF-BCAM-HOST
HOST-NAME = <composed-name 1 .. 8> , **CONDITION** = **EQ** / **NE**

HOST-NAME=...
You use HOST to specify the name of a BCAM host which is to be used for a comparison.

HOST-NAME=<composed-name 1..8>
Name of the host.

CONDITION=...
You use CONDITION to specify the condition under which the commands are processed.

CONDITION=EQ
When the host name is the same, the commands are processed up to the next END-IF-BCAM-HOST statement.

CONDITION=NE
When the host name is not the same, the commands are processed up to the next END-IF-BCAM-HOST statement.

System-specific branching instructions

You use the system-specific branching instructions to control the execution of a command file in accordance with the underlying hardware. The system-specific branching instructions can be used before a DCOPT command.

The following system-specific branching instructions are available:

/IF-BCAM-SYSINF	**SYSINF**=***CPUID**(...) / ***CONFNAM**(...) / ***SYSID**(...) / ***VMID**(...), **CONDITION** =**EQ**/**NE** The following commands are processed if the condition for a system-specific branch has been fulfilled (equal to in the case of EQ, not equal to in the case of NE).
/END-IF-BCAM-SYSINF	Terminates a system-specific branch which has started. This instruction has no parameters.

The nesting depth of the system-specific branching instructions is limited to one.

IF-BCAM-SYSINF

SYSINF = ***CPUID**(...) / ***CONFNAM**(...) / ***SYSID**(...) / ***VMID**(...)

***CPUID** (...)

| **CPU-ID** = <composed-name 1 ..21 with wildcards> / <c-string 1..21>

***CONFNAM** (...)

| **CONFIGURATION** = <composed-name 1 ..16 with wildcards> / <c-string 1..16>

***SYSID** (...)

| **SYSID** = <alphanum-name 1..3>

***VMID** (...)

| **VM-ID** = <integer 1..255> / <name 1..8>

, **CONDITION** = **EQ** / **NE**

SYSINF=...
You use SYSINF to specify which system attribute is to be used for the comparison.

SYSINF=*CPUID(...)
The name of the CPU used is to be employed for the comparison.
The values are output with the SHOW-SYSTEM-INFORMATION INF=*CPU-ID-LIST command.

CPU-ID=<composed-name 1..21 with wildcards> / <c-string 1..21>
The CPU ID. It is compared with the first CPU ID.

SYSINF=*CONFNAM(...)
The name of the hardware configuration used is to be employed for the comparison. The values are output with the SHOW-SYSTEM-INFORMATION INF=*CONFIGURATION command.

CONFIGURATION=<composed-name 1..16 with wildcards> / <c-string 1..16>
Name of the hardware configuration.

SYSINF=*SYSID(...)
The SYSID of the home pubset is to be used for comparison. The value is output with the SHOW-SYSTEM-INFORMATION INF=*SYSTEM-CONFIGURATION command.

SYSID=<alphanum-name 1..3>
Specification of the SYSID assigned for the home pubset.

Value range: A through Z, up to 9 and 65 through 192.

SYSINF=*VMID(...)
The VM ID is to be used for the comparison. The condition can be specified either via the VM index or the VM name. The VM name is defined in the VM2000 command CREATE-VM. The values for the VM ID are output with the SHOW-SYSTEM-INFORMATION INF=*SYSTEM-CONFIGURATION command.

VM-ID=<integer 1..255>
The VM ID is specified by the VM index.

VM-ID=<name 1..8>
The VM ID is specified by the VM name.

CONDITION=...
You use CONDITION to specify the condition under which the commands are to be processed.

CONDITION=EQ
When the system attribute is the same, the commands are processed up to the next END-IF-BCAM-SYSINF statement.

CONDITION=NE
When the system attribute is not the same, the commands are processed up to the next END-IF-BCAM-SYSINF statement.

Command file structure

A command file must be organized as a SAM file.

(FILE=filename, FCBTYPE= SAM, RECFORM=V, BLKSIZE=STD).

You can choose any filename. You create the command file using a BS2000 file preparation program (e.g. EDT). The command file must be cataloged in the home pubset. Errors may occur in connection with files cataloged on data pubsets or shared pubsets.

Continuation lines

Any command you enter in the command file may possess continuation lines.
A maximum 800 lines are permitted for each command.
A hyphen at the end of a line is interpreted as a continuation character.
The continuation line must start with '/'.
You can use /BCOPTION LINE-CONTINUATION to define whether a hyphen in column 72 is always interpreted as a continuation character.

Remarks, comments

To clarify the structure of the file, you can generate Remark lines in the command file. Remark lines are identified by a * in the first column or by /REMARK.

Multiple command files

If a command file is being processed then no further command files can be started via the console until the current file has been terminated. However, a command files may contain calls to up to seven additional command files.

Command errors

BCAM administration outputs a message for every executed administration command.

You use the BCAM command BCOPTION CMDFILE-CONTINATION to specify whether or not the remainder of the command file should be processed if an error occurs (negative command acknowledgment).

The branching instructions provide a convenient way of controlling the processing of a command file (see above).

Startup

Startup of BCAM is initiated with the DCSTART command, which is normally contained in the BS2000 command file $TSOS.CMDFILE (standard name). The statically generated objects (partner systems, line characteristics, etc.) are transferred from the RDF to BCAM tables. The dynamically generated partner systems (BCIN format 2) are then transferred to the BCAM tables from the SOF file.
Any BCAM options for individual local connections must be made known before they are activated. The partner systems must then be activated. Any file containing BCMAP commands can be loaded after the mapping function has been initialized (BCMAP FUNCT=INIT).

> For systems with low memory capacity, insufficient BCAM memory may result in problems during connection establishment or poor transaction rates. Performance can be improved by increasing the PAGMEM or RESMEM values (see BCMOD, DCOPT, DCSTART commands).

Event monitoring using BCAM job variables

The BCAM job variable JV-BCAM-STATUS contains detailed information on the status of the BCAM host. You assign the job variable with the JV-BCAM-STATUS operand in the DCOPT or DCSTART command. The structure of the job variable is based on the MONJV standard.

Store /Length	Flag	Flag value	Description of function
0/3	Status display	$R $T	BCAM is active BCAM terminated normally
3/1	Filler	0	Filler (preset to 0)
4/4	TSN flag	<tsn>	TSN of the current BCAM task
8/9	RESERVED	-	Currently not used by BCAM
17/19	Time stamp of the DCSTART	date.time	Time stamp of the DCSTART command: YYYY-MM-DD.HHMMSS obtained from GTIME UTC
36/17	Time stamp (current)	date.time	Periodically (1 min.) written time stamp: YYYY-MM-DD.HHMMSS obtained from GTIME UTC
53/8	RESERVED	-	Currently not used by BCAM
61/9	Filler	Blank	Filler
70/8	Host	<name 1..8>	Name of the BCAM host. This value is taken from the start parameter list.
78/54	RDF name	<filename>	Name of the RDF file defined with DCRDF in the DCSTART command. This value is taken from the start parameter list.

BCAM job variable JV-BCAM-STATUS

The job variable STATUS-JV contains detailed information on the status of a virtual host. You assign the job variable with the STATUS-JV operand in the CREATE-VIRTUAL-HOST command. The structure of the job variable is based on the MONJV standard.

Store /Length	Flag	Flag value	Description of function
0/3	Status flag	$R $I $E $D $T	HOST active HOST included HOST excluded HOST defined BCAM normal end The ADM status is displayed
3/1	filler	0	Filler (preset to 0)
4/4	TSN indicator	<tsn>	TSN of the current BCAM task.
8/8	Catid	????????	Catid of the home pubset (not currently supported by BCAM).
16/1	Type	?	Type is not currently supported by BCAM.
17/3	Session number	???	Session number (not currently supported by BCAM).
20/16	Timestamp of CREATE-VIRTUAL-HOST command	<date&time>	CREATE-VIRTUAL-HOST command timestamp indicating the time at which the virtual host or job variable is defined. The UTC time is stored in the job variable (Remainder filled with blanks). Format: YYYY-MM-DDHHMMSS
36/16	Current timestamp	<date&time>	Time of the currently last status change of the host. Output in the same format as above in GTIME UTC time. Used, for example, to monitor the status of a virtual host. Format: YYYY-MM-DDHHMMSS
52/8	Creator of Function	????????	Creator of Function(not currently supported by BCAM).
60/10	RESERVED	<blank>	
70/8	Host	<name 1..8>	Name of the virtual BCAM host, taken from the CREATE-VIRTUALHOST parameter list.
78/54	RDF filename	<filename>	Filename of the RDF specified in CREATE-VIRTUAL-HOST. But can also have the following values: UNDEFINED or *PARAMETERS.

BCAM job variable STATUS-JV

BCAM early start with the BCAM BS2000 parameter service

It is possible to activate the BCAM traces and start the communication system during the start-up phase of the CLASS2-EXEC. To perform a BCAM start, you must specify the following parameters in the BS2000 parameter file:

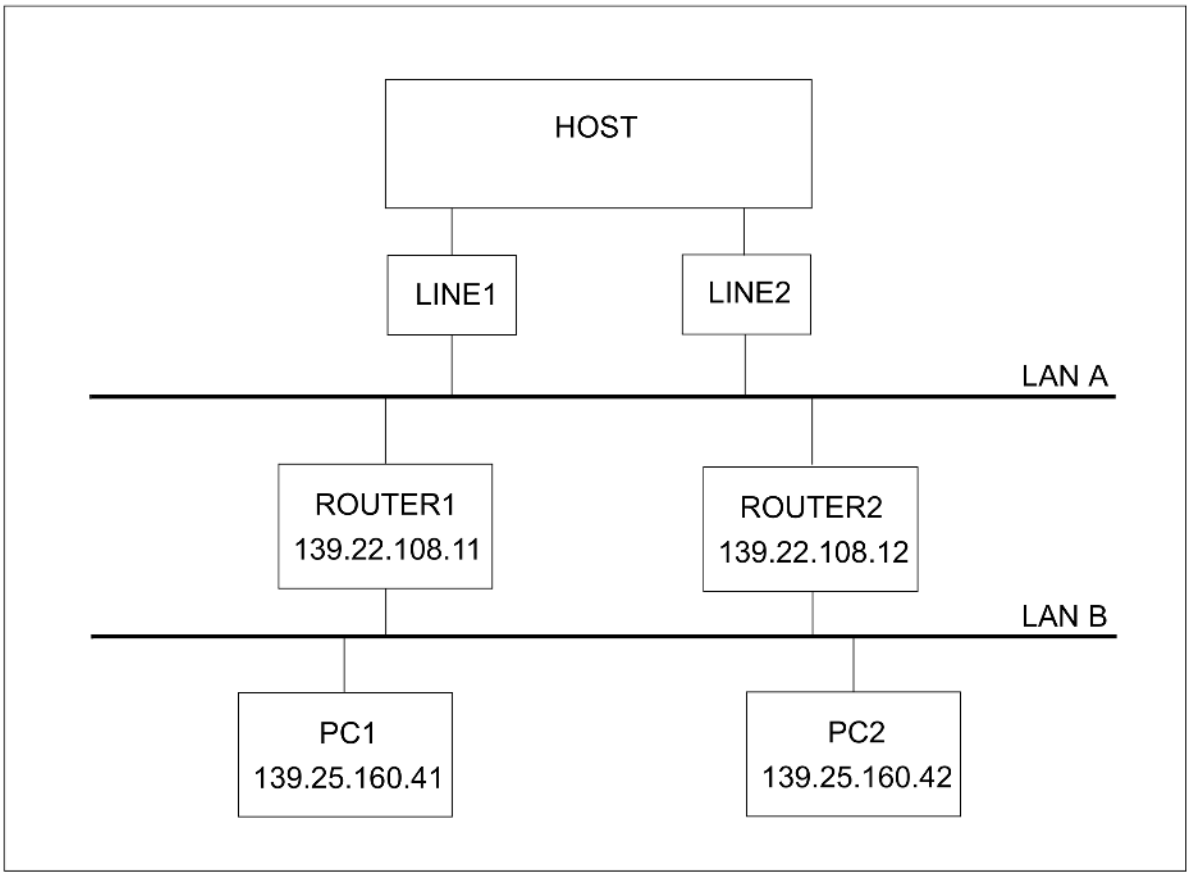
```
/BS2000 PARAMS
.
.
/BEGIN BCAM
[/DCDIAG ....]
/DCSTART ...
/EOF
.
.
/END-PARAMS
```

The DCDIAG command should only be used for debugging purposes, as it impedes the system performance.

All the parameters of the DCDIAG command can be used.
For system-related reasons, implementation of the DCSTART command is subject to restrictions. The parameters that cannot be used are described in section "DCOPT: Predefine DCSTART parameters" and in section "DCSTART: Start the data communication system in BS2000".

Operation of routes

A route is a logical data path between two processors which is defined by the two addresses (home / partner address). The hardware components required by the route, for example lines and routers, play a subordinate role. As a result it is possible to change the route if a hardware error occurs, provided the configuration allows for alternate routing (see section "Creating SOF and command files"). Rerouting in the event of an error can take place automatically in the LAN segment, since TCP/IP and ISO provide appropriate protocols. Support for the routing functionality for TCP/IP and ISO can be optionally activated in BCAM by means of the MODIFY-BCAM-OPTION command.
The figure below illustrates the examples on the topic of routes.



Redundant configuration with two channel adapters on one node

Handling routes after failure of a channel adapter

Automatic rerouting on the basis of TCP/IP or ISO protocols after a channel adapter has failed is described on "Failure of a channel adapter". If you want to restore the old configuration once the cause of the error has been eliminated, then you can do this manually. The following steps must be performed for manual reconfigurationr (the case of two normal lines in a redundant configuration is examined):

- terminate any activity on the channel adapter
- restart the channel adapter
- reset all routers and end systems assigned to the failed channel adapter to their initial state.
- set the line-specific options using the MODIFY-LINE command:
  `/MODIFY-LINE LINE-NAME=LINE1,SLOW-POLL=*ON,-`

```
/  AUTO-ROUTE-SWITCHING=*ON,-
/  ROUTE-RESWITCHING=*ON
/MODIFY-LINE LINE-NAME=LINE2,SLOW-POLL=*ON,-
/  AUTO-ROUTE-SWITCHING=*ON,-
/  ROUTE-RESWITCHING=*ON
```

The example below shows the steps required for starting up the LINE1 (mainframe interface controller) after it has failed:

```
/ACTIVATE-LINE LINE-NAME=LINE1
```

If the failure was caused by a DETACH-DEVICE command, enter the following commands:

```
/DEACTIVATE-LINE LINE-NAME=LINE1
/ACTIVATE-LINE LINE-NAME=LINE1
```

If the channel adapter failed before being activated by BCAM (ACTIVATE-LINE commands and BCACT command for the node), you must initialize route switchover to an alternate channel adapter as shown below.
In the following example LINE1 and LINE2 are combined to form the node LAN.

```
/ACTIVATE-LINE LINE-NAME=LINE1
/ACTIVATE-LINE LINE-NAME=LINE2
/BCACT NODE=LAN,ACT=ALL
```

Command controlled rerouting

Automatic rerouting for IP and ISO routes can be initialized with the command DEACTIVATE-LINE LINE-NAME=<line-name>, provided other active lines are available.

Handling routes after failure of a router

To reconfigure a router that has failed, all the end systems that were assigned to this router must be reset to their initial states (CONFIGURATION=PRIMARY).

Example

```
/BCDAC PROCESSOR=ROUTER1
/BCACT PROCESSOR=ROUTER1,CONFIGURATION=PRIMARY
```

Operation of virtual hosts

Virtual hosts enable current operations to be transferred in part to another mainframe when a mainframe fails. When this happens, connections must be set up again. Detailed information on virtual hosts is provided in the section "Host redundancy". You must define the virtual host using the CREATE-VIRTUAL-HOST command. An example of this is provided in the section "Example of host redundancy". The switchover between the standard host and virtual hosts can take place manually or, more conveniently, automatically using HIPLEX AF.

> **CAUTION!**
>
> The main thing to bear in mind here is that a network address may only be active once in the network at any given time; otherwise, serious errors may occur throughout the entire network.

Configuration on a virtual host

After the mainframe has failed, the virtual host is started manually on another mainframe:

```
/BCACT HOST=VHOST1,ACT=ALL
```

Reconfiguration of a virtual host from the backup mainframe for the original mainframe

The first and most important step when reconfiguring after correcting an error is to take the virtual host on the backup mainframe out of service. Only then may you reactivate the virtual host working with the same network addresses on the backup mainframe:

```
/BCDAC HOST=VHOST1,DAC=ALL
```

The addresses of the virtual host must now be in the "invalid" status on the backup mainframe. You can check this with the following command:

```
/SHOW-OWN-ADDRESS HOST=VHOST1
```

Assignment of applications to virtual hosts

It is possible to assign NEA,ISO and SOCKET applications dynamically to virtual hosts and to change these assignments dynamically. The assignment only occurs at BCAM level in the application file (see section "Application file"), and no changes to the applications are necessary. The application file only contains the applications which are not intended to run on the default host., i.e. all the applications which do not have an entry in the application file are automatically started on the default host. However, if the application itself performs an assignment through the explicit specification of a host name, then this always has priority, i.e. the application file is not accessed. If the application file contains several entries for applications with identical names on different hosts, only the first entry is evaluated.

Host-Aliasing

If, when an application is accessed, it is not found at the specified network address, an additional check is performed to determine whether the application has been started at the default host. If this is the case, and provided that the application is not found at any other virtual host, then a connection to this host is established.

The following definitions/limitations apply:

- Host aliasing can be prevented for specific applications by entering the keyword “-NOALIAS” as the host name in the configuration file.

- Any mapping entries must be defined for each host.
- Mapping is only performed for the host accessed via the network address.
- Mapping is performed before host aliasing.
- No host aliasing is performed for statically predefined applications.
- No host aliasing is performed for UDP messages.

Online backup of a BCAM configuration

Online backup of a BCAM configuration serves the following purposes:

1. backup of the current BCAM configuration and of the operating parameters,
2. providing the option of a BCAM restart with the backed-up settings,
3. helping to migrate to a configuration defined by BCAM commands.

The implementation envisages that a SOF file should be generated from a complete backup using the same BCAM commands which restore the saved configuration in the specification in the DCSTART command.

It is also possible only to back up individual BCAM object groups. Backup takes place to a file which can be processed using CALL-BCAM-COMMANDS.

Activation, on the other hand, is not initiated within the generated configuration file. The system administrator is responsible for the way in which the configuration is activated.

You can skip the next two sections if you want to go straight to practical applications.

Resources for generating a BCAM configuration file

The BCAM SHOW functions of the BCAM-CMD subsystem enable a number of BCAM tables to be read out and used to create a BCAM configuration file.

Command	Function
SHOW-ADDRESS-ASSIGNMENT	BCAM gateway tables
SHOW-AEC-OPTIONS	AEC settings
SHOW-BCAM-IP-RANGE	IP range tables
SHOW-BCAM-OPTIONS	BCAM options
SHOW-BCAM-PARAMETERS	BCAM start parameters
SHOW-BCAM-SERVER-PORTS	Server port settings
SHOW-BCAM-START-PARAMETER	BCAM start parameter settings
SHOW-BCAM-TIMER	BCAM timer settings
SHOW-DNS-ACCESS	Table of the DNS settings
SHOW-HOST-ATTRIBUTES	Host information
SHOW-LINE-ATTRIBUTES	Line information
SHOW-LINK-AGGREGATION-ATTR	Information for link aggregation
SHOW-MAPPING-ENTRIES	Mapping entries
SHOW-MAPPING-STATUS	Mapping status information, size setting
SHOW-NODE-ATTRIBUTES	Nodes
SHOW-PROCESSOR-ATTRIBUTES	Processors
SHOW-ROUTE-ATTRIBUTES	Routes
SHOW-VLAN-ASSIGNMENT	VLAN assignment settings
SHOW-VLAN-DEVICE-ATTRIBUTES	VLAN devices
SHOW-VLAN-LINE-ATTRIBUTES	VLAN lines

Resources for generating configuration files

In addition, the BCAM settings and possible monitoring and trace settings must be prepared. In functional terms these settings have little effect on normal BCAM operation and are thus ignored.

Command	Evaluation function
BCMON	“SHOW-BCAM-MONITORING”
BCSET	“SHOW-BCAM-SETTING”
DCDIAG	Change trace settings (no SDF command)

Remaining resources for future configuration file generation

Generating a BCAM configuration file

The GENERATE-BCAM-CMD-FILE command is designed as an evaluation function for a current BCAM configuration. In a complete output, this command takes into account the correct sequence of the command definition. It builds on the existing SHOW functions / auxiliary functions of BCAM-CMD.

This function comprises two steps:

- reading out the table contents,
- generating the command sequence, taking into account the command sequence.

The result is stored in file form. The file can be adjusted later.

The table shows precisely the order in which the commands are stored in the command file.

Generated command	**Information from command**
DCOPT	SHOW-BCAM-START-PARAMETERS
BCMOD	SHOW-BCAM-PARAMETERS
MODIFY-BCAM-OPTIONS	SHOW-BCAM-OPTIONS
BCOPTION A-E-C=	SHOW-AEC-OPTIONS
MODIFY-DNS-ACCESS	SHOW-DNS-ACCESS
BCOPTION ADD-SERVER-PORTS=..., ADD-REM-SERVER-PORTS	SHOW-BCAM-SERVER-PORTS
BCOPTION ADD-IP-RANGE=...	SHOW-BCAM-IP-RANGE
MODIFY-VLAN-ASSIGNMENT	SHOW-BCAM-IP-RANGE
CREATE-VIRTUAL-HOST	SHOW-HOST-ATTRIBUTES
CREATE-NODE	SHOW-NODE-ATTRIBUTES
CREATE-LINK-AGGREGATION	SHOW-LINK-AGGREGATION-ATTRIBUTES
CREATE-LINE	SHOW-LINE-ATTRIBUTES
CREATE-VLAN-DEVICE	SHOW-VLAN-LINE-ATTRIBUTES
CREATE-VLAN-LINE	SHOW-NODE-ATTRIBUTES
ADD-OWN-ADDRESS	SHOW-LINE-ATTRIBUTES SHOW-VLAN-LINE-ATTRIBUTES
CREATE-PROCESSOR	SHOW-PROCESSOR-ATTRIBUTES

CREATE-ROUTE	SHOW-ROUTE-ATTRIBUTES (order of dependent routes must be taken into account)
MODIFY-ADDRESS-ASSIGNMENT	SHOW-ADDRESS-ASSIGNMENT
MODIFY-BCAM-OPTIONS	SHOW-BCAM-OPTIONS (individual operands)
BCMAP FUNCT=INIT	SHOW-MAPPING-STATUS
BCMAP FUNCT=DEFINE	SHOW-MAPPING-ENTRIES

Command generation sequence

Practical applications

Generally a configuration can have been generated using a mixture of definitions of an RDF, dynamic BCINs and BCAM-CREATE commands.

SOF generation and migration aid/conversion aid

You use the GENERATE-BCAM-CMD-FILE command (for information, see section "GENERATE-BCAM-CMD-FILE / GBCF: Output the BCAM configuration to a file") to generate a current command file which serves as the basis for a SOF file. Which command sequences arise is described in detail in the preceding section. The command sequence here takes into account the required order of the object definitions.

```
/GENERATE-BCAM-CMD-FILE FILE-NAME=ACTUAL.SOF,INFORMATION=*ALL
```

If the existing configuration has so far been defined in an RDF or with dynamic BCINs, it is now converted into a command file consisting of the new CREATE commands. The command can therefore be regarded as a conversion aid for converting the old configuration to the new notation using CREATE commands. The resultant command file can be edited and, if necessary, adapted to the new requirements before it is used in productive operation.

Generating command groups

The GENERATE-BCAM-CMD-FILE command also enables individual command groups to be output when, for instance, you want to output information about the AEC options or BCAM options which are set.

```
/GENERATE-BCAM-CMD-FILE FILE-NAME=ACTUAL.AEC-OPTIONS,INFORMATION=*AEC
/GENERATE-BCAM-CMD-FILE FILE-NAME=ACTUAL.OPTIONS,INFORMATION=*OPTION
```

Checking the command file

You should definitely check the command file which has been created, e.g. using the CALL-BCAM-COMMANDS command and the RDFCHECK tool.

- First you should perform a simple syntax check using the command CALL-BCAM-COMMANDS command-filename, SYNTAX-CHECK-ONLY=*ON (see section "CALL-BCAM-COMMANDS: Process commands from a file").

Comment on activation

After completing the steps described so far, you must consider how the network defined by the configuration file is to be activated. This is of particular interest in the case of redundant configurations if the order in which the (VLAN) lines are to be activated is essential. This is a decision which must be taken by the system administrator and cannot be derived from the configuration itself.

Support when changing settings and for activation

The **SHOW-BCAM-OBJECTS** command also supports the online backup of an active BCAM configuration (for information, see section "SHOW-BCAM-OBJECTS / SHBCOB: Show BCAM objects in compact form"). With this command you can generate CREATE, MODIFY, ACTIVATE and DEACTIVATE commands for BCAM objects, each of which can be stored in a file on an object-related basis. The command allows the descriptions for the following BCAM objects to be complemented: host, nodes, VLAN devices, (VLAN) lines, link aggregations, processors and routes.

The online backup can be supplemented by these to prepare a complete SOF file with the necessary modification and activation of the objects.

Example 1

MODIFY commands for lines stored in the SHBCOB.MOD.LINE file:

```
/SHOW-BCAM-OBJECTS OUTPUT=SHBCOB.MOD.LINE,OBJECT=*LINE,INF=*MODIFY
```

Extract from the generated file:

```
/MODIFY-LINE LINE-NAME=STDLINE1 -
:
/ ,AUTO-ROUTE-SWITCHING=*ON -
/ ,ROUTE-RESWITCHING=*OFF -
```

As a rule AUTO-ROUTE-SWITCHING, ROUTE-RESWITCHING and TIMEOUT-PROCESSING must be set for redundant configurations. All other settings can be omitted.

Example 2

ACTIVATE commands for lines stored in the SHBCOB.ACT.LINE file:

```
/SHOW-BCAM-OBJECTS OUTPUT=SHBCOB.ACT.LINE,OBJECT=*LINE,INF=*ACTIVATE
```

Generated file is containing:

```
/ACTIVATE-LINE LINE-NAME=STDLINE1
```

Example 3

ACTIVATE commands for nodes stored in the SHBCOB.ACT.NODE file:

```
/SHOW-BCAM-OBJECTS OUTPUT=SHBCOB.ACT.NODE,OBJECT=*NODE,INF=*ACTIVATE
```

Generated file is containing:

```
/BCIN NODE=STDNODE1,ACT=ALL
```

SE server support

The internal control LAN which utilizes the IPv6 functionality was introduced to support SE servers. This internal control LAN is called an MCNPR (Management Control Network Private). A distinction must be made between the non-redundant and the redundant control LANs. This control LAN is reserved for Customer Support and is used principally to support the display functions and administration in an SE server.

To simplify initial installation of an SE server, various templates have been introduced: In addition to the two templates for configuring the non-redundant and the redundant control LANs, there are also files for the local administration LANs which are known as MANLO (Management Administration Network Local). These templates take into account the standard requirements for the configuration of an SE server which are made internally. The requirements concern the specification of names to be used, the IPv4 address specifications for the local administration LANs and the device mnemonics of these LANs which are to be used. Further networks can also be derived from the templates by using them as a pattern and adapting them as required.

These templates are supplied as text files. You are recommended to copy these files when you wish to adjust them and to begin the actual configuration of the network on the basis of the copies. The following templates are available:

Template file	Description
SYSDAT.BCAM.SE.CMDF.CT.R.TXT	Template for a VLAN, control LAN, MCNPR defined redundantly
SYSDAT.BCAM.SE.CMDF.CT.S.TXT	Template for a VLAN, control LAN, MCNPR not defined redundantly
SYSDAT.BCAM.SE.CMDF.LAD1.TXT	Template for a normal line, MANLO1
SYSDAT.BCAM.SE.CMDF.LAD2.TXT	Template for a normal line, MANLO2
SYSDAT.BCAM.SE.CMDF.MSCF.TXT	Template for a secure MSCF configuration
SYSDAT.BCAM.SE.SOF.TXT	Template for a SOF file which supports the various LANs

Template files in BCAM

Manual interventions

- Executing modifying BCAM commands
- Modifying object attributes in a dialog using an EDIT command
- Modifying route configuration

Executing modifying BCAM commands

BCAM permits manual intervention in a configuration using a number of MODIFY commands. Manual interventions in a configuration must be implemented with care.

Modifications can be made for

- options
- AEC options
- DNS settings
- parameters
- timers
- server ports
- ADDRESS-ASSIGNMENT entries for routers (mainly for IPv4)
- VLAN-ASSIGNMENT entries for VLAN assignment
- virtual hosts
- lines
- VLAN lines
- VLAN devices
- processors and routes

The following MODIFY commands are available to modify individual objects, settings, parameters and timers:

MODIFY command	**Meaning**
BCGEN	Assign a new BCAM name or a new partner address for a processor. This also applies for multiple routes with the same partner address.
BCMOD	Modify BCAM parameters, supported by SHOW-BCAM-PARAMETER , OUT-F=*GEN
BCOPTION (AEC-OPTIONS)	Modify AEC-OPTIONS, supported by SHOW-AEC-OPTIONS ,OUT-F=*GEN
BCOPTION (ADDRESS-RANGE)	Modify ADDRESS-RANGE settings, supported by SHOW-ADDRESS-RANGE ,OUT-F=*GEN
BCOPTION (SERVER-PORTS)	Modify SERVER-PORTS settings, supported by SHOW-SERVER-PORTS ...,OUT-F=*GEN
BCTIMES	Modify timer settings, supported by SHOW-BCAM-TIMER ,OUT-F=*GEN
MODIFY-ADDRESS-ASSIGNMENT	Specify address assignment to routers, supported by SHOW-ADDRESS-ASS ...,OUT-F=*GEN
MODIFY-BCAM-OPTIONS	Modify BCAM options, supported by SHOW-BCAM-OPTIONS ,OUT-F=*GEN

MODIFY-DNS-ACCESS	Define DNS restrictions in BCAM and addressing of the standard DNS Resolver daemon, supported by SHOW-DNS-ACCESS ...,OUT-F=*GEN
MODIFY-HOST-ATTRIBUTES	Modify settings for hosts
MODIFY-LINE	Modify settings for lines
MODIFY-OWN-ADDRESS	Reassign addresses to a different line in redundant configurations
MODIFY-ROUTE-ATTRIBUTES	Modify route attributes
MODIFY-ROUTE-PATH	Reassign routes (see the section "Modifying route configuration")
MODIFY-VLAN-ASSIGNMENT	Specify address assignment to a VLAN, supported by SHOW-VLAN-ASS ...,OUT-F=*GEN
MODIFY-VLAN-DEVICE	Modify settings for VLAN devices
MODIFY-VLAN-LINE	Modify settings for VLAN lines

MODIFY commands for modifying individual objects

Note

You can also generate the individual commands separately by issuing the corresponding SHOW commands with the OUTPUT-FORMAT=*GENERATING-CMD parameter.

Modifying object attributes in a dialog using an EDIT command

You can have the attributes of certain BCAM objects displayed (and also modify them) in a dialog. A number of EDIT commands is available for doing this.

The output starts a guided dialog for the MODIFY command. In this dialog you can modify the attributes of the object.

The following EDIT commands are available for displaying and modifying individual objects:

EDIT command	Associated MODIFY command
EDIT-BCAM-OPTIONS	MODIFY-BCAM-OPTIONS
EDIT-HOST-ATTRIBUTES	MODIFY-HOST-ATTRIBUTES
EDIT-LINE	MODIFY-LINE
EDIT-ROUTE-ATTRIBUTES	MODIFY-ROUTE-ATTRIBUTES
MODIFY-ROUTE-ATTRIBUTES	MODIFY-ROUTE-ATTRIBUTES
MODIFY-ROUTE-ATTRIBUTES	MODIFY-ROUTE-ATTRIBUTES

EDIT commands for modifying individual objects

The EDIT-BCAM-OBJECT command is also available with which you can both create and modify various BCAM objects. You use the OBJECT= operand to specify the type of the BCAM object, and the CMD= operand to control whether a CREATE or MODIFY command is to be edited. The table below shows which CREATE and MODIFY commands are generated depending on what is specified for OBJECT=.

EDIT-BCAM-OBJECT Value for OBJECT=	Associated CREATE-command when CMD=*CREATE	Associated MODIFY-command when CMD=*MODIFY
*HOST	CREATE-VIRTUAL-HOST	MODIFY-HOST-ATTRIBUTES
*LINE	CREATE-LINE	MODIFY-LINE
*LINK-AGGREGATION	CREATE-LINK-AGGREGATION	---
*NODE	CREATE-NODE	---
*PROCESSOR	CREATE-PROCESSOR	---
*ROUTE	CREATE-ROUTE	MODIFY-ROUTE-ATTRIBUTES
*VLAN-DEVICE	CREATE-VLAN-DEVICE	MODIFY-VLAN-DEVICE
*VLAN-LINE	CREATE-VLAN-LINE	MODIFY-VLAN-LINE

EDIT command EDIT-BCAM-OBJECT for creating and modifying objects

Example

You want to modify the attributes of the line STDLIN02. Enter the following EDIT command to do so:

```
EDIT-LINE LINE-NAME=STDLIN02
```

The following screen is then displayed with the line attributes:

```
SITUATION: DIALOG IN PROG/S-PROC          COMMAND: MODIFY-LINE
OPERANDS : ...-POLL=*ON,BROADCAST=*ON,MULTICAST=*ON,CHECKSUM=*BY-DEVICE,AUTO-
ROU
         TE-SWITCHING=*ON,ROUTE-RESWITCHING=*OFF,DUP-ADDR-DETECTION=*STD,AD
           DR-CONFLICT-DETECT=*STD,TIMEOUT-PROCESSING=*KEEP-LINE,MAX-LPDU-
SIZ...
------------------------------------------------------------------------------
LINE-NAME            = STDLIN02
NEW-LINE-NAME        = *SAME
WRITE-DEVICE         = VO
READ-DEVICE          = VP
SLOW-POLL            = *ON
BROADCAST            = *ON
MULTICAST            = *ON
CHECKSUM             = *BY-DEVICE
AUTO-ROUTE-SWITCHING = *ON
ROUTE-RESWITCHING    = *OFF



------------------------------------------------------------------------------
NEXT = +
KEYS : F1=?   F3=*EXIT   F5=*REFRESH   F6=*EXIT-ALL   F8=+   F9=REST-SDF-IN
       F11=*EXECUTE   F12=*CANCEL
```

You can edit the attributes. As soon as you transfer the screen, a MODIFY-LINE command is generated which modifies the settings as you have specified.

Modifying route configuration

How you can modify the route configuration is described below.

Basic attribute of a route

A route is determined unambiguously by the address pair (partner-address, own-address).

partner-address and own-address can be an IPv4, IPv6, INTF or NEA address. Hardly any NEA addresses are now to be found in configurations, however.

A route’s address pair is invariant. The only exception is when the partner-address is modified using a BCGEN commando in an emergency. The own-address, by contrast, cannot be modified.

Modifying route attributes

The following commands are available for modifying route attributes:

- MODIFY-ROUTE-ATTRIBUTES
- MODIFY-ROUTE (old command)

Modifying the manual switching of routes

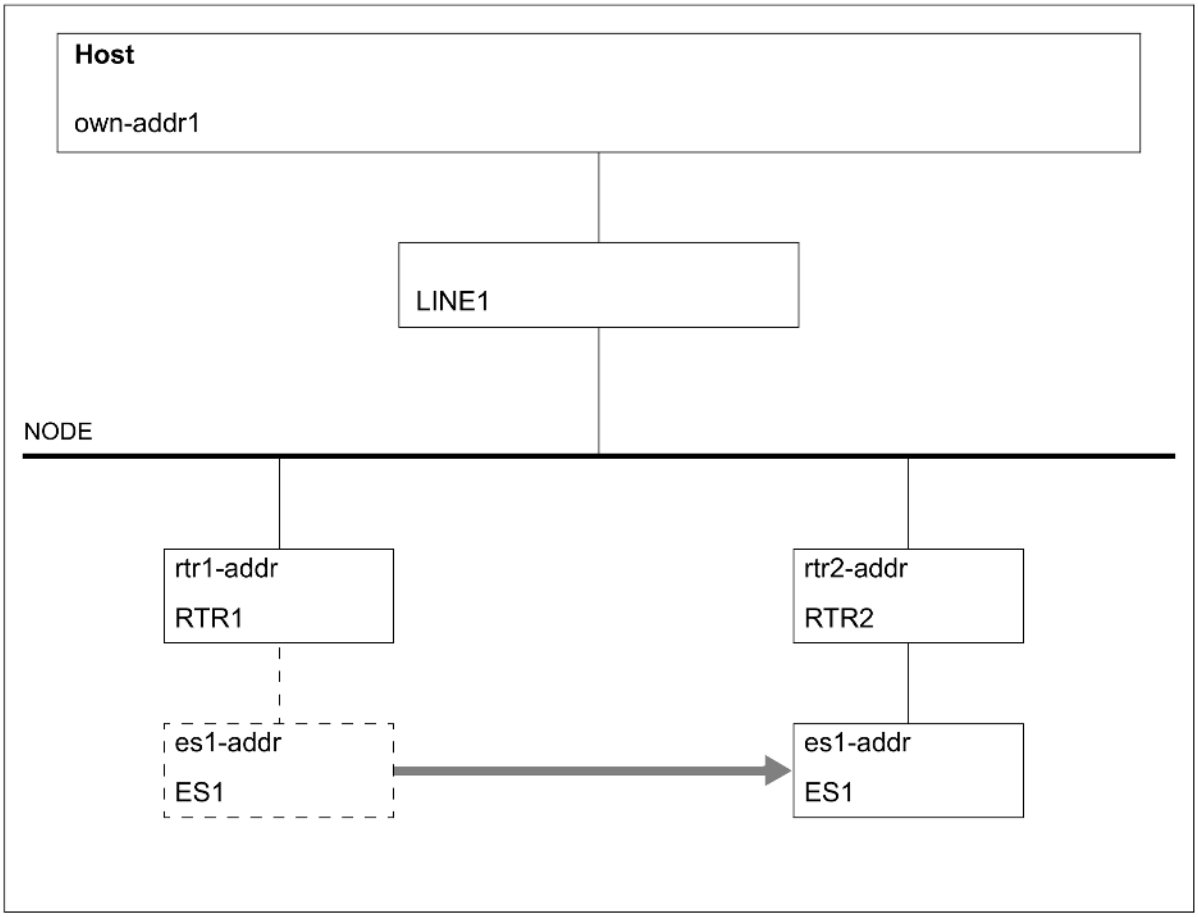
The following commands are available for modifying routes and route paths:

- MODIFY-ROUTE-PATH
- MODIFY-ROUTE (old command)

Route paths can be modified only if the underlying route attribute is retained. This means in particular that the same own-address must also be used for the intermediate routes. All other route changes are inadmissible and cannot succeed.

The figures below show both admissible and inadmissible switchovers.

Examples of admissible switchovers

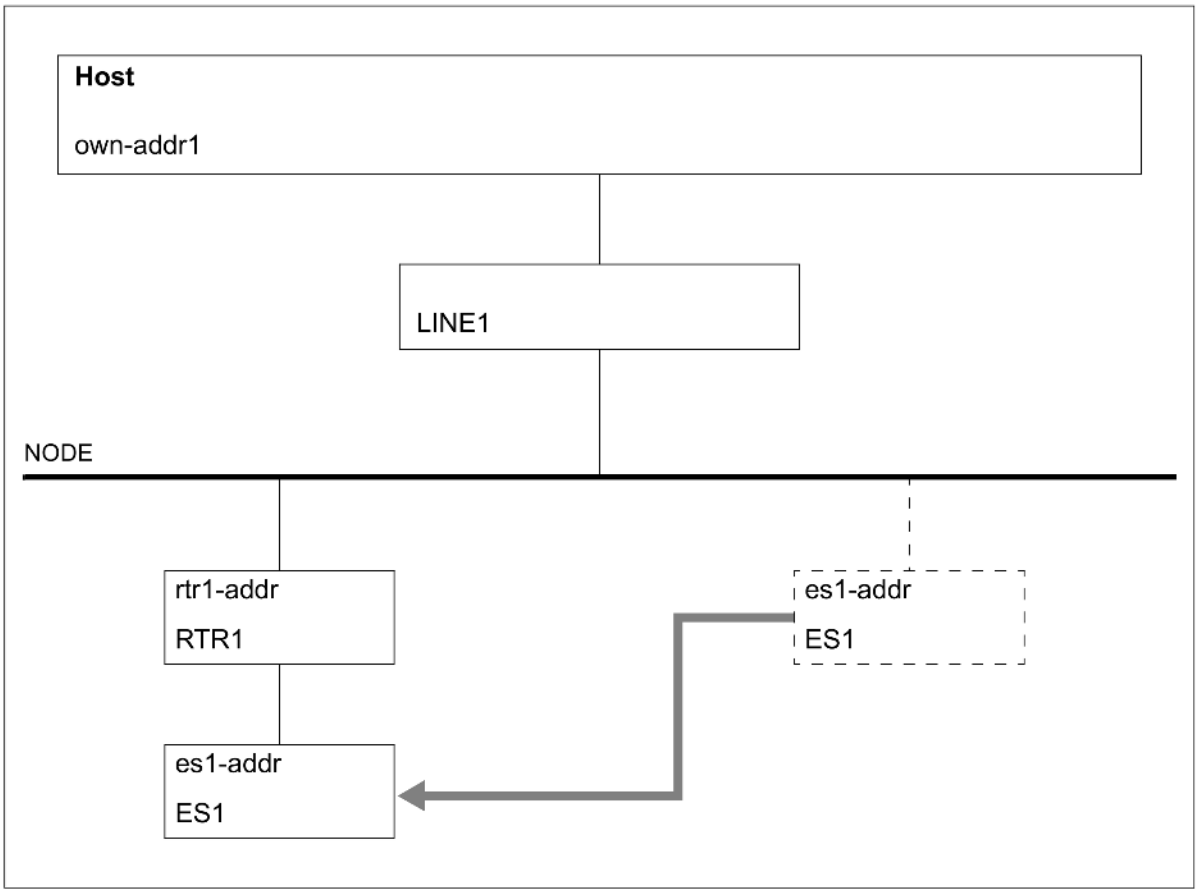


Route switchover from remote to remote

In the example a route is switched from remote to remote. This guarantees the invariance of the address pair.

The command is:

```
/MODIFY-ROUTE-PATH ROUTE-NAME=ES1,PATH=*VIA-ROUTER( -
/ ROUTER-ROUTE-NAME=RTR2)
```

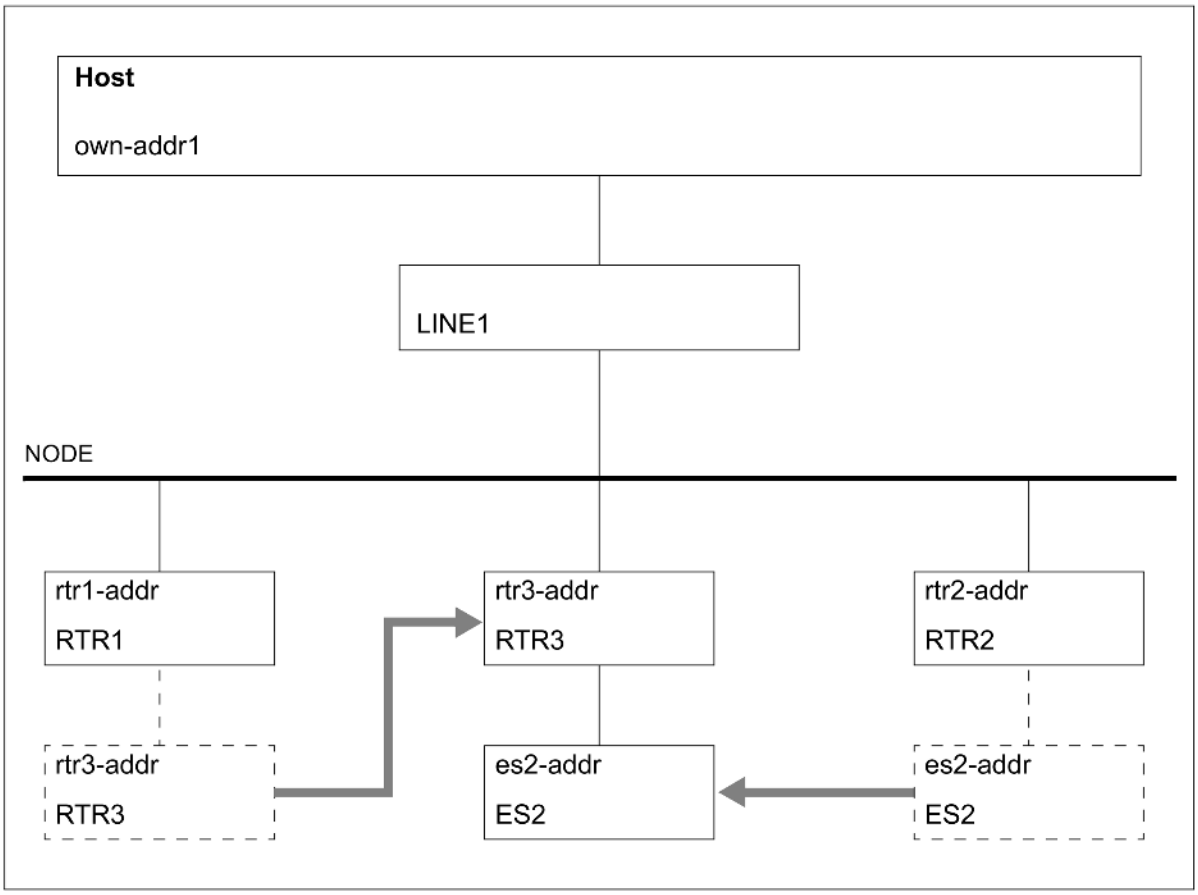


Route switchover from node to remote

In the example a route is switched from node to remote. This also guarantees the invariance of the address pair.

The command is:

```
/MODIFY-ROUTE-PATH ROUTE-NAME=ES1,PATH=*VIA-ROUTER( -
/ ROUTER-ROUTE-NAME=RTR1)
```



Double route switchover: remote - node and remote - remote

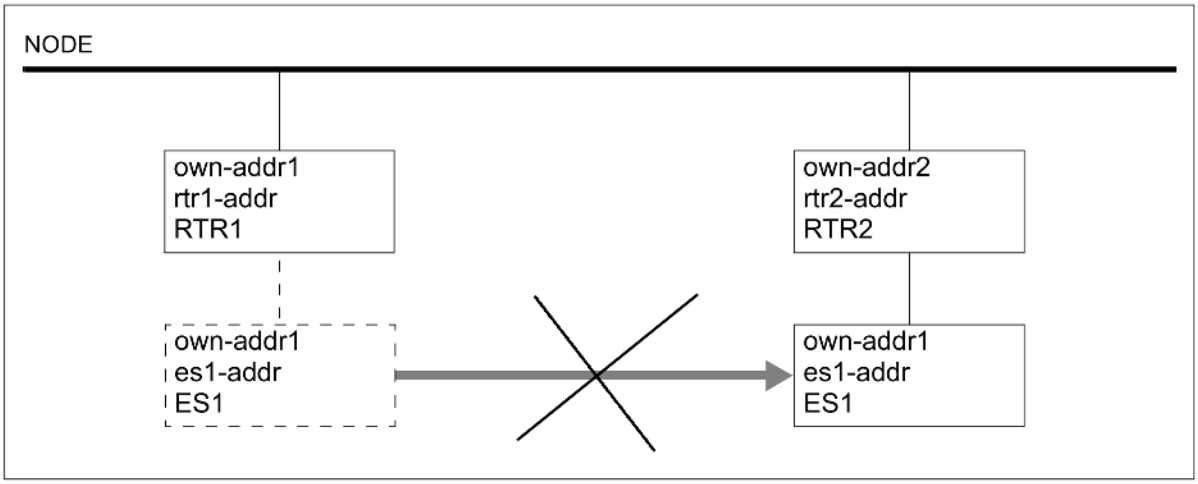
In the example a remote route of router RTR3 is switched from remote to node and a second route from remote to remote. Here, too, the invariance of the address pair is ensured.

Two MODIFY commands are required:

```
/MODIFY-ROUTE-PATH ROUTE-NAME=ES2,PATH=*VIA-LINE( -
/ LINE-NAME=LINE1)
/MODIFY-ROUTE-PATH ROUTE-NAME=ES2,PATH=*VIA-ROUTER( -
/ ROUTER-ROUTE-NAME=RTR3)
```

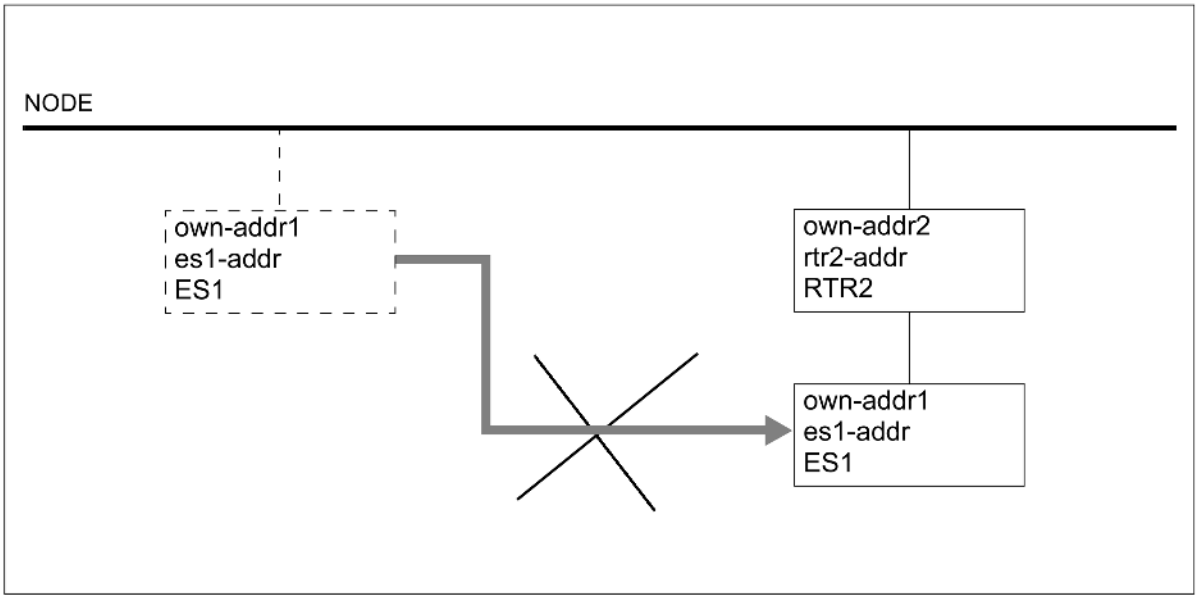
Examples of inadmissible switchovers

Three examples are provided below which cannot work because the invariance of the address pair and, in consequence, of the subpaths cannot be maintained.



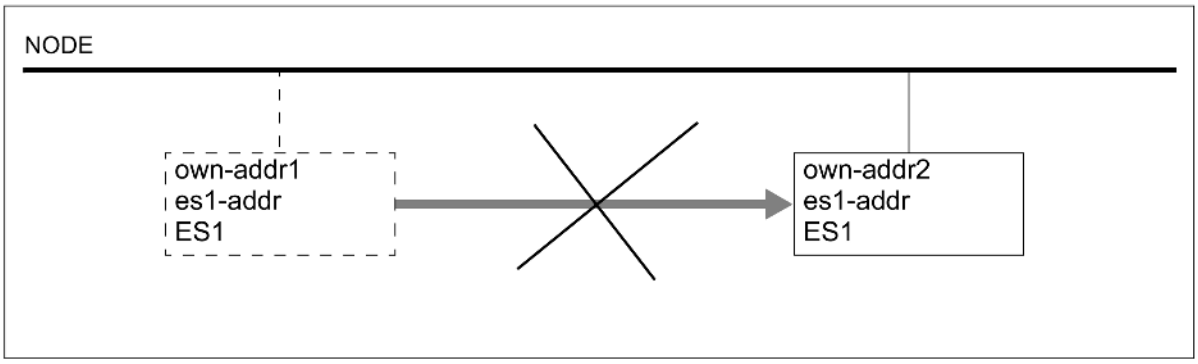
Inadmissible route switchover with a change of the own-address

RTR2 has a different own-address from ES1; consequently the intermediate path is not appropriate and the switchover is not possible.



Inadmissible reassignment of the end system with a change of the own-address

The reassignment of end system ES1 behind the router does not work because the router is connected to a different own-address.



Inadmissible route switchover to another line

IPv4, IPv6 and INTF routes cannot be switched over to another line or another own address.

Address conflicts

In networks it is becoming increasingly important to detect address conflicts.

The aim here is to prevent faulty configuration in good time since assigning an address more than once in the same network can lead to problems which are difficult to diagnose.

IPv6 incorporated the method for Address Conflict Detection when it was introduced. This method is defined in the Stateless Address Autoconfiguration.

By contrast, it took some time before an analogous method based on ARP was introduced for IPv4.

Address Conflict Detection IPv4 (ACD)

The Address Conflict Detection method requires that communication systems implement the steps described below. Detailed information is provided in RFC5227.

“Address Probing”

With ARP probe, it is reported while the (VLAN) line is being activated that the address noted in the log will be used and the systems are waiting for the response from the network.

“Address Announcing”

With ARP announce, when the (VLAN) line is activated it is announced that after a defined wait time the address noted in the log will be used.

“Conflict Detection”

If an address conflict has already been detected when the (VLAN) line is activated, the address cannot be used. Access via this network connection is not possible using this address. This network connection consequently does not become active. A message which must be answered is output to the console.

“Defense”

In ongoing operation you must protect the address in such a way that no other processor uses this IP address. This mechanism is used cyclically.

Information in “case of conflict”

The following BCAM messages are used to display conflict situations: BCA08C7, BCA08C8, BCA08C9 and BCA08CA. The messages are output to the console.

In addition to the (VLAN) line name, the address is also logged in the deactivation messages. In the case of the warning messages BCA08C8 and BCA08CA the MAC address received is also logged, which permits conclusions to be drawn about partner end system which caused problems.

Duplicate Address Detection IPv6 (DAD)

The process for Duplicate Address Detection is a component part of the core of the IPv6 implementation. It uses the IPv6 basic mechanisms "Neighbor Solicitation" and "Advertisement" messages to detect address conflicts. These messages and their use for Duplicate Address Detection are described in RFC4861 and RFC4862.

In addition, the process is to be applied to all unicast addresses.
The following cases are the exceptions here:

- Duplicate detection is disabled.
- An anycast address is concerned.

Addresses may be assigned to the line only when it has been recognized that they exist only once in the network which is operated. If this is not the case, the address may not be assigned to the line connection.

Information when a fault occurs

The two BCAM messages BCA08C7 and BCA08C9 are used to display conflict situations. The messages are output to the console.

Handling address conflicts

Displaying address conflict information

The messages which are output on the console in the event of address conflicts must be answered. You can have them displayed using the SHOW-PENDING-MESSAGES command.

For (VLAN) lines, the Address Conflict Detection (IPv4) and the Duplicate Address Detection (IPv6) are set by default.

You can check the current settings for IPv4 and IPv6 using the following commands:

```
SHOW-LINE-ATTRIBUTES INFORMATION=*OPTION
SHOW-VLAN-LINE-ATTRIBUTES INFORMATION=*OPTION (VLAN)
```

If the settings for the (VLAN) lines are set to *OFF, address conflicts for the relevant address type are not recognized. The repercussions of address conflicts cannot then be foreseen.

The setting for (VLAN) lines can be modified using the following commands:

```
MODIFY-(VLAN)-LINE ADDR-CONFLICT-DETECT= ... (IPv4)
MODIFY-(VLAN)-LINE DUP-ADDRESS-DETECTION=... (IPv6)
```

You can use the SHOW-OWN-ADDRESS ADDRESS-STATE=*INVALID command to display addresses for which an address conflict has been recognized or which have already been deactivated by means of a command. Alternatively, the information can be output in dialog mode using the SHOW-BCAM-ADDRESS command.

Handling address conflicts on a targeted basis

The BCAM commands DEACTIVATE-OWN-ADDRESS and ACTIVATE-OWN-ADDRESS enable you to handle address conflicts in IPv4 or IPv6 on a targeted basis. These commands are used to address own addresses directly which have caused a detected address conflict.

You use the DEACTIVATE-OWN-ADDRESS command to deactivate own addresses, which are then completely withdrawn from being accessed by other BCAM commands until further notice and no longer have an effect on the network. The ACTIVATE(-VLAN)-LINE and DEACTIVATE(-VLAN)-LINE commands take into account such deactivated own addresses and perform no implicit actions with these own addresses.

If an own address is to be used again, you must first reactivate it explicitly with the ACTIVATE-OWN-ADDRESS command.

BCAM-Exit (36)

BCAM-Exit makes it possible to monitor access to BS2000-TSAPs.

Register input

The following information is passed to the exit routine:

R1 = Address ($SYSX parameter area)

R12 = Address (TPR Program Manager)

R13 = Address (backup area of the calling component)

R14 = Address (indirect return)

R15 = Address (exit routine)

System exit function 01

System exit function 01 simply makes it possible to monitor connection requests to system applications (e.g. $DIALOG, $CONSOLE). The exit routine is called if BCAM recognizes that a local or remote partner wants to connect to the system application.

Parameter area

The parameter area has the following format:

Distance	Content
0	Function of the exit routine: X'01' - Monitors the connections to system applications
1	Name type of the called system application: X'01' - System application
2	Application name of the called system application
A	Name of own host
12	Name type of calling system application: X'01' - NEA application
13	Application name of calling application
1B	Name of the processor in which the calling application is running

System exit function 01: format of the parameter area

> **CAUTION!**
>
> An incorrect exit routine can result in a communication system (DCM) crash. You should therefore ensure that the exit routine simply aligns the names. Before accessing the names (IDs), it is essential to check the type since the layout, and in particular the length, may change as a function of the type.

Return information

The following is expected in register 15 as return information from the exit routine:

BB	00	00	RR

System exit function 01: return information

BB Return code of the basic system

RR =X’00’
The connection request can be accepted. BCAM announces the connection request (CONR-anno).

RR >X’00’
The connection request must be rejected. BCAM rejects the connection request.

System exit function 02

System exit function 02 makes it possible to monitor the connection request (e.g. the opening of TSAPs and the request to establish connections from or to applications), in a way that is very largely independent of the interface functionality.

The exit routine is called if the following two conditions are fulfilled:

- System exit function 02 has been activated in BCAM via MODIFY-BCAM-OPTIONS.
- A TSAP has been opened in BCAM or BCAM has more generally recognized the communication request.

Parameter area

The parameter area is supplied by the macro program YDBBXD. The subsections are described below as an aid to understanding.

General format

Distance	Content
0	Function of the exit routine: X'02' - General monitoring of TSAPs
1	Event type: X'01' - Passive connection X'02' - Active connection X'03' - TSAP opened
2	Reserved for later use
3	Reserved for later use
4	TSN of caller

System exit function 02: parameter area, general format

> The TSN of the calling application is available on the active establishment of a connection as well as when a TSAP is opened.

The following parameters are supplied if available:

- Source parameters
- Source L3 address
- Destination parameters
- Destination T-selectors
- Destination L3 address

The communication interface triggering the event (DCAM, CMX, SOCKETS), the current connection, and any BCAM mapping entries that are present have an influence on the type and extent of the available parameters.

Source parameters

The source parameters describe the application which

- is actively establishing a connection.
- is opening a TSAP.

Name of the source TSAP

Distance	Content
8	Length of source TSAP name
A	Type of source TSAP name: X'02' - Nea name X'06' - Socket name X'07' - ISO name
B	If type=NEA: name of the source application (8 characters) If type=Socket/ISO: source socket / ISO name (max. 78 characters)
13	If type=NEA: name of the source host (8 characters)
5A	Type of source T-selector: X'80' - Nea T-selector X'10' - OSI T-selector X'01' - Port#
5B	If type=Port#: source port#
5D	Length of source OSI T-selector (if type=OSI)
5E	Source OSI T-selector (if type=OSI)
7E	Source-NEA T-selector (if type=NEA)

System exit function 02: Parameter area, source TSAP

TSAP names are available if connection takes place via BCAM or if corresponding BCAM mapping entries exist.

Depending on any available BCAM (default) mapping entries, more than one local T-selector may be present.

Source L3 address

Distance	Content
86	Type of source L3 address: X'05' - IPv4 X'06' - IPv6
87	Reserved for later use
8A	Source IPv4 address
8E	Source IPv6 address

System exit function 02: parameter area, source L3 address

> In the case of internal BS2000 connections, no source L3 address is available when the connection takes place via BCAM.

Destination parameters

The destination parameters describe the application to which a connection is to be established.

Name of the destination TSAP

Distance	Content
9E	Length of the destination TSAP name
A0	Type of destination TSAP name: X'02' - Nea name X'06' - Socket name X'07' - ISO name
A1	If type=NEA: name of destination application (8 characters)
A9	If type=NEA: name of processor (8 characters)
A1	If type=Socket/ISO: destination socket/ISO name (max. 78 characters)

System exit function 02: parameter area, destination TSAP

> TSAP names are only available if the connection takes place via DCAM or if corresponding BCAM mapping entries exist.

Destination T-selector(s)

Distance	Content
EF	Type of destination T-selector: X'80' - NeaT-selector X'10' - OSI T-selector X'01' - Port#
F0	Destination port# (if type=Port#)
F2	Length of the destination OSI T-selector (if type=OSI)
F3	Destination OSI T-selector (if type=OSI)
113	Destination NEA T-selector (if type=NEA)

System exit function 02: parameter area, Destination T-selector(s)

ℹ Depending on any available BCAM (default) mapping entries, more than one local T-selector may be present.

Destination L3 address

Distance	Content
11B	Type of destination L3 address: X'05' - IPv4 X'06' - IPv6
11C	Reserved for later use
11F	Destination IPv4 address
123	Destination IPv6 address

System exit function 02: parameter area, destination L3 address

ℹ In the case of internal BS2000 connections, no source L3 address is available when the connection takes place via BCAM.

Return information

The following is expected in register 15 as the return information from the exit routine:

BB	00	00	RR

System exit function 02: return information

BB: Return code of the basic system

RR =X’00’
The connection request, the TSAP opening is permissible

RR ’=X’01’
The connection request, the TSAP opening must be rejected.
Further connection requests are permissible.

RR ’=X’02’
The connection request must be rejected;
Further attempts to establish connections from the corresponding source IPv4/IPv6 address are blocked in SIH.

Diagnosis

This chapter provides information on creating diagnostic documentation and on SAT logging. It also describes the diagnostic tools DCM-DIAG, ASTRID, DAMP, TEDDY, DIG, NETSTAT, NSLOOKUP, TRACEROUTE, PING4 and PING6.

Preparatory steps

In order to use the diagnostic tools (ASTRID, DIANA, DAMP, TEDDY, NETSTAT, TRACEROUTE, PING4, PING6, NSLOOKUP), the following libraries must be available and shareable under the TSOS user ID:

- SYSLNK.BCAM.DUMP
- SYSPRG.SOCKETS.210
- SYSPRG.BCAM.250
- SYSPRG.LWRESD.210.DIG
- SYSPRG.LWRESD.210.NSLOOKUP

SYSLNK.BCAM-DIAG.010 is delivered with the delivery unit openNet Server V21.0 which contains the prelinked modules of older versions. The SYSLNK.BCAM-DIAG.010 is copied from IMON to SYSLNK.BCAM.DUMP.

> If ASTRID is to run under a user ID other than TSOS, the test privilege 8,1 must be entered in the user entry for this ID.
> This is necessary because ASTRID uses AIDSYS, and internally issues the MODIFY-TEST-OPTIONS PRIVILEGE=*PARAMETERS(READ=8,WRITE=1), -,USERDUMP-OPTIONS=*PAR(DUMP=*YES) command.

Creating diagnostic documentation

If, despite your best efforts, errors occur which you cannot rectify yourself, please contact your Fujitsu Technology Solutions GmbH contact partner. To simplify the troubleshooting process, your Fujitsu Technology Solutions GmbH contact partner will require the following information and documentation:

- a precise description of the error situation and information on whether or not the error can be reproduced
- a description of the hardware configuration
- information on the software configuration, including information on the type and scope of the operating system software and communication software used; the relevant version numbers and any REP corrections used must also be documented
- the complete console log fileei ($SYSAUDIT.SYS.CONSLOG.<date>.<counter>) of the session
- trace files
- dumps
- ASTRID documentation, if appropriate

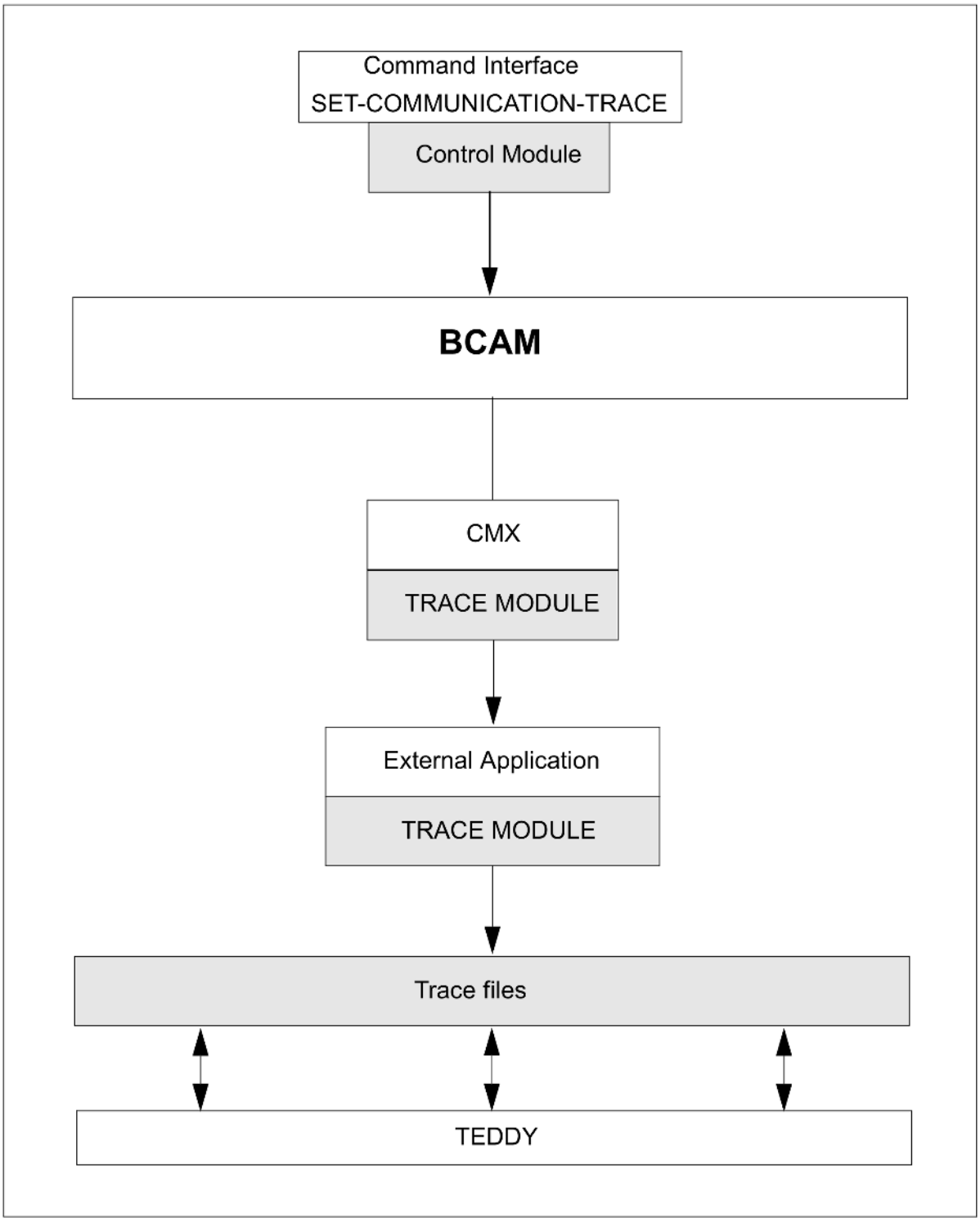
The DCM-DIAG diagnostic tool

Starting with BCAM V14, the diagnostic tool DCM-DIAG is available for diagnosing the CMX(BS2000) communication component.

DCM-DIAG is a subsystem that essentially consists of a command interface (SET-COMMUNICATION-TRACE) and a trace module. As of BCAM V14, the trace module is linked into CMX. For external applications, the trace module is offered for linkage in the respective application. The trace module can only be used in external applications, provided the CMX communication component is also used by these external applications.

The trace module offers functions to open, close, and write the trace file. It can be controlled by means of the SET-COMMUNICATION-TRACE command. The command SET-COMMU-NICATION-TRACE is not a console command and is available to the administrator as well as the user.
In order to use the full functionality of SET-COMMUNICATION-TRACE, the administrator must have TSOS or NET-ADMINISTRATION privileges. Users can only access the trace files associated with their respective user IDs.
More detailed information on the structure and use of the trace module can be found on the following pages.

The SET-COMMUNICATION-TRACE command is described in section "SET-COMMUNICATION-TRACE: Control DCM-DIAG".


Command Interface
SET-COMMUNICATION-TRACE
Control Module
BCAM
CMX
TRACE MODULE
External Application
TRACE MODULE
Trace files
TEDDY

Trace file

The trace file is generated by the trace module and can be analysed by the user with the help of the diagnostic aid TEDDY. Trace files are recreated whenever a trace is activated (turned on); no traces are appended to existing files.

The trace module is stored under the name YDTLNK and exists separately for TU and TPR. In addition, there is also the module YDTTOOL for the assembler routines used by YDTLNK. These modules reside in the following libraries:

- For applications created with the C Compiler >= V2.0 and CRTE V2.0 (for example 011 is the value for nnn in the case of DCM-DIAG V1.1):

  For TU in SYSLIB.DCM-DIAG.nnn.TU

  For TPR in SYSLIB.DCM.DIAG.nnn.TP

  The YDTLNK module for applications created with the C Compiler >= V2.0 and CRTE V1.0 is in SYSLIB.DCM-DIAG.nnn.COMPV2.
- For applications created with the C Compiler V1.0:

  For TU in SYSLIB.DCM-DIAG.nnn.COMPV1
- For applications on X86 systems:

  For TPR in SKMLIB.DCM-DIAG.nnn.TP

Four functions to process a trace file are offered by the trace module:

Open a trace file	TraceFileOpen
Close a trace file	TraceFileClose
Close all open trace files	AllTraceFileClose
Write a trace record to the trace file	TraceFileWriteRecord

Opening a trace file

```
int TraceFileOpen(int *handle, char *KompName, char *KompVer);
```

This function opens a new trace file. The name of the trace file has the following structure:

```
<$userid>.SYS.DIA.<component>.<tsn>.<sequential number>
```

<$userid>	The file is created under the same user ID that is running the task.
<component>	is the name of the application (CMX or the user s own application, for example)
<tsn>	TSN of the user
<sequential number>	To ensure that the name of the trace file remains unique, a sequential number is appended to it.

Trace files have the following file attributes:
`FCBTYPE=SAM, RECFORM=V, BLKCTRL=PAMKEY, BLKSIZE=(STD,14)`

Call parameters:

int *handle:	Pointer to integer for the file ID, which must be specified in all subsequent calls

char *KompName:	One of the following component names:
	`#define CMX "CMX"`
	`#define EXT "EXT"`

char *KompVer:	Version for the selected component (with a length of 4)

Return values:

```
#define FILE_OPENED_SUCCESSFULLY     0
#define FILE_NAME_CONSTRUCTION_ERROR 1
#define FILE_OPEN_DMS_ERROR          2
#define REQUEST_MEMORY_ERROR         3
#define WRITE_HEADER_RECORD_ERROR    4
#define FILE_COMMAND_ERROR           5
```

If the function executes successfully, a header record for TEDDY is written to the trace file.

Writing to the trace file

```
int TraceFileWriteRecord(int handle,char *identifier, char *typ, char *target,char
*TraceInfo, int TraceLen);
```

This function writes a trace record to the trace file identified by *handle*. To improve performance, the trace records are initially collected in a buffer. This buffer is written to the trace file when it is full or on a *TraceFileClose* / *AllTraceFileClose*.

Call parameters:

int handle: File ID defined in the TraceFileOpen function

char *identifier: Trace Identifier (length 1), e.g.:

- C for CMX
- X for External User

char *typ: Type of trace information (max. length 2), e.g.:

- C for a call to a function
- R for a return from a function
- D for data, etc.

char *target: Freely selectable value (max. length 2), e.g.:

- I Function call or signal from another component to the tracing component
- O Function call from the tracing component to another component.

char *TraceInfo: Trace record to be saved

int TraceLen: Length of the Trace Info or 0 (implicit string length)

Return value:

```
#define RECORD_WRITE_SUCCESSFULLY 0
#define RECORD_WRITE_DMS_ERROR    1
#define INVALID_FILE_ID           2
#define FOREIGN_FILE_ID           3
#define IDENTIFIER_TOO_LONG       4
#define TYP_TOO_LONG              5
#define TARGET_TOO_LONG           6
#define TRACE_INFO_TOO_LONG       7
```

If the function executes successfully, the trace record with a header for TEDDY is written to the buffer.

Closing a trace file

```
int TraceFileClose(int handle);
```

This function closes the trace file defined by *int handle*.

Call parameters:

int handle: As returned by the TraceFileOpen function

Return values:

```
#define FILE_CLOSED_SUCCESSFULLY 0
#define FILE_CLOSE_DMS_ERROR     1
#define INVALID_FILE_ID          2
#define FOREIGN_FILE_ID          3
```

On closing the trace file successfully, all trace records that have not yet been saved are written to the trace file.

Closing all trace files

```
void AllTraceFileClose();
```

Call parameters: none

Return value: none

Example

```
/* Example of an application with the function calls of the trace module */
#include "stdio.h"
   #include "stdlib.h"
   #include "string.h"
   #include "ydtlnk.h"
 void main () {
/* ----------------------- Values for the test example ------------------ */
    int ret;
    int handle;  *)
    char *identifier       = "S";
    char *typ              = "TY";
    char *target           = "TA";
    char *TraceInfo        = "THIS-IS-THE-TRACEINFO";
    char *version          = "V14";
    char *KompNam          = "TESTPROG";
```

*) Internal handle of a trace file; returned by the trace function

```
/* --------------------     Open trace file    -------------------------- */
  if ((ret = TraceFileOpen(&handle,KompNam,version)) ==
                              FILE_OPENED_SUCCESSFULLY)
        printf ("open succeeded, FileId=%d\n", handle);
  else  {
        printf ("open failed:%d\n", ret);
        goto invalid;
        }
               .
               .
               .
               .
/* -------------------------  Write trace record   --------------------  */
  if ((ret = TraceFileWriteRecord(handle,identifier,
              typ,target,TraceInfo,0)) == RECORD_WRITE_SUCCESSFULLY)
        printf ("write succeeded\n");
  else  {
        printf ("write failed:%d\n", ret);
        goto invalid;
        }
                  .
                  .
                  .
/* ----------------------------  Close trace file ------------------  */
  if ((ret = TraceFileClose(handle)) == FILE_CLOSED_SUCCESSFULLY)
          printf ("close succeeded\n");
     else {
          printf ("close failed:%d\n", ret);
          goto invalid;
          }
    return;
  invalid: printf ("Invalid run\n");
  }
```

Diagnostic system ASTRID

With the program system ASTRID (**A**nalysis of **Str**uctured **I**nternal **D**ata), the internal data structure of BCAM can be output from virtual memory.
The purpose of this program system is to create diagnostic documentation in the event of an error. This documentation is created in formatted mode, which makes it easier to analyze than a conventional memory dump.

Starting ASTRID

ASTRID can run under any user ID, provided the test privilege 8,1 has been entered for that user ID in the join entry (user administration). This is necessary because ASTRID uses AIDSYS and issues the command OPTION TESTPRIV=(8,1), DUMP=YES internally. On starting ASTRID, the command START-ASTRID MONJV=MJV. ASTRID can be used to enable a MONJV to monitor the program status.
ASTRID can operate either as an independent program or as a subroutine under DAMP in a dialog or batch process.
Various BCAM versions can be analysed with ASTRID. The required prelinked modules are contained in the $TSOS.SYSLNK.BCAM-DIAG.010.DIAG library.
The ASTRID diagnostic system comprises the ASTRID load phase (which must be started with /START-ASTRID) and several prelinked modules. These prelinked modules contain the actual analysis routines and are loaded dynamically by DAMP (with RUN DCM) or SODA (with CALL DCM) before the ASTRID load phase. By default, the prelinked modules are loaded dynamically from the $TSOS.SYSLNK.BCAM-DIAG.010.DIAG library. If the prelinked modules are contained in a different library, this must be assigned.
DCMDMP (default file $TSOS.SYSLNK.BCAM.DUMP) is used as the link name for the basic part (DCMUPE module).
BCAMDUMP (default file $TSOS.SYSLNK.BCAM-DIAG.010.DIAG.SRV) is used as the link name for the basic output routine (YDBXMU module).
BCAMDUMP (default file $TSOS.SYSLNK.BCAM-DIAG.010.DIAG) is used as the link name for the BCAM part (BCA.... modules).

The following are the corresponding BS2000 commands for assigning the library:

```
/SET-FILE-LINK LINK-NAME=DCMDMP,FILE-NAME=<lib-name>
/SET-FILE-LINK LINK-NAME=DCMSERV,FILE-NAME=<lib-name>
/SET-FILE-LINK LINK-NAME=BCAMDUMP,FILE-NAME=<lib-name>
```

Each individual link name has a corresponding default file name:

- DCMDMP: $TSOS.SYSLNK.BCAM.DUMP
- DCMSERV: $TSOS.SYSLNK.BCAM-DIAG.010.SRV
- BCAMDUMP: $TSOS.SYSLNK.BCAM-DIAG.010.DIAG

> Analyzing an active system with ASTRID can lead to inaccurate values in traces and control block chaining, because the values change constantly as a result of connection setup and cleardown, for example. For this reason, the results are of limited use.

Controlling ASTRID outputs

The MODE command can be used to define the output medium for ASTRID. The output is written to SYSLST by default. In addition, the output medium could also be CONSOLE and SYSOUT.

The following description applies to the selection of SYSOUT and CONSOLE as the output media: if the amount of data retrieved by an ASTRID command exceeds one screen, a part of the data to be output is placed in an ASTRID buffer. If the amount of data to be displayed is greater than the capacity of the buffer, the remaining data is maintained in background storage.

The following commands can be used to control the buffer and the display of the buffer contents:

Commands for output control
± / **-** / **++** / **--** / ***** / **+**<n> / -<n> / **#**<n> / **R**<n> / **L** / **F**'<string>' / **FF** / **FB** / **H** / **?** / **S** / **C** / **M** / **0** / **E**

+
Moves one screen forward.

-
Moves one screen backward.

++
Moves to the logical start of the buffer.

--
Moves to the logical end of the buffer.

*****
Repeats the output of the same screen.

+<n>
Moves forward by <n> (max. 99999999) lines.

-<n>
Moves backward by <n> (max. 99999999) lines.

#<n>
Moves to line <n> (max. 99999999).

R<n>
Releases <n> (max. 99999999) write-protected buffer lines for renewed overwriting. It is then possible to scroll forward. If R<n> is entered following an overflow message, the remaining lines are edited.

L
L is used to turn off conversion from lowercase to uppercase letters for the next input and thus enables lowercase letters to be specified in the following search string.

F'<string>'
Finds the specified search <string> (max. 19 characters) from the current position onward. The string must not begin with a blank. The search string is retained even on exiting the display. It is deleted only on defining a new search string or on terminating ASTRID.

FF
Finds the next hit for the specified search string by searching forward from the current position plus one line.

FB
Finds the specified search string by searching backward from the current position minus one line.

H / ?
Enables the help function and displays all positioning commands.

S
Shows the range of write-protected lines.

C
Exits the display of a data buffer.
As of this output, the buffer is assigned a write-protected status. To remove this write protection, enter “0" as the next input or shift it forward with "R<n>".

M / 0
Exits the display of a data buffer.
If all data of the last command could not be edited due to a buffer overflow, the remaining data from the background storage is now loaded into the buffer and displayed.

E
Ends the display process.

ASTRID commands

ASTRID is controlled by commands.
The commands can be entered via SYSDTA, the terminal, or the console (see also section "MODE").

Description of commands

The following description of the ASTRID commands is based on the command syntax given in section "Syntax of the command description"ff.

ALL

You use this command to output all control blocks and data areas.

ALL

The output information corresponds to the following commands:

DCMBASE	CB=(*ALL,STATE),LOG=*ALL,AREA=*ALL,CMD=*ALL,OPTION=*ALL,DNS-ACCESS=*ALL,VLAN-ASSIGNMENT=*ALL
NET	*ALL,INFO=(NETCB,STATE)
PORT	*ALL,CB=(*STD,STACK),TYPE=*ALL,DEVICE=*ALL
POOL	*ALL,INFO=*ALL
TRANS	INFO=(CB,CIDTAB),CB=*ALL
APID	INFO=BINARY,CB=IDTABS
EVID	INFO=BINARY,CB=IDTABS
TSKID	INFO=BINARY,CB=IDTABS
NAME	*ALL,TYP=*ALL,SUBTYP=*ALL
ADDRCB	CB=*ALL,ATYPE=*ALL
RS	SIGHT=NET,CB=*ALL,INFO=*ALL
RS	SIGHT=QUEUES,QUEUE=(UNUSED-ROUTE, ADDRESS-TYPE,ARP-FLOW-CTRL,OSPF-ROUTER,BCOUT-DELAY),CB=*ALL,INFO=*STATE
RS	SIGHT=QUEUES,QUEUE=(RELEASE-ROUTE,RELEASE-ADDR-P),CB=*ALL,INFO=*ALL
RS	SIGHT=QUEUES,QUEUE=FIREWALL,CB=*ALL,INFO=*ALL
RS	SIGHT=QUEUES,QUEUE=UNKNOWN-GATE,CB=*ALL,INFO=*ALL
RS	SIGHT=QUEUES,CB=*ALL,INFO=*ALL
RS	SIGHT=ROUTING-PROTOCOL,CB=*ALL,INFO=STATE
FILE	TYPE=*ALL
AVLTREE	STRUCT=*ALL,INFO=STRUCTURE
ND	CB=*ALL
RD	CB=*ALL
MAP	INFO=*ALL

```
INFOCB

SM2

MIB             TYPE=*ALL
```

ADDRCB

You use this command to output the existing ADDRCB chains.

ADDRCB
[, **CB = *ALL** / list-poss (3): **OWN** / **PARTNER** / **LOOPBACK-P**]
[, **ATYPE =*ALL** / list-poss (5): **LAN** / **OSI** / **IP** / **IPV6**]

CB=
Defines which control blocks are to be output.
Apart from the value *ALL, the remaining values can also be specified as a list (list-poss).

***ALL**	All control blocks
OWN	ADDRCB-O
PARTNER	ADDRCB-P
LOOPBACK-P	ADDRCB-P for loopback

ATYPE=
Defines the (network) address types for which data is to be output.
Apart from the value *ALL, the remaining values can also be specified as a list (list-poss).

***ALL**	All address types
LAN	LAN addresses
OSI	OSI network addresses
IP	IP network addresses
IPV6	IPv6 network addresses
***INTERFACE**	All interface ADDRCB-Os

APID

You use this command to output the APID tables and corresponding control blocks.

APID
[, **INFO = LOGICAL** / **BINARY**]
[, **CB =IDTABS** / list-poss (5): ***ALL** / **IDTABS** / **SUBTCB** / **ENACB** /***NONE**]

INFO=
Defines which control blocks are to be output.

LOGICAL	Logical output
BINARY	Control blocks and tables

CB=
Defines which control blocks are to be output for INFO=BINARY.
The values can also be specified as a list (list-poss).

***ALL**	All control blocks/tables
IDTABS	ID tables
SUBTCB	SUBTCB
ENACB	ENACB
***NONE**	No control blocks/tables

AVLTREE

You use this command to display the AVLTREE structure information.

AVLTREE
[**STRUCT = *ALL** / **MIB-CONN** / **MIB-APPL** / **MIB-ROUTE** / **IP-ROUTE** / **IP-ADDRCBP**]
[, **INFO = STRUCTURE** / **CB**]

STRUCT=
Defines which control blocks are to be output.

***ALL**	All structures
MIB-CONN	Connection-specific structure
MIB-APPL	Application-specific structure
MIB-ROUTE	Route-specific structure, arranged by MIB number
IP-ROUTE	Route-specific structure, arranged by IP addresses
IP-ADDRCBP	Address control block structure, arranged by IP addresses

INFO=
Defines whether control blocks and/or only the AVL structures are to be output.

STRUCTURE	Only the AVL structures
CB	AVL structures and the associated control blocks

BKPT

You use the BKPT command to switch to system mode (breakpoint).

BKPT

BROWSE

You use this command to return to output mode, i.e. paging mode, so that the data last output can be viewed again. The last output is displayed again. Information on the commands available under BROWSE can be obtained using HELP.
If a BROWSE command whose output is longer than one screen page is issued interactively, paging mode is entered automatically. In order to issue another ASTRID command, you must terminate paging mode with E (END).

BROWSE

CID

You use this command to output the entire CID TABLE in an edited format.

CID

CLEAR

You use this command to delete the ASTRID output written to SYSOUT (i.e. the contents of the ASTRID output buffer for the paging function).
ASTRID output that has been redirected to SYSLST is not affected by CLEAR.

CLEAR

CONSOLE

You use this command to switch command input from SYSDTA to console.
If output is switched to SYSOUT, it is also switched to console.

CONSOLE

DCMBASE

You use this command to output the basic structures of BCAM

DCMBASE
<u>*ALL</u> [**CB** = **<u>*NONE</u>** / ***ALL** / list-poss (6): **BASETAB** / **BTSBTAB** / **BCAMCB** / **CMDCB** / **STATE** / **TASKCB**] [,**LOG** = **<u>*NONE</u>** / ***ALL** / list-poss (6): **HERSLOG** / **SERSLOG** / **PERMTRACE** / **MEM-3-REL** / **MEM-5-REL** / **MEMO-CALL**] [,**AREA** = **<u>*NONE</u>** / ***ALL** / list-poss (8): **YDBFST** / **STACK** / **KA-SLOT** / **STARTPAR** / **MEM-3** / **MEM-5** / **BCAT-SIGNAL** / **CONA-SIGNAL**] [,**CMD** = **<u>*NONE</u>** / ***ALL** / list-poss (6): / **BCMOD** / **BCOPTION** / **BCSET** / **BCTIMES** / **MODIFY-BCAM-OPTIONS**,[**OPTION=...**] / ,**OPTION=*ALL** / list-poss (14): **LINE-OPTIONS** / **IP-RANGE** / **REMOTE-SERVER-PORTS** / **SERVER-PORTS** / **AUTOMATIC-ES-CREATE** / **MISCELLANEOUS** / **CMDFILE-PROCESSING** / **AVAILABILITY-OPTIONS** / **IP-OPTIONS** / **IPV6-OPTIONS** / **ISO-OPTIONS** / **SNMP-OPTIONS** / **DNS-OPTIONS** **MODIFY-DNS-ACCESS**,[**DNS-ACCESS=...**]] **DNS-ACCESS=...** ***ALL** / list-poss(3): **IP-ADDRESSES** / **IPV6-ADDRESSES** / **NAMES** **MODIFY-VLAN-ASSIGNMENT**,[**VLAN-ASSIGNMENT=...**]] **VLAN-ASSIGNMENT=...** ***ALL** / list-poss(2): **IP** / **IPV6**

<u>*ALL</u>
All control blocks, logging information, and other areas are output.

CB=
Defines which control blocks are to be output.
Apart from the values *NONE and *ALL, the remaining values can also be specified as a list (list-poss).

<u>*NONE</u>
DCM base table, BTSBTAB, BCAMCB, and CMDCBs are not output.

***ALL**
All control blocks, i.e. DCM base table, BTSBTAB, BCAMCB, and CMDCBs are output.

BASETAB
The DCM base table (YDYYBASE) is output.

BTSBTAB
The BTSBTAB is output.

BCAMCB
The BCAMCB is output.

CMDCB
CMDCBs are output.

STATE
The state of the data communication system is output in readable form.

TASKCB
The control blocks of transport task processes are output in readable form.

LOG=
Controls which logging information is to be output.
Apart from the values *NONE and *ALL, the remaining values can also be specified as a list (list-poss).

***NONE**
HERS entries, SERS entries, and the permanent trace are not output.

***ALL**
HERS entries, SERS entries, and the permanent trace are output.

HERSLOG
The HERSLOG entries are output.

SERSLOG
The SERSLOG entries are output.

PERMTRACE
The permanent trace is output.

MEM-3-REL
The release trace for ADM class-3 memory is output.

MEM-5-REL
The release trace for ADM class-5 memory is output.

MEMO-CALL
The trace on $GETMEM and $RETMEM by BCAM is output.

AREA=
Defines which (additional) areas are to be output.
Apart from the values *NONE and *ALL, the remaining values can also be specified as a list (list-poss).

***NONE**
The SIH stack area, the Kernel Activity slots, and the start parameters are not output.

***ALL**
The SIH stack area, the Kernel Activity slots, and the start parameters are output.

YDBFST
The SIH stack area is output.

STACK
The SIH stack area is output.

KA-SLOT
The Kernel Activity slots are output.

STARTPAR
The start parameters are output.

MEM-3
The ADM class-3 memory is output.

MEM-5
The ADM class-5 memory is output.

BCAT-SIGNAL
The BCAT-SIGNAL slot ranges are output.

CONA-SIGNAL
The CONA-SIGNAL slot ranges are output.

CMD=
Controls the BCAM parameters for which the generation commands are output. list-poss causes them to be output in list form. list-poss cannot be used for *NONE and *ALL.

***NONE**
No generation commands are output.

***ALL**
All available generation commands are output as a list.

BCMOD
The generating BCMOD commands are output.

BCOPTION
The generating BCOPTION commands are output for the BCAM operating options.

BCSET
The generating BCSET commands are output for the BCAM diagnostic parameters.

BCTIMES
The generating BCTIMES commands are output for the BCAM time intervals.

MODIFY-BCAM-OPTIONS,OPTION=...
The generating MODIFY-BCAM-OPTIONS commands or the corresponding BCOPTION commands are output for special BCAM commands.

OPTION=
Controls the BCAM options for which the generation commands are output. listposs causes them to be output in list form. list-poss cannot be used for *NONE and *ALL.

***ALL**
All available generation commands are output as a list.

LINE-OPTIONS
Outputs the BCOPTION commands for all line options.

IP-RANGE
Outputs the BCOPTION commands for all IP-RANGE settings.

REMOTE-SERVER-PORTS
Outputs the BCOPTION commands for all REMOTE-SERVER-PORT settings.

SERVER-PORTS
Outputs the BCOPTION commands for all SERVER-PORT settings.

AUTOMATIC-ES-CREATE
Outputs the BCOPTION commands for all AUTOMATIC-ES-CREATE settings.

MISCELLANEOUS
Outputs the MODIFY-BCAM-OPTIONS commands for all MISCELLANEOUS options.

CMDFILE-PROCESSING
Outputs the MODIFY-BCAM-OPTIONS commands for all CMDFILE-PROCESSING options.

AVAILABILITY-OPTIONS
Outputs the MODIFY-BCAM-OPTIONS commands for all AVAILABILITY-specific options.

IP-OPTIONS
Outputs the MODIFY-BCAM-OPTIONS commands for all IP-specific options.

IPV6-OPTIONS
Outputs the MODIFY-BCAM-OPTIONS commands for all IPv6-specific options.

ISO-OPTIONS
Outputs the MODIFY-BCAM-OPTIONS commands for all ISO-specific options.

SNMP-OPTIONS
Outputs the MODIFY-BCAM-OPTIONS commands for all SNMP-specific options.

DNS-OPTIONS
Outputs the MODIFY-BCAM-OPTIONS commands for all DNS-specific options.

MODIFY-DNS-ACCESS,DNS-ACCESS=...
Outputs the generating MODIFY-DNS-ACCESS commands for the BCAM-DNS access settings.

DNS-ACCESS=
Controls the BCAM-DNS access settings for which the generating commands are to be output. list-poss causes them to be output in list form. list-poss cannot be used for *NONE and *ALL.

***ALL**
Outputs all the available generation commands as a list.

IP-ADDRESSES
Outputs the MODIFY-DNS-ACCESS commands for all the BCAM-DNS-ACCESS settings which affect the IP addresses.

IPV6-ADDRESSES
Outputs the MODIFY-DNS-ACCESS commands for all the BCAM-DNS-ACCESS settings which affect the IPv6 addresses.

NAMES
Outputs the MODIFY-DNS-ACCESS commands for all the BCAM-DNS settings which affect the processor's namespace.

MODIFY-VLAN-ASSIGNMENT,VLAN-ASSIGNMENT=...
Outputs the generating MODIFY-VLAN-ASSIGNMENT commands for the BCAM VLAN-ASSIGNMENT settings.

VLAN-ASSIGNMENT=
Controls the BCAM VLAN-ASSIGNMENT settings for which the generating commands are to be output.

list-poss causes them to be output in list form. list-poss cannot be used for *NONE and *ALL.

***ALL**
Outputs all the available generation commands as a list.

IP
Outputs the MODIFY-VLAN-ASSIGNMENT comands for all the BCAM VLAN-ASSIGNMENT settings which affect the IP addresses.

IPV6
Outputs the MODIFY-VLAN-ASSIGNMENT comands for all the BCAM VLAN-ASSIGNMENT settings which affect the IPv6 addresses.

DIAG

This command is used to obtain a brief overview of the current state of BCAM.

DIAG

The output information corresponds to the following commands:

DCMBASE	CB=STATE
POOL	POOLCB,INFO=STATE
NET	*ALL,INFO=STATE
PORT	*ALL,CB=STATE,TYPE=*ALL
TRANS	INFO=STATE
MIB	TYPE=*ALL

END / E

You use this command to terminate the ASTRID program, the BCAM diagnostic function, or the paging mode of the BROWSE command.

END / **E**

EVID

You use this command to output the EVID tables and corresponding control blocks.

EVID
[, **INFO = LOGICAL** / **BINARY**]
[, **CB = IDTABS** / list-poss (4): ***ALL** / **IDTABS** / **GLOBAL-EGCB** / **LOCAL-EGCB** / **EGCBS** /***NONE**]

INFO=
Defines which information is to be output.

LOGICAL	Logical output
BINARY	Control blocks and tables

CB=
Defines which control blocks are to be output for INFO=BINARY.
The values can also be specified as a list (list-poss).

***ALL**	All control blocks/tables
IDTABS	ID tables
GLOBAL-EGCB	Global EGCBs
LOCAL-EGCB	Local EGCBs
EGCBS	All EGCBs
***NONE**	No control blocks/tables

FILE

You use this command to output the BCAM control files employed.

FILE
TYPE = *ALL / PROCESSOR-TABLE / SOCKETHOST-TABLE / APPLICATION-TABLE / FQDN-TABLE / SERVICES-TABLE

FILE=
Defines which files are to be output.

***ALL**
All BCAM control files which are used

PROCESSOR-TABLE
The processor file

SOCKETHOST-TABLE
The socket host file

APPLICATION-TABLE
The application file

FQDN-TABLE
The FQDN file

SERVICES-TABLE
The services file

HELP

You use this command to output information on the permitted commands.

HELP
[***CMDS**]
[<**cmdname**>]
[***ALL**]

***CMDS**
All permitted commands with brief explanation.

<cmdname>
The command description of the command defined with <cmdname>.

***ALL**
All permitted commands and the command descriptions of all commands.

INFOCB

You use this command to output the control blocks of the BCAM info service.

INFOCB

MAP

You use this command to output the control blocks of the BCAM mapping function.

MAP
INFO = *ALL / **CB** / **STATE**

INFO=
Defines which mapping information is to be output.

***ALL**
Information on CB and STATE

CB
MAPCB; hash table; host, application, and name entries

STATE
Status information in readable format.

MIB

You use this command to output information about the MIB in BCAM.

MIB
TYPE = *ALL / **ARP** / **IP** / **I6** / **ICMP** / **IGMP** / **ICM6** / **TCP** / **UDP** (...,...,...)

TYPE=
Defines which BCAM MIB information is to be output.

***ALL**
Information on the complete MIB in BCAM is output.

ARP
ARP information of the MIB in BCAM is output.

IP
IP information of the MIB in BCAM is output.

I6
IPv6 information of the MIB in BCAM is output.

ICMP
ICMP information of the MIB in BCAM is output.

IGMP
IGMP information of the MIB in BCAM is output.

ICM6
ICMPv6 information of the MIB in BCAM is output.

TCP
TCP information of the MIB in BCAM is output.

UDP
UDP information of the MIB in BCAM is output.

MODE

You use this command to modify the operating and control parameters.

MODE
[**INPUT** = **SYSDTA** / **CONSOLE**]
[, **OUTPUT** = list-poss (3): **CONSOLE** / **S**[**YS**]**OUT** / **S**[**YS**]**LST**]
[, **TMODE** = **PAGE** / **LINE**]
[, **FORMAT** = **LIST** / **TERMINAL**]
[, **CMDECHO** = **NO** / **YES**]
[, **TIME** = **ISO4** / **STCK** / ***ALL**]

INPUT=
Defines from where the ASTRID commands are to be read.

CONSOLE
ASTRID commands are read from the console.

SYSDTA
ASTRID commands are read from SYSDTA using RDATA.
The default setting when ASTRID is started is SYSDTA.

OUTPUT=
Defines where the output is to be sent.
A number of specifications can be made, in the form of a list; data is then output to all specified “devices”. If OUTPUT is specified, the existing setting is overridden and is replaced by the new setting.

CONSOLE
Data is output to the console.

SYSLST / **SLST**
Data is output to SYSLST.
SYSLST is the default setting when ASTRID is started.

SYSOUT / **SOUT**
Data is output to the terminal.

TMODE=
Defines the mode of terminal output.
If TMODE=PAGE results in difficulties with terminal output, you should try TMODE=LINE.

PAGE
Terminal output is in page mode.
PAGE is the default setting on starting ASTRID.

LINE
Terminal output is in line mode (roll up).

FORMAT=
Defines the format of the output to SYSLST.

LIST
Full list format (i.e. line width is 132 characters).
LIST is the default setting on starting ASTRID.

TERMINAL
The format of output to SYSOUT (terminal).
FORMAT=TERMINAL simplifies ONLINE processing using an EDITOR, which is subsequently planned. The disadvantage is a significant increase in the number of lines.

CMDECHO=
Defines whether a command entered is to be logged on the input device. All commands entered are logged to SYSLST if SYSLST is selected as the output device.

NO
Commands are not logged on the input device.
NO is the default setting on starting ASTRID.

YES
Commands are to be logged on the input device.

TIME=
Controls the output format of the time stamp in trace entries.

ISO4
The time stamp is output in the printable ISO4 format.
ISO4 is the default setting.

STCK
The time stamp is output in the binary STCK format.

***ALL**
The time stamp is output in both the ISO4 format and in STCK format.

NAME

You use this command to output the entire NAME ACCESS TABLE or a particular entry in the NAME ACCESS TABLE in edited format.

NAME

[***ALL** / <application-name> , **2ND** = ***ALL** / <application-name> , **2ND** = <host-name>]

***ALL**

| [, **TYP = *ALL** / list-poss(11): **HOST** / **SOCKET-HOST** / **ROUTE** / **LTGNAM** / **SOCKET-NAME** /

| **OSI-NAME** / **EVENTGROUP** / **ISO-TSEL** / **DEVNAM** / **AGGREGATION** / **DNS-NAME**

| **CMD** , ... / **APPLICATION** , ...]

| **CMD** , ...

| | [, **SUBTYP** = ***ALL** / list-poss(5): **HOST** / **PROCESSOR** / **NODE** / **APPL-GROUP**]

| **APPLICATION** , ...

| | [, **SUBTYP** = ***ALL** / list-poss(5): **DYNAMIC** / **$DYNAMIC** / **PREDEF** / **$PREDEF**]

***ALL**
Entries of the NAME ACCESS TABLE are output for all names.

<application-name 1..8>
Entries of the NAME ACCESS TABLE are output for all names that match name1 in the first 8 characters (application part of the NEA name).

2ND=
Defines the host part of the NEA name, if *ALL was not specified as the positional parameter:

***ALL**
No explicit definition of the host part in the NEA name.

<host-name 1..8>
Adds the host name to the first eight characters (<application-name>).

TYP=
Defines the names for which data is to be output if *ALL is specified as the positional parameter.
Apart from the value *ALL, the remaining values can also be specified as a list (list-poss).

***ALL**
For all names.

HOST
For all host names.

SOCKET-HOST
For all socket host names.

ROUTE
For all route names.

LTGNAM
For all line names.

SOCKET-NAME
For all socket names.

OSI-NAME
For all OSI names.

EVENTGROUP
For all event groups.

ISO-TSEL
For all ISO T selectors.

DEVNAM
For all device names.

AGGREGATION
For all link aggregations.

DNS-NAME
For all DNS names.

CMD
For all command names or those defined by SUBTYP.

SUBTYP=
Defines the command names (TYP=CMD) for which outputs are to be performed. With the exception of the value *ALL, the other values can be specified in list form (list-poss).

***ALL**
For all command names.

HOST
For all host (command) names.

PROCESSOR
For all processor (command) names.

NODE
For all node (command) names.

APPL-GROUP
For all application group (command) names.

APPLICATION
For all application names or those defined by SUBTYP.

SUBTYP=
Defines the application names (TYP=APPLICATION) for which outputs are to be performed. With the exception of the value *ALL, the other values can be specified in list form (list-poss).

***ALL**
For all application names

DYNAMIC
For all application names of dynamically opened applications whose names do not begin with the “$” character.

$DYNAMIC
For all application names of dynamically opened applications whose names begin with the “$” character.

PREDEF
For all application names of generated applications whose names do not begin with the “$” character.

$PREDEF
For all application names of generated applications whose names begin with the “$” character.

ND

You use this command to output the IPv6 Neighbor Discovery control blocks.

ND
[**CB = *ALL** / **OWN-ADDRESS** / **PREFIX-LIST** / **ROUTER-LIST** / **NEIGHBOR-CACHE** / **DESTINATION-CACHE** / **MESSAGE-BUFFER**]

CB=
Defines which IPv6 Neighbor Discovery-related information is output.

***ALL**
All available information.

OWN-ADDRESS
Own IPv6 addresses.

PREFIX-LIST
The IPv6 prefix list(s).

ROUTER-LIST
The IPv6 router list(s).

NEIGHBOR-CACHE
The IPv6 neighbor cache(s).

DESTINATION-CACHE
The IPv6 destination cache(s).

MESSAGE-BUFFER
The ICMPv6 message buffer (contains the last received ICMPv6 Neighbor Discovery message)

NET / L3

You use this command to output all NETCBs or one specific NETCB.

NET / **L3**
[***ALL** / <line-name 1..8>]
[, **INFO** = list-poss (2): ***NETCB*** / **STATE**]

***ALL**
Displays information for all NETCBs.

<line-name 1..8>
Displays information for the NETCB of the line called <line-name>.

INFO=
Defines what information is to be output.
Both values may also be specified as a list (list-poss).

NETCB
The NETCB.

STATE
The network state in readable form.

POOL

You use this command to output control blocks and storage areas of BCAM buffer management.

POOL
[***ALL** / **POOLCB** / **LIST** / **ALLRES** / **ALLPAG** / **RESHC** / **RESDC** / **PAGHC** / **PAGDC**]
[, **INFO** = ***ALL** / list-poss (4): **CB** / **BITMAP** / **BUFFER** / **STATE**]

***ALL**
All control blocks and storage areas of buffer management are output.

POOLCB
Only the POOLCB is output.

ALLRES
The resident header and data cells are output.

ALLPAG
The pageable header and data cells are output.

RESHC
The resident header cells are output.

RESDC
The resident data cells are output.

PAGHC
The pageable header cells are output.

PAGDC
The pageable data cells not fixed by BCAM are output.

LIST
The list pool is output.

INFO=
Defines which parts of the pool specified by the positional parameter are to be output.Apart from the value *ALL, the remaining values can also be specified as a list (list-poss).

***ALL**
SUBCB, BITMAP, and BUFFER.

CB
The SUBCB.

BITMAP
The BITMAP and the BUFFER-ADDRESS-LIST.

BUFFER
The storage area.

STATE
The pool state in readable form (only applies if POOLCB or *ALL is specified).

PORT / L2

You use this command to output the control blocks (PORTCB, LEPCB, LINECB, LDEVCB) and trace entries of Layer 2.

PORT / **L2**
[***ALL** / <line-name>]
[, **TYPE** = ***ALL** / list-poss (4): **N-PORT** / **V-PORT** / **G-PORT** / **A-PORT**]
[, **DEVICE** = ***ALL** / list-poss (3): **OUTPUT** / **INPUT** / **ATTENTION**]
[, **CB** =***ALL** / ***TOTAL** / ***STD** / list-poss (8): **PORTCB** / **LEPCB** / **LINECB** / **TRACE** / **STATE** / **VCA-INFORMATION** / **HNC-CONFIGURATION** / **STACK-AREA** / **IDAW-BUFFER**]

***ALL**
Control blocks are to be output for all PORTs.

<line-name 1..8>
Control blocks are to be output for the PORT identified by <line-name>.

TYPE=
Defines the PORTs for which data is to be output, if *ALL is specified as the positional parameter.
Output is performed for a port if it is selected by the TYPE parameter.
Apart from the value *ALL, the remaining values can also be specified as a list (list-poss).

***ALL**
For all PORTs.

N-PORT
For all N-PORTs (LAN-PORTs).

V-PORT
For all V-PORTs (VLAN-PORTs)

G-PORT
For all G-PORTs (VLAN-PORTs)

A-PORT
For all A-PORTs (AGGREGATION-PORTs)

DEVICE=
Defines the device for which data is to be output, if LINECB is specified in the CB keyword parameter.
Apart from the value *ALL, the remaining values can also be specified as a list (list-poss).

***ALL**
For all devices.

OUTPUT
For the output device.

INPUT
For the input device.

ATTENTION
For the device that accepts attention interrupts.

CB=
Defines which control blocks are to be output.
Apart from the values *ALL, *TOTAL and *STD, the remaining values can also be specified as a list (list-poss).

***ALL**
All control blocks (i.e. the PORT-CB) and the IDAW buffers.

***STD**
The state, all control blocks, HNC configuration, VCA information and the IDAW buffers.

***TOTAL**
The sets of *STD, the stack area and the port trace.

PORTCB
The PORTCB.

LEPCB
The LEPCB.

LINECB
The LINECB or LINECBs.

TRACE
The port trace.

STATE
The port state in readable form.

VCA-INFORMATION
VCA information.

HNC-CONFIGURATION
HNC configuration information.

STACK-AREA
Stack area.

IDAW-BUFFER
IDAW buffers.

RD

You use this command to output the control locks of the IPv4 Router Discovery.

RD
[**CB = *ALL** / **OWN-ADDRESS** / **PREFIX-LIST**]

CB=
Controls which information regarding IPv4 Neighbor Discovery is output.

***ALL**
All available information

OWN-ADDRESS
The local IPv4 addresses

PREFIX-LIST
The IPv4 prefix list(s)

RS

You use this command to output all tables relevant to the routing service, or specific routing service tables.

RS

[**SIGHT** = **NET** / **ES** / **ROUTING-PROTOCOL** / **QUEUES**]

[, **QUEUE** = ***ALL** / list-poss (10): **ADDRESS-TYPE** / **UNUSED-ROUTE** / **RELEASE-ROUTE** / **RELEASE-ADDR-P** / **BCOUT-DELAY** / **OSPF-ROUTER** / **ARP-FLOW-CTRL** / **ISO-CACHE** / **FIREWALL** / **UNKOWN-GATE**]

[, **ATYPE** = ***ALL** / list-poss (4): **LAN** / **OSI** / **IP** / **IPV6**]

[, **CB** = ***ALL** / list-poss (13): **HOSTCB** / **LAGGCB** / **LINKCB** / **LSAPCB** / **NODECB** / **ROUTECB** / **PROCB** / **GATEWAY-TABLE** / **ARP-CACHE** / **ISO-CACHE** / **FIREWALL-TABLE** / **IP-RANGE-TABLE** / **LDEVCB**]

[, **INFO** = ***ALL** / **CB** / **STATE** / **CMD** / **MULTICAST**]

[, **RANGE** = ***ALL** / list-poss (11): **AGGREGATION** / **LAGG** / **DEVICE** / **LDEV** / **LINE** / **LI** / **LSAP** / **LINK** / **ROUTER** / **TUNNEL**]

[, **AGGREGATION** = ***ALL** / <aggregation-name>]

[, **DEVICE** = ***ALL** / <device-name>]

[, **HOST** = ***ALL** / <host-name>]

[, **LINE** = ***ALL** / <line-name>]

[, **PROCESSOR** = ***ALL** / <processor-name>]

[, **ROUTE** = ***ALL** / <rout-name>]

[, **NODE** = ***ALL** / <node-name>]

SIGHT=
Defines the sequence in which the control blocks are to be output (i.e. the search algorithm).

NET

- all HOSTCBs
- all LAGGCBs
- all LSAPCBs
- all LDEVCBs
- all NODECBs
- all PROCBs
- all LINKCBs

In this case, all local ROUTECBs are output for each LINKCB and, for each ROUTECB acting as a gateway or router, all ROUTECBs running via the gateway/router are output.

ES
All PROCBs with the associated ROUTECBs.

ROUTING-PROTOCOL

- Contents of the ACTIVATION-CONTROL-QUEUE
- Contents of the LIVETIME-CONTROL-QUEUE
- Contents of the ICMP-ECHO-CONTROL-QUEUE
- Contents of the ISO9542-CONTROL-QUEUE

QUEUES

- Contents of the queue selected with the QUEUE= parameter.

QUEUE=
Defines which release queues are to be output.
Apart from the value *ALL, the remaining values can also be specified as a list (list-poss).

***ALL**
All release queues

ADDRESS-TYPE
All ROUTECBs in the queue for the same address type as the one selected with the ATYPE= parameter.

UNUSED-ROUTE
All ROUTECBs in the UNUSED-ROUTE queue

RELEASE-ROUTE
All ROUTECBs in the RELEASE-ROUTE queue

RELEASE-ADDR-P
All ROUTECBs in the RELEASE-ADDRCB-P queue

BCOUT-DELAY
All ROUTECBs in the BCOUT-DELAY queue

OSPF-ROUTER
All ROUTECBs in the OSPF-ROUTER queue

ARP-FLOW-CTRL
All ROUTECBs in the ARP-FLOW-CTRL queue

ISO-CACHE
All ISO caches

FIREWALL
All ROUTECBs in the FIREWALL queue

UNKNOWN-GATE
all ROUTECBs in theUNKNOWN-GATE queue

ATYPE=
Defines the (network) address types for which queues are to be output.

This parameter is only evaluated if QUEUE=ADDRESS-TYPE.
Apart from the value *ALL, the remaining values can also be specified as a list (list-poss).

***ALL**
For all address types

LAN
For LAN addresses

OSI
For OSI network addresses

IP
For IP network addresses

IPV6

For IPv6 network addresses

CB=
Defines which control blocks are to be output.
Apart from the value *ALL, the remaining values can also be specified as a list (list-poss).

***ALL**
All control blocks.

HOSTCB
Host control blocks.

LAGGCB
Control blocks of the link aggregations.

LINKCB
LINKCB control blocks.

LSAPCB
Line control blocks.

NODECB
Node control blocks.

PROCB
Processor control blocks.

ROUTECB
Route control blocks.

GATEWAY-TABLE
Table of IP/ISO gateways.

ARP-CACHE
Contents of the ARP cache

ISO-CACHE
Contents of the ISO cacheSOCKET-HOSTNAME-ADDRESS-TABLE

FIREWALL-TABLE
Table of firewall entries

IP-RANGE-TABLE
Table of IP address ranges

LDEVCB
Control block of the device

INFO=
Defines the scope of the data to be output.

***ALL**
Corresponds to STATE and CB.

CB
The control block is output.

STATE
Information on the state, profile, addresses.

CMD
The command information is output.

MULTICAST
The L2 MULTICAST address list is output.

RANGE=
When SIGHT=ES, defines which control blocks are to be output for a route.
Apart from the value *ALL, the remaining values can also be specified as a list (list-poss).

***ALL**
All control blocks.

AGGREGATION / **LAGG**
The LAGGCB assigned to the aggregation.

DEVICE / **LDEV**
LDEVCBs assigned to the devices.

LINE / **LI** / **LSAP**
The LSAPCB assigned to the route.

LINK
The LINKCB assigned to the route.

ROUTER
The router ROUTECB assigned to the route.

TUNNEL
The tunnel ROUTECB assigned to the route.

AGGREGATION=
Controls which link aggregation outputs are made provided CB=LAGGCB is specified.

***ALL**
For all link aggregations.

<aggregation-name 1..8>
For the link aggregation determined with the link aggregation name.

DEVICE=
Defines for which devices data is to be output, provided CB=LDEVCB is specified.

***ALL**
For all devices.

<device-name 1..8>
For the device defined by name.

HOST=
Defines for which hosts data is to be output, provided CB=HOSTCB is specified.

***ALL**
For all hosts.

<host-name 1..8>
For the host defined by name.

LINE=
Defines the lines for which data is to be output, provided CB=LSAPCB is specified.

***ALL**
For all lines.

<line-name 1..8>
For the line defined by name.

PROCESSOR=
Defines the processors for which data is to be output, provided CB=PROCB is specified.

***ALL**
For all processors.

<processor-name 1..8>
For the processor defined by name.

ROUTE =
Defines the routes for which data is to be output, provided CB=ROUTECB or CB=PROCB is specified.

***ALL**
For all routes.

<rout-name 1..8>
For the route defined by name.

NODE =
Defines the nodes for which data is to be output, provided CB=NODECB is specified.

***ALL**
For all nodes.

<node-name 1..8>
For the node defined by name.

SLST

You use this command to switch output to SYSLST (default setting is SYSLST).

SLST

The command should be replaced by the MODE OUTPUT=SYSLST command.

SM2

You use this command to output the BCAM-specific SM2 control blocks.

SM2

SOUT

You use this command to switch output to SYSOUT (default setting is SYSLST).

SOUT

The command should be replaced by the MODE OUTPUT=SYSOUT command.

STD

You use this command to output the following selection of information.

STD

The output information corresponds to the following commands:

DCMBASE	CB=(*ALL,STATE),LOG=*ALL,AREA=*ALL,CMD=*ALL,OPTION=*ALL, DNS-ACCESS=*ALL,VLAN-ASSIGNMENT=*ALL
NET	*ALL,INFO=(NETCB,STATE)
PORT	ALL,CB=*STD,TYPE=*ALL,DEVICE=*ALL
TRACE	*ALL
POOL	*ALL,INFO=*ALL
TRANS	INFO=(CB,CIDTAB),CB=*ALL
APID	INFO=BINARY,CB=IDTABS
EVID	INFO=BINARY,CB=IDTABS
TSKID	INFO=BINARY,CB=IDTABS
POOL	*ALL,INFO=*ALL
TRANS	INFO=(CB,CIDTAB),CB=*ALL
NAME	*ALL,TYP=*ALL,SUBTYP=*ALL

TOTAL

You use this command to output all control blocks and data areas.

TOTAL

The output information corresponds to the following commands:

DCMBASE	CB=(*ALL,STATE),LOG=*ALL,AREA=*ALL,CMD=*ALL,OPTION=*ALL,DNS-ACCESS=*ALL,VLAN-ASSIGNMENT=*ALL
NET	*ALL,INFO=(NETCB,STATE)
PORT	*ALL,CB=(*STD,STACK),TYPE=*ALL,DEVICE=*ALL
TRACE	*ALL
POOL	*ALL,INFO=*ALL
TRANS	INFO=(CB,CIDTAB),CB=*ALL
APID	INFO=BINARY,CB=IDTABS
EVID	INFO=BINARY,CB=IDTABS
TSKID	INFO=BINARY,CB=IDTABS
NAME	*ALL,TYP=*ALL,SUBTYP=*ALL
ADDRCB	CB=*ALL,ATYPE=*ALL
RS	SIGHT=NET,CB=*ALL,INFO=*ALL
RS	SIGHT=QUEUES,QUEUE=(UNUSED-ROUTE, ADDRESS-TYPE,ARP-FLOW-CTRL,OSPF-ROUTER,BCOUT-DELAY) ,CB=*ALL,INFO=STATE
RS	SIGHT=QUEUES,QUEUE=(RELEASE-ROUTE,RELEASE-ADDR-P),CB=*ALL,INFO=*ALL
RS	SIGHT=QUEUES,QUEUE=FIREWALL,CB=*ALL,INFO=*ALL
RS	SIGHT=QUEUES,QUEUE=UNKNOWN-GATE,CB=*ALL,INFO=*ALL
RS	SIGHT=QUEUES,CB=*ALL,INFO=*ALL
RS	SIGHT=ROUTING-PROTOCOL,CB=*ALL,INFO=STATE
FILE	TYPE=*ALL
AVLTREE	STRUCT=*ALL,INFO=STRUCTURE
ND	CB=*ALL
RD	CB=*ALL

```
MAP

INFOCB

SM2

MIB             TYPE=*ALL
```

TRACE / TRC

You use this command to output information on the DCMTRACE function and/or one or more traces.

TRACE / **TRC**
[***ALL**]
[<trace-name>]
[list-poss(24): **TRACE**]
[**PORT**]
[**A-PORT**]
[**G-PORT**]
[**V-PORT**]
[**NET**]
[**ADM**]
[**BASIC**]
[**BUF**]
[**BCAM**]
[**TRANS**[**PORT**]]
[**REM**]
[**LOC**]]
[**CON**[**HAND**]]
[**MAP**]
[**MGMT**]
[**INFO**]
[**SM2**]
[**SNMP**]
[**FILE**]
[**IPSEC**]
[**COM-IPSEC**]
[**INTERFACE**]
[**LOOPBACK**]
[**EXIT**]
[**TSAP**]

[**CRYPT-COM**]

[**CRYPT-PORT**]

[**ONETSTOR**]

[**TIAM**]

[**VTSU-B**]

[, **INFO** = ***DISPLAY** / ***SAVING-FILE**]

***ALL**
All control blocks of the DCMTRACE function and all traces are to be output.

<trace-name>
The trace entry and trace buffer for the trace called <trace-name> are to be output.
The name may be fully qualified (e.g. “DCM.BCAM.CON”) or partially qualified (e.g. “DCM.BCAM.PORT.”).

TRACE
The trace entry and trace buffer for the internal trace of the DCMTRACE function are to be output.
(Trace name: $TRACE).

PORT
The trace entry and trace buffer for all port traces are to be output.
(Trace name: DCM.BCAM.PORT.<line-name>).

A-PORT
The trace entry and the trace buffers for the BCAM A-PORT-specific traces are to be output.
(Trace name: DCM.BCAM.A-PORT.<aggregation-name>).

G-PORT
The trace entry and the trace buffers for the BCAM-G-PORT-specific traces are to be output.
(Trace name: DCM.BCAM.G-PORT.<device-name>).

V-PORT
The trace entry and the trace buffers for the BCAM-V-PORT-specific traces are to be output.
(Trace name: DCM.BCAM.PORT.V.<vlan-line-name>).

NET
The trace entry and trace buffer for the network trace are to be output.
(Trace name: DCM.BCAM.NET).

ADM
The trace entry and trace buffer for the ADM trace are to be output.
(Trace name: DCM.BCAM.ADM).

BASIC
The trace entry and trace buffer for the transport basis trace are to be output.
(Trace name: DCM.BCAM.BASIC).

BUF
The trace entry and trace buffer for the buffer trace are to be output.
(Tracename: DCM.BCAM.BUF).

BCAM
The trace entry and trace buffer for all BCAM traces are to be output.
(Trace name: DCM.BCAM.<..>).

TRANSPORT / TRANS
The trace entry and trace buffer for the transport traces are to be output.
(Trace name: DCM.BCAM.TRANS and DCM.BCAM.LOOPBACK).

REM
The trace entry and trace buffer for the remote transport trace are to be output.
(Trace name: DCM.BCAM.TRANS).

LOC
The trace entry and trace buffer for the local transport trace are to be output.
(Trace name: DCM.BCAM.LOC).

CONHAND / CON
The trace entry and trace buffer for the connection trace are to be output.
(Trace name: DCM.BCAM.CON).

MAP
The trace entry and trace buffer for the mapping trace are to be output.
(Trace name: DCM.BCAM.MAP).

MGMT
The trace entry and trace buffer for the management trace are to be output.
(Trace name: DCM.BCAM.MGMT).

INFO
The trace entry and trace buffer for the info service trace are to be output.
(Trace name: DCM.INFO).

SM2
The trace entry and trace buffer for the BCAM-SM2-specific trace are to be output.
(Trace name: DCM.BCAM.SM2).

SNMP
The trace entry and trace buffer for the BCAM-SNMP-specific trace are to be output.
(Trace name: DCM.BCAM.SNMP)

FILE
The trace entry and trace buffer for the BCAM-FILE-specific trace are to be output.
(Trace name: DCM.BCAM.FILE).

IPSEC
The trace entry and trace buffer for the BCAM-IPSec-specific trace are to be output.
(Trace name: DCM.BCAM.IPSEC).

COM-IPSEC
The trace entry and trace buffer for the IPSec-specific trace are to be output.
(Trace name: IPSEC.COM).

INTERFACE
The trace entry and the trace buffers for the INTERFACE-specific trace are to be output.
(Trace name: DCM.BCAM.INTERFACE).

LOOPBACK
The trace entry and the trace buffers for the LOOPBACK-specific trace are to be output.
(Trace name: DCM.BCAM.LOOPBACK).

EXIT
The trace entry and the trace buffers for the EXIT-specific trace are to be output.
(Trace name: DCM.BCAM.EXIT).

TSAP
The trace entry and trace buffer for the BCAM-TSAP-specific trace are to be output.
(Trace name: DCM.BCAM.TSAP).

CRYPT-COM
The trace entry and the trace buffers for the CRYPT-specific trace are to be output.
(Trace name: CRYPT.COM).

CRYPT-PORT
The trace entry and the trace buffers for the CRYPT-PORT-specific traces are to be output.
(Trace name: CRYPT-PORT.<crypt-port-name>).

ONETSTOR
The trace entry and the trace buffers for the ONETSTOR-specific trace are to be output.
(Trace name: ONETSTOR.COM).

TIAM
The trace entry and the trace buffers for the TIAM-specific trace are to be output.
(Trace name: TIAM.COM).

VTSU-B
The trace entry and the trace buffers for the VTSU-B-specific traces are to be output.
(Trace name: VTSU.B.COM).

INFO=
Specifies how the information is to be output.

***DISPLAY**
The information is output on the monitor or to a SYSLST file in the ASTRID format supported to date.

***SAVING-FILE**
The information is output to a file in the Saving file format. The output file contains the following name, which is formed in the same way as for the Saving files to date.
File name: S.DCTRAC.AST.<yyyhhmmss> (Julian date + time)

TRANS / L4

You use this command to output control blocks (ACONCB1, ACONCB2, ACONCB3, APPCB, APPCB2, ENACB, DISTAB, EGGCB, EGLCB, EVOL) and/or access tables (CIDTAB, PORT#TAB) of Layer 4.

TRANS / L4

[**APPLICATION** = (**NEA** ,<nea-name 1 ..16>) / (**OSI** ,<osi-name 1 .. 78>) / (**SOCKET** ,<socket-name 1 ..78>)]

[, **HOST** = <host-name 1 .. 8>]

[, **PARTNER** = (**NEA** ,<nea-name 1 .. 16>) / (**OSI** ,<osi-name 1 .. 78>) / (**SOCKET** ,<socket-name 1 .. 78>)]

[, **ES** = <processor-name 1 .. 8>]

[, **INFO** = ***ALL** / list-poss (5): **CB** / **STATE** / **CIDTAB** / **PORT#TAB** / **PORT#USE**]

[, **CB** = ***ALL** / list-poss (12): **GAPCB** / **EGCB** / **EGGCB** / **EGLCB** / **EVOL** / **ACONCB** / **A** / **ACONCB1** / **A1** / **ACONCB2** / **A2** / **APPCB** / **AP** / **APPCB2** / **AP2** / **ENACB** / **SUBTCB** / **DISTAB** / **MULTICAST**]

[,**TASKID** / **TID = <tskid>**]

[, **APID** = <apid>]

[, **CID** = <cid>]

[, **EVENTGROUP** = <eg-name>]

APPLICATION=
Defines the applications for which data is to be output.
APPLICATION is only evaluated if CB and/or *ALL is specified in the INFO parameter. If APPLICATION is not specified, data is output for all applications.

(NEA,<nea-name 1..16>)
You use the first eight characters of the application name and the first eight characters of the host name (each should be one to eight alphanumeric characters, left-aligned, and padded with blanks) as the NEA name. If the application name is shorter than eight characters, then the NEA name must be specified as a C string.

(OSI,<osi-name 1..78>)
For the application with OSI name <osi-name>.
<osi-name> is up to 78 characters long.

(SOCKET,<socket-name 1..78>)
For the application with SOCKET name <socket-name>.
<socket-name> is up to 78 characters long.

HOST=<host-name 1..8>
If specified, defines that data is only to be output for applications in the host called hostname.

PARTNER=
Defines the partners for which data is to be output. If PARTNER is not specified, data is output for all partners.

(NEA,<nea-name 1..16>)
For the partner with the NEA name.
You use the first eight characters of the application name and the first eight characters of the host name (each

should be one to eight alphanumeric characters, left-aligned, and padded with blanks) as the NEA name. If the application name is shorter than eight characters then the NEA name must be specified as a C string.

(OSI,<osi-name 1..78>)
For the partner with the OSI name.
<osi-name> is up to 78 characters long.

(SOCKET,<socket-name 1..78>)
For the partner with the SOCKET name.
<socket-name> is up to 78 characters long.

ES=<processor-name>
Defines that data is only to be output for partners in the end system called <processor-name>.

INFO=
Defines what information is to be output: Apart from the value *ALL, the remaining values can also be specified as a list (list-poss).

***ALL**
All information (i.e. state, control blocks, tables).

CB
Control blocks.

STATE
The application and connection state in readable form.

CIDTAB
The CID tables.

PORT#TAB
PORT#CB and PORT# tables

PORT#USE
Table of the port numbers occupied by an application

CB=
Defines which control blocks are to be output. CB is only evaluated if CB or *ALL is specified in the INFO parameter. Apart from the value *ALL, the remaining values can also be specified as a list (list-poss).

***ALL**
All control blocks.

ACONCB / **A**
The ACONCB1, ACONCB2 and ACONCB3 (control block 1, 2 and 3 for the connection endpoint).

ACONCB1 / **A1**
The ACONCB1 and ACONCB3 (control block 1 and 3 for the connection endpoint).

ACONCB2 / **A2**
The ACONCB2 (control block 2 for the connection endpoint).

GAPCB
The GAPCB (control block for the application group).

EGCB
The EGGCB and EGLCB (global and local control block for the event group) and the EVOL (event list).

EGGCB
The EGGCB (global control block for the event group).

EGLCB
The EGLCB (local control block for the event group).

EVOL
The EVOL (event list).

APPCB / **AP**
The APPCB (control block 1 for the application).

APPCB2 / **AP2**
The APPCB2 (control block 2 for the application).

ENACB
The ENACB (control block for the application logon).

SUBTCB
The SUBTCBs (control block for tasks)

DISTAB
The distribution table.

MULTICAST
ENACBs for which MULTICAST groups were registered, global and local MULTICAST-CBs and MULTICAST LINKCBs.

TASKID/TID=<tskid>
Defines that data is only to be output for the applications of the task with task ID <tskid>.ID or TASKID is only evaluated if CB and/or *ALL is specified in the INFO parameter. If TID or TASKID is not specified, data is output for the applications of all tasks.
TID/TASKID and APID supplement each other: data is output for an application if it is selected by the TID/TASKID parameter and/or by the APID parameter.

APID=<apid>
Defines that data is only output for the application to which the APID <apid> belongs. APID is only evaluated if CB and/or *ALL is specified in the INFO parameter. If APID is not specified, data is output for all applications.
TID/TASKID and APID supplement each other: data is output for an application if it is selected by the TID/TASKID parameter and/or the APID parameter.

CID=<cid>
Defines the CID for which ACONCBs are to be output. CID is only evaluated if ACONCBs are specified in the CB parameter.

EVENTGROUP=<eg-name>
Defines that data is only to be output for the event group specified with <eg-name>.

TSKID

You use this command to output the task ID tables and corresponding control blocks.

TSKID
[, **INFO = LOGICAL** / **BINARY**] [, **CB =IDTABS** / list-poss (5): ***ALL** / **IDTABS** / **SUBTCB** / ***NONE**]

INFO=
Defines which information is to be output.

LOGICAL	Logical output
BINARY	Control blocks and tables

CB=
Defines which control blocks are to be output for INFO=BINARY.
The values can also be specified as a list (list-poss).

***ALL**	All control blocks/tables
IDTABS	ID tables
SUBTCB	SUBTCB
***NONE**	No control blocks/tables

TEDDY

The TEDDY program is used to evaluate BCAM traces. TEDDY (**T**race **E**ntry an**d** **D**ispla**y**) opens a trace input file and issues the edited trace entries either on the terminal or in the file. The input file is generated with the DCDIAG ....,MODE=SAVE or /SET-COMMUNICATION-TRACE command.
The following data can be issued:

- indices of all the current trace entries and the number of records.
- the edited trace entries
  (at terminal output there is a browse and search function)
- number of entries and the time of the first and last entry

The TEDDY program is started at the terminal using the call
`START-TEDDY [MONJV=MJV.TEDDY]`

If desired, a MONJV to monitor the program status can be activated on starting TEDDY with the START-TEDDY command. Following a successful start, the user is asked to enter a command.

The command is entered in the form:
`command name operand1, operand2, ...`

If there is an error in the command or the parameter, this is displayed at the terminal as an error message, otherwise control is passed to the last subroutine and the command is processed.

The following commands are available:

Command	Function
BROWSE	Continuation of the last DISP command
DATIN	Output of the versions of the trace producers
DISP	Output of the edited trace entries
END	End TEDDY
HELP	Output of the syntax of the individual commands
LIST	Index of all the traces contained in the input file and the number of records in the input file
PRINT	Output of the edited trace entries to SYSLST
SLST	Assignment of a SAM file
TRACE	Number of entries in the input file. Time of the first and last entries. The trace to be edited was specified as the <tracename> operand in the command

TEDDY commands

Description of TEDDY commands

The following is a list of the TEDDY commands in alphabetical order.

BROWSE

Continuation of the last DISP command

BROWSE

DATIN

Selection of the trace file to be evaluated.
The version number of the trace producers are stored in the first record in the saving file. These are in the following order:

1. BCAM
2. DCAM
3. DCMB
4. OSD
5. CMX (if available)

The version number consists of 4 characters (xyab) according to the representation Vxy.ab. If no parameters are entered, information on the current input file is provided.

If DATIN is specified without parameters, the version numbers are displayed for a file that has already been assigned.

DATIN
[<filename> / <qualifier>]

<filename>
Fully qualified filename according to BS2000 conventions (max. 41 characters)

<qualifier>
The files are shown on the terminal using wildcards ("*"). The selection is made with the help of a list of the corresponding figures (see FSTAT).

Error messages for the DATIN command

Message	**Meaning**
NO TRACE-FILE SPECIFIED USE DATIN FIRST	No file name specified; use DATIN first
FILE NOT FOUND	The file name entered does not exist
WARNING: NO FILE CHOSEN	DATIN selection menu was exited using "X" (EXIT)
ERROR WHILE OPENING: <filename> / ERROR WHILE READING: <filename>	File error on opening or reading the file <filename>
POSSIBLE INCONSISTENCY BECAUSE OF FILE ERROR	Read error, possibly because the file is not FCBTYPE=PAM
ERROR WHILE ALLOCATING MEMORY	Error on saving
ERROR IN HEADER SET BCA/ DCM-DIAG DETECTED	An error was detected on analyzing the header record of the trace file.

DISP

Output on SYSOUT of the trace entries edited in the TRACE command. A browse or search function is supported.

DISP
- <n> / -- / + <n> / ++ / .
f ‘ <string> ‘ / ft ‘ <hhmmss> ‘ / fb / ff
c / help / 0

Browse function

-<n>
Scroll back by n trace records.
If n is not specified, scroll back one page.

--
Position at start of file

+<n>
Scroll forward by n trace records.
If n is not specified, scroll forward one page.

++
Position at end of file

.
Repeat the current screen

Search function

f‘<string>‘

The specified string is searched for forwards from the current position.
The current position of the first complete trace record on the current page.
The specified string is searched for in the hex and text area.
<string> = all printable characters

ft‘<hhmmss>‘
The specified time stamp is searched for from the current position.
Finds the time stamp that is greater than or equal to the one specified.
Format: hhmmss (hour/minute/second)
All the left-justified entries can be omitted!
Not possible to enter milliseconds!

fb
Search function backward from the beginning of the current position.

ff
Search function forward from the beginning of the current position.

Other functions

c
Shows information on the existing traces.
Provides names of all the trace files involved in the evaluation and the time stamp of the first and last entries.

help
Provides help on all the functions in DISP

0
Ends the output and switches to the TEDDY command mode

Error messages for DISP command

Message	Meaning
ERROR WHILE OPENING: <filename>	File error when opening the file <filename>
TRACE-END	End of the trace file reached
NO SEARCH-STRING SPECIFIED	A search string with <string> must be entered before the search function can be used
NO MATCH FOUND	Term searched for cannot be found
UNKNOWN COMMAND	Unknown or false command entered

END

Terminates TEDDY

END

HELP

The HELP command offers assistance in entering the TEDDY command.
HELP plus the specification of a command name provides the syntax of the command.

HELP
[<cmdname>]

<cmdname>
Specification of the command for which the syntax is to be represented.
HELP without the specification of a command name lists all the TEDDY commands.

LIST

Output of a list of the existing traces in the input file and the number of records contained in each. A record can contain several trace entries.

LIST

Error messages for the LIST command

Message	**Meaning**
NO TRACE-FILE SPECIFIED USE DATIN FIRST	DATIN <filename> must be entered before the LIST command

PRINT

Output of the trace entries on SYSLST edited using the TRACE command. If the command SLST <filename> was entered, the edited trace entries were written into the specified file.

PRINT
[**format** = **printer** / **terminal**]

printer
Output format 62 lines/32 byte (DEFAULT)

terminal
Output format 24 lines/20 columns
This output mode is recommended when the output file is to be edited further on the terminal.

SLST

This command assigns SYSLST to an SAM output file. In the same way the command can be used to re-establish the primary allocation. The current allocation is specified by the command SLST without parameters.

SLST
<filename> / **PRIMARY**

<filename>
Allocation of an output file with fully qualified file name according to BS2000 conventions.

PRIMARY
The primary allocation is reestablished.

TRACE

TRACE selects the trace or traces to be evaluated. An input file must be allocated before trace is called. The time of the first and last entries and the total number of entries is output by default for the specified trace name. In the same way all the trace entries for this trace name are edited. An OR connection by means of repeated use of the TRACE command with the ADD parameter is possible. Optionally, search strings with distance can be specified. Several strings mean an AND connection of the trace. Letters are changed to upper case. With the TIM1 and TIM2 operands it is possible to view only the trace entries of a particular time period.
TRACE without parameters outputs all the names of the traces involved in the evaluation and the time stamp for the first and last entries if the TRACE command has already been used.

TRACE
<trace-name,...>
[, <string> , [<distance>] ,..]
[, TIM1 = <time>] [, TIM2 = <time>]
[, ADD = <Y / N>]

<trace-name>
Fully or partly qualified trace name of the trace to be edited

- DCM.BCAM can be omitted and TEDDY completes the trace name if it does not begin with '$' or 'DCM',
- * (Wildcard) stands for all names,
- Several trace names can be specified,
- Time shifts of the time stamp of the trace entries possible using "+hhmmssttt" or "hhmmssttt" (after selection),
- All left-justified time specifications are optional. This shift is cut from the trace name again before selection, e.g. TRACE CON+05001 (shift of 5 seconds, 1 millisecond "in the future").

<string>
Specification of a hexadecimal (x='13c47f3d') or char search string (c'abc')

<distance>
A distance behind the string can be specified in the form of a hexadecimal or decimal number.

TIM1=...
Lower time limit. If this information is not specified, the beginning is the starting point. Trace entries with TIM1 as the time stamp are also edited.

TIM2=...
Upper time limit. If this information is not specified, the editing continues to the end. Trace entries with TIM2 as the time stamp are also not edited.

<time> = <yyyymmddhhmmss>

1950 <= yyyy <= 20nn	(year)
00 <= mm <= 12	(month)
01 <= dd <= 31	(day)
00 <= hh <= 24	(hour)
00 <= mm,ss <= 60	(minute/second)

If desired, only the entries for hours, minutes and seconds may be specified.

ADD=...
ADD=YES mixes the selected and already existing data of the last intermediate files. If the entry ADD or ADD=NO has not been entered, the intermediate files are recreated (OR connection of search criteria).

Error messages for the command TRACE

Message	Meaning
NO TRACE-FILE SPECIFIED USE DATIN FIRST	DATIN<filename> must be entered before the command TRACE
ENTRY NOT FOUND IN LIST	the specified trace name is not present in the trace file
NO LEGAL TRACENAME SPECIFIED	none of the trace names was entered correctly
ERROR WHILE OPENING: <filename>	file error when opening the file <filename>
IILEGAL ADD-PARAMETER	YES / Y / NO / N does not follow ADD=
ILLEGAL HEX-CONSTANT	wrong format on entering a hexadecimal constant
ERROR WHILE WRITING - FILE INVALID VOLUME FULL? <filename>	error writing a record into a <filename>, your volume is probably full

Error messages for the command TRACE

Example of a trace evaluation

1. Allocation of an input file dctrac.sav

   `DATIN dctrac.sav` or `DATIN dc*`

2. List of all entries

```
LIST
DCM.BCAM.CON        1 2015-01-22 13-59-14
.
.
.
.
```

3. Selection of trace records:

```
TRACE DCM.BCAM.CON,C='reclt',0x1c,C='hugo',
                  TIM1=093010,TIM2=093100
TRACE DCM.BCAM.LOC,X='a5c35ff6',ADD=YES
```

Result

The intermediate file contains all CON trace records with “reclt” string at distance 1c and records with the character string 'hugo'.
The selection still occurs between the time stamp 09:30:10 and 09:31:00.
In addition, all LOC trace records which contain the hexadecimal entry 'a5c35ff6' are added onto the end of the file.

The following are also possible:

```
    TRACE CON+1000000,TIM1=19980718000000,TIM2=19980719000000
```

All CON trace records of 1998/07/18, where 10 minutes are added to the time stamps of all selected records after the selection.

```
    TRACE ADM,CON,TRANS,...
TRACE *,DCM.DCAM*
```

All left-justified time stamp entries are optional, i.e.

```
     TRACE CON,TIM1=3000,TIM2=3500  (Selection in minutes)
     TRACE CON,TIM1=10,TIM2=20      (Selection in seconds)
```

Selection by specifying milliseconds is not possible.

Diagnostic tool TRACEROUTE

The TRACEROUTE program is the result of porting the corresponding traceroute program from the Open Source package from Dmitry Butskoy.

TRACEROUTE displays the route and the internet nodes that a data package passes to get to the specified ip address.

Starting TRACEROUTE

When `tracert` is called, the program expects a suitable IP address or a computer name. When you specify a computer name, TRACEROUTE converts this name into an IP address using the internal tables and an available DNS server. Here the computer name stands both for the specific computer name without the domain label and for an FQDN with the complete computer and domain names.

You can call TRACEROUTE under any ID. There are, however, options which have a different value range depending on whether the program was called under the TSOS ID or under a user ID.

You can dispense with the single quotes when you use SDF-A 04.1G and higher and when the SDF syntax file SYSSDF.SOCKETS.*nnn* (where *nnn* >= 025) has been appropriately adjusted.

```
start-tracert IPv4 address or IPv6 address or processor name (only processor part or
FQDN) [-option 1 [Value Option 1] -Option n [Value Option n]]
```
or
```
start-tracert [-option 1 [Value Option 1] -Option n [Value Option n]] IPv4 address
or IPv6 address or processor name (only processor part or FQDN)
```
or
```
tracert IPv4 address or IPv6 address or processor name (only processor part or
FQDN) [-option 1 [Value Option 1] -Option n [Value Option n]]
```
or
```
tracert [-option 1 [Value Option 1] -Option n [Value Option n]] IPv4 address or IPv6
address or processor name (only processor part or FQDN)
```

You can query the possible options online:

```
tracert
```
or alternatively
```
tracert --help
```

If you specify an unknown option, the program will be aborted with an error message.

Diagnostic tool PING4 for IP

The PING4 program is the result of porting the corresponding ping program from the Open Source package iputils.

PING4 sends an ICMP echo request to an IP address which you have entered and evaluates the associated echo reply.

Starting PING4

When `ping4` is called, the program expects a suitable IP address or a computer name. When you specify a computer name, PING4 converts this name into an IP address using the internal tables and an available DNS server. Here the computer name stands both for the specific computer name without the domain label and for an FQDN with the complete computer and domain names.

You can call PING4 under any ID. There are, however, options which have a different value range depending on whether the program was called under the TSOS ID or under a user ID.

You can dispense with the single quotes when you use SDF-A 04.1G and higher and when the SDF syntax file SYSSDF.SOCKETS.*nnn* (where *nnn* >= 025) has been appropriately adjusted.

```
start-ping4 [-option 1 [Value Option 1] -Option n [Value Option n]] IPv4
address or processor name (only processor part or FQDN)
```

or alternatively

```
ping4 [-option 1 [Value Option 1] -Option n [Value Option n]] IPv4 address or
processorn name (only processor part or FQDN)
```

You can query the possible options online:

```
ping4 -h
```

or alternatively

```
ping4 -?
```

If you specify an unknown option, the program's usage information is output.

Note:

If, despite correct entry, the usage list is displayed following the command call, enclose the call parameters in single quotes.

```
start-ping4 '[-option 1 [Value Option 1] -Option n [Value Option n]] IPv4
address or processor name' (only processor part or FQDN)
```

If the command is now processed without error, no current SDF version is available to you.

Diagnostic tool PING6 for IPv6

The PING6 program is the result of porting the corresponding ping program from the Open Source package iputils.

PING6 sends an ICMPv6 echo request to an IPv6 address which you have entered and evaluates the associated echo reply.

Starting PING6

When `ping6` is called, the program expects a suitable IPv6 address or a computer name. When you specify a computer name, PING6 converts this name into an IPv6 address. using the internal tables and an available DNS server. Here the computer name stands both for the specific computer name without the domain label and for an FQDN with the complete computer and domain names.

You can call PING6 under any ID. There are, however, options which have a different value range depending on whether the program was called under the TSOS ID or under a user ID.

You can dispense with the single quotes when you use SDF-A 04.1G and higher and when the SDF syntax file SYSSDF.SOCKETS.*nnn* (where *nnn* >= 025) has been appropriately adjusted.

```
start-ping6 [-option 1 [Value Option 1] -Option n [Value Option n]] IPv6
address or processor name (only processor part or FQDN)
```

or alternatively

```
ping6 [-option 1 [Value Option 1] -Option n [Value Option n]] IPv6 address or
processor name (only processor part or FQDN)
```

You can query the possible options online:

```
ping6 -h
```

or alternatively

```
ping6 -?
```

If you specify an unknown option, the program's usage information is output.

Note:

If, despite correct entry, the usage list is displayed following the command call, enclose the call parameters in single quotes.

```
start-ping6 '[-option 1 [Value Option 1] -Option n [Value Option n]] IPv4
address or processor name' (only processor part or FQDN)
```

If the command is now processed without error, no current SDF version is available to you.

NETSTAT

The NETSTAT program can be used to request information about applications, connections, routing data and network interfaces.
The output numbers are usually 32-bit values. In the event of an overflow, a requested value may deviate from the actual value by a multiple of 2^{32}.

The terms used (especially the names of variables used in the statistics as well as the named values for MAC-ADRESSES, ROUTING and TCP-CONNECTIONS) originate from the RFC 1213-MIB (MIB-II).

The functionality of the NETSTAT program is also available via BCAM command SHOW-NET-STATISTICS /NETSTAT (see section “SHOW-NET-STATISTICS / NETSTAT: Show network connection information”).

NETSTAT BS2000

Starting Netstat

The NETSTAT program can be used under any user ID with the SHOW-NETSTAT-STATISTICS/NETSTAT command.
NETSTAT -h gives an overview of all available subcommands.

Example

```
/SHOW-NET-STATISTICS or NETSTAT
```

SHOW-NET-STATISTICS/NETSTAT

ARGUMENTS = ***NO** / <text 1..1800>

IP-ADDRESSES = ***NO** / ***YES**

, **INTERNET-ADDRESSES** = ***NO** / ***YES**(...)

, **INTERFACE-VALUES** = ***NO** / ***YES**(...)

***YES**(...)

| **INTERFACE-NAME1** = ***ANY** / <composed-name_1..8>

| ,**INTERFACE-NAME2** = ***ANY** / <composed-name_1..8>

| ,**INTERFACE-NAME3** = ***ANY** / <composed-name_1..8>

| ,**INTERFACE-NAME4** = ***ANY** / <composed-name_1..8>

| ,**INTERFACE-NAME5** = ***ANY** / <composed-name_1..8>

, **INTERFACE-RATE** = ***NO**/***YES(...)**

***YES**(...)

| **INTERFACE-NAME1** = ***ANY** / <composed-name_1..8>

| ,**INTERFACE-NAME2** = ***ANY** / <composed-name_1..8>

| ,**INTERFACE-NAME3** = ***ANY** / <composed-name_1..8>

| ,**INTERFACE-NAME4** = ***ANY** / <composed-name_1..8>

| ,**INTERFACE-NAME5** = ***ANY** / <composed-name_1..8>

, **INTERFACE-SUM** = ***NO** / ***YES**

, **INTERFACE-SUM-RATE** = ***NO** / ***YES**

, **DEVICE-VALUES** = ***NO** / ***YES**

, **MAC-ADDRESSES** = ***NO** / ***YES**

, **ALL-MAC-ADDRESS** = ***NO** / ***YES**

, **OWN-MAC-ADDRESS** = ***NO** / ***YES**

, **PARTNER-MAC-ADDRESS** = ***NO** / ***YES**

, **ROUTING** = ***NO** / ***YES**

, **ALL-STATISTICS** = ***NO** / ***YES**

, **ICMP-STATISTICS** = ***NO** / ***YES**

, **IP-STATISTICS** = ***NO** / ***YES**

, **TCP-STATISTICS** = ***NO** / ***YES**

, **UDP-STATISTICS** = ***NO** / ***YES**

, **ALL-CONNECTIONS** = ***NO** / ***YES**

, **TCP-CONNECTIONS** = ***NO** / ***YES**

, **UDP-PORTS** = ***NO** / ***YES**

, **BCAM-GLOBAL** = ***NO** / ***YES**

, **BCAM-MEMORY** = ***NO** / ***YES**

, **WAITTIME** = ***NO** / <integer 1 .. 2147483647>

, **REPETITIONS** = <integer 0 .. 2147483647>

, **OUTPUT** = ***SYSOUT** / <filename 1 .. 54 without-gen-vers>

ARGUMENTS=...
Definition of the parameter list.

ARGUMENTS=*NO
Use the old parameter list (see the following list of parameters).

ARGUMENTS= <text 1..1800>
Use options from the new parameter list. A list of all available options can be found in Program call (BCAM, #162).

IP-ADDRESSES=...
Show own IP addresses.

IP-ADDRESSES=*NO
Do not show own IP addresses.

IP-ADDRESSES=*YES
Show own IP addresses.
The display consists of a table with the following columns:

IP address	Own IP address
Mask	Network mask of this IP address
If	Name of the interface that corresponds to the IP address

INTERNET-ADDRESSES=...
Show own IP/IPv6 addresses.

INTERNET-ADDRESSES=*NO
Do not show own IP/IPv6 addresses.

INTERNET-ADDRESSES=*YES
Show own IP/IPv6 addresses.
The display consists of a table with the following columns:

IP Address	Own IP/IPv6 address with prefix length specified
Mac Address	Physical address of the network connection
L4 If	Name of the Layer 4 Interfaces
L2 If	Name of the line

INTERFACE-VALUES=...
Show interface values.

INTERFACE-VALUES=*NO
Do not show interface values.

INTERFACE-VALUES=*YES(...)
Show interface values.
If just one INTERFACE-NAME that does not equal *ANY is specified, the display is limited to the interfaces with the specified names.

INTERFACE-NAME1 = *ANY/<composed-name_1..8>
Name of the interface to be shown.

,INTERFACE-NAME2 = *ANY/<composed-name_1..8>
Name of the interface to be shown.

,INTERFACE-NAME3 = *ANY/<composed-name_1..8>
Name of the interface to be shown.

,INTERFACE-NAME4 = *ANY/<composed-name_1..8>
Name of the interface to be shown.

,INTERFACE-NAME5 = *ANY/<composed-name_1..8>
Name of the interface to be shown.

The display consists of a table containing the following columns:

Name	Name of the interface
MTU	Maximum number of bytes per packet
PacketsIn	Number of received packets
BytesIn	Number of received bytes
IosIn	Number of input operations
ErrorsIn	Number of received packets with errors
PacketsOut	Number of sent packets
BytesOut	Number of sent bytes
IosOut	Number of output operations
ErrorsOut	Number of sent packets with errors

INTERFACE-RATE=...
Shows the interface rate, i.e. the throughput rate for each interface.

INTERFACE-RATE=*NO
Do not show interface rate.

INTERFACE-RATE=*YES
Show interface rate.
If just one INTERFACE-NAME that does not equal *ANY is specified, the display is limited to the interfaces with the specified names.

INTERFACE-NAME1 = *ANY/<composed-name_1..8>
Name of the interface to be shown.

,INTERFACE-NAME2 = *ANY/<composed-name_1..8>
Name of the interface to be shown.

,INTERFACE-NAME3 = *ANY/<composed-name_1..8>
Name of the interface to be shown.

,INTERFACE-NAME4 = *ANY/<composed-name_1..8>
Name of the interface to be shown.

,INTERFACE-NAME5 = *ANY/<composed-name_1..8>
Name of the interface to be shown.

The first display consists of the following values for each interface:

Name	Name of the interface
PacketsIn	Number of received packets
BytesIn	Number of received bytes
ErrorsIn	Number of received packets with errors
PacketsOut	Number of sent packets
BytesOut	Number of sent bytes
ErrorsOut	Number of sent packets with errors

If the WAITTIME parameter has been specified, a line is displayed with the differential time, and all the other lines contain the differential values compared with the previous request time divided by the WAITTIME value.

dt(s)	Differential time compared with previous request time (in seconds)
Name	Name of the interface
PktsIn/s	Number of packets received per second during the WAITTIME interval
BytesIn/s	Number of bytes received per second during the WAITTIME interval
ErrIn	Number of packets received with errors during the WAITTIME interval
PktsOut/s	Number of packets sent per second during the WAITTIME interval
BytesOut/s	Number of bytes sent per second during the WAITTIME interval
ErrOut	Number of packets sent with errors during the WAITTIME interval

INTERFACE-SUM=...
Shows the sum of all the interfaces.

INTERFACE-SUM=*NO
Do not show the sum of all the interfaces.

INTERFACE-SUM=*YES
Show the sum of all the interfaces.
The sum of the following values of all the interfaces is determined:

dt(s)	Differential time compared with previous request time (in seconds)
PacketsIn	Number of received packets
BytesIn	Number of received bytes
ErrorsIn	Number of received packets with errors
PacketsOut	Number of sent packets
BytesOut	Number of sent bytes
ErrorsOut	Number of sent packets with errors

INTERFACE-SUM-RATE=...
Shows the interface sum rate, i.e. the total throughput of all interfaces.

INTERFACE-SUM-RATE=*NO
Do not show interface sum rate.

INTERFACE-SUM-RATE=*YES
Show interface sum rate.
This function determines the sum of the values shown for all interfaces.
The first display consists of the sum of the following values:

PacketsIn	Number of received packets
BytesIn	Number of received bytes
ErrorsIn	Number of received packets with errors
PacketsOut	Number of sent packets
BytesOut	Number of sent bytes
ErrorsOut	Number of sent packets with errors

If the WAITTIME parameter has been specified, all the other lines contain the differential values compared with the previous request time divided by the WAITTIME value.

dt(s)	Differential time compared with previous request time (in seconds)
PktsIn/s	Number of packets received per second during the WAITTIME interval
BytesIn/s	Number of bytes received per second during the WAITTIME interval
ErrIn	Number of packets received with errors during the WAITTIME interval
PktsOut/s	Number of packets sent per second during the WAITTIME interval
BytesOut/s	Number of bytes sent per second during the WAITTIME interval
ErrOut	Number of packets sent with errors during the WAITTIME interval

DEVICE-VALUES=...
Shows the device connections.

DEVICE-VALUES = *NO
No device connections are shown.

DEVICE-VALUES = *YES
The device connections are shown.

The output consists of a table with the following columns:

Name	**Name of the device connection**
DvMnemonic Write	Device Mnemonic Write
DvMnemonic Read	Device Mnemonic Read
Name Device	Name of the device connection
Name Typ	Name of the type of device connection
MTU	Maximum number of bytes contained in a packet
PacketsIn	Number of received packets
BytesIn	Number of received bytes
IosIn	Number of input operations
ErrorsIn	Number of faulty received packets
PacketsOut	Number of transmitted packets
BytesOut	Number of transmitted bytes

IosOut	Number of output operations
ErrorsOut	Number of faulty transmitted packets
Ntyp	Specify type of interface, either line or dev(ice)

MAC-ADDRESSES=...
Shows known MAC addresses.

MAC-ADDRESSES=*NO
Do not show MAC addresses.

MAC-ADDRESSES=*YES
Show MAC addresses.
The display consists of a table with the following values:

If	Name of the interface which is used to access the shown address
IP-Address	IP address of the system
MAC-Address	MAC address that corresponds to the IP address (if known)
Type	Type of assignment of the MAC address to the IP address; possible values: other, invalid, dynamic, static

ALL-MAC-ADDRESS=...
Shows all known MAC addresses (own and partner MAC addresses).

ALL-MAC-ADDRESSES=*NO
Do not show all MAC addresses.

ALL-MAC-ADDRESSES=*YES
Shows all MAC addresses.
The display consists of the table specified in MAC-ADRESSES.

OWN-MAC-ADDRESS=...
Shows the own MAC addresses which are known.

OWN-MAC-ADDRESSES=*NO
Do not show own MAC addresses.

OWN-MAC-ADDRESSES=*YES
Shows own MAC addresses.
The display consists of the table specified in MAC-ADRESSES.

PARTNER-MAC-ADDRESS=...
Shows the known partner MAC addresses.

PARTNER-MAC-ADDRESS=*NO
Do not show the partner MAC addresses.

PARTNER-MAC-ADDRESS=*YES
Shows the partner MAC addresses.
The display consists of the table specified in MAC-ADRESSES.

ROUTING=...
Shows routing information.

ROUTING=...*NO
Do not show routing information.

ROUTING=...*YES
Show routing information.
The display consists of a table with the following values:

Dest	IP address of the target system, where 0.0.0.0 specifies the default router
NextHop	IP address of the first intermediate system
Mask	Subnet mask of the intermediate system
Type	Type of route; possible values: other, invalid, direct, indirect
If	Name of the network port which belongs to the IP address
Creation	Type of route creation; possible values: other, local, netmgmt, icmp, egp, ggp, hello, rip, is-is, es-is, ciscoIgrp, bbnSpfIgp, ospf, bgp

ALL-STATISTICS=...
Shows the ICMP, IP, TCP and UDP statistics.

ALL-STATISTICS=*NO
Do not show ICMP, IP, TCP and UDP statistics.

ALL-STATISTICS=*YES
Show ICMP, IP, TCP and UDP statistics.
The values shown are described below under the ICMP-STATISTICS, IP-STATISTICS, TCP-STATISTICS and UDP-STATISTICS functions.

IP-STATISTICS=...
Shows IP statistics.

IP-STATISTICS=*NO
Do not show IP statistics.

IP-STATISTICS=*YES
Show IP statistics.
The display contains the following values:

ipForwarding	Possible values: 1: The system also operates as a router. 2: The system does not operate as a router.
ipDefaultTTL	Value of Time-To-Live (TTL), which is entered in IP packets to be sent
ipInReceives	Number of IP packets received (including packets with errors)
ipInHdrErrors	Number of IP packets received, which were ignored due to an IP header error
ipInAddrErrors	Number of IP packets received, which were ignored due to an incorrect destination address
ipForwDatagrams	Number of routed IP packets
ipInUnknownProtos	Number of IP packets received, which were ignored due to unknown or unsupported protocols
ipInDiscards	Number of correct IP packets received, which were ignored for other reasons (e.g. shortage of memory)
ipInDelivers	Number of successfully delivered IP packets (including ICMP packets)
ipOutRequests	Number of IP packets to be sent (only routed packets)
ipOutDiscards	Number of IP packets not sent (e.g. due to shortage of memory)
ipOutNoRoutes	Number of IP packets to be sent, which were ignored due to missing routing information
ipReasmTimeout	Time (in seconds) within which IP reassembling must be completed
ipReasmReqds	Number of IP fragments to be reassembled
ipReasmOKs	Number of successfully reassembled IP fragments
ipReasmFails	Number of errors that occurred during reassembly
ipFragOKs	Number of successfully fragmented IP packets
ipFragFails	Number of IP packets that were not fragmented successfully
ipFragCreates	Number of created IP fragments
ipRoutingDiscards	Number of deleted routing entries

ICMP-STATISTICS=...
Shows ICMP statistics.

ICMP-STATISTICS=*NO
Do not show ICMP statistics.

ICMP-STATISTICS=*YES
Show ICMP statistics.
The display contains the following values:

icmpInMsgs	Number of ICMP messages received (including messages with errors)
icmpInErrors	Number of ICMP messages received with errors
icmpInDestUnreachs	Number of Destination Unreachable messages
icmpInTimeExcds	Number of Time Exceeded messages received
icmpInParmProbs	Number of Parameter Problem messages received
icmpInSrcQuenchs	Number of Source Quench messages received
icmpInRedirects	Number of Redirect messages received
icmpInEchos	Number of Echo Request messages received
icmpInEchoReps	Number of Echo Reply messages received
icmpInTimestamps	Number of Time Stamp Request messages received
icmpInTimestamp Reps	Number of Time Stamp Reply messages received
icmpInAddrMasks	Number of Address Mask Request messages received
icmpInAddrMaskReps	Number of Address Mask Reply messages received
icmpOutMsgs	Number of ICMP requests to be sent
icmpOutErrors	Number of ICMP requests to be sent with errors
icmpOutDest Unreachs	Number of Destination Unreachable messages sent
icmpOutTimeExcds	Number of Time Exceeded messages sent
icmpOutParmProbs	Number of Parameter Problem messages sent
icmpOutSrcQuenchs	Number of Source Quench messages sent
icmpOutRedirects	Number of Redirect messages sent
icmpOutEchos	Number of Echo Request messages sent
icmpOutEchoReps	Number of Echo Reply messages sent
icmpOutTimestamps	Number of Time Stamp Request messages sent
icmpOut TimestampReps	Number of Time Stamp Reply messages sent
icmpOutAddrMasks	Number of Address Mask Request messages sent

icmpOutAddr MaskReps	Number of Address Mask Reply messages sent

TCP-STATISTICS=...
Shows TCP statistics.

TCP-STATISTICS=*NO
Do not show TCP statistics.

TCP-STATISTICS=*YES
Show TCP statistics.
The display contains the following values:

tcpRtoAlgorithm	Retransmit algorithm used (Value 4: Van Jacobson algorithm)
tcpRtoMin	Minimum time (in milliseconds) after which a retransmit occurs
tcpRtoMax	Maximum time (in milliseconds) after which a retransmit occurs
tcpMaxConn	Maximum number of TCP connections (-1: dynamically determined number)
tcpActiveOpens	Number of actively opened TCP connections
tcpPassiveOpens	Number of passively opened TCP connections
tcpAttemptFails	Number of TCP connections opened with errors
tcpEstabResets	Number of TCP connections established with RESET
tcpCurrEstab	Number of TCP connections currently open
tcpInSegs	Number of TCP segments received
tcpOutSegs	Number of TCP segments sent
tcpRetransSegs	Number of TCP segments sent, which required a retransmit
tcpInErrs	Number of TCP segments received with errors
tcpOutRsts	Number of TCP resets sent

UDP-STATISTICS=...
Shows UDP statistics.

UDP-STATISTICS=*NO
Do not show UDP statistics.

UDP-STATISTICS=*YES
Show UDP statistics.
The display contains the following values:

udpInDatagrams	Number of UDP datagrams received
udpNoPorts	Number of UDP datagrams received for which no application was opened
udpInErrors	Number of UDP datagrams received with errors
udpOutDatagrams	Number of UDP datagrams sent

ALL-CONNECTIONS=...
Shows all connections.

ALL-CONNECTIONS=*NO
Do not show connections.

ALL-CONNECTIONS=*YES
Shows connections.
The display contains the following values:

Connection Type	Type of connection (TCP or UDP)
State	State of the connection Possible values: closed, listen, synSent, synReceived, established, finWait1, finWait2, closeWait, lastAck, closing, timeWait, deleteTCB
listen	listen port Possible values: *yes, *no
Local Address	Local address of the connection (IP/IPv6 address and port)
Remote Address	Remote address of the connection (IP/IPv6 address and port)

TCP-CONNECTIONS=...
Shows TCP connections.

TCP-CONNECTIONS=*NO
Do not show TCP connections.

TCP-CONNECTIONS=*YES
Show TCP connections.

The display contains the following values:

Local IP-Address	Local IP address of the connection
Local Port	Local port number of the connection
Remote IP-Address	Remote IP address of the connection
Remote Port	Remote port number of the connection
State	State of the connection Possible values: closed, listen, synSent, synReceived, established, finWait1, finWait2, closeWait, lastAck, closing, timeWait, deleteTCB

UDP-PORTS=...
Shows opened UDP ports.

UDP-PORTS=*NO
Do not showopened UDP ports.

UDP-PORTS=*YES
Show opened UDP ports.
The display contains the following values:

Local IP-Address	Local IP address of the UDP application; 0.0.0.0 for applications that listen to all interfaces
Local Port	Local port number of the UDP application

BCAM-GLOBAL=...
Shows global information on BCAM (for diagnostic purposes).

BCAM-GLOBAL=*NO
Do not show global information on BCAM.

BCAM-GLOBAL=*YES
Show global information on BCAM.

BCAM-MEMORY=...
Shows memory information on BCAM (for diagnostic purposes).

BCAM-MEMORY=*NO
Do not show memory information on BCAM.

BCAM-MEMORY=*YES
Show memory information on BCAM.

WAITTIME=...
Wait time (in seconds) between 2 displays of the selected functions.

WAITTIME=*NO

- If REPETITIONS contains the value 0, the values of the selected functions are displayed once and the program is terminated.
- If REPETITIONS contains a value not equal to 0, the values of the selected functions are displayed as often as specified. The interval between 2 displays is 10 seconds.

WAITTIME=<integer 1 .. 2147483647>

- If REPETITIONS contains the value 0, the values of the selected functions are displayed every <WAITTIME> seconds until the program is terminated.
- If REPETITIONS contains a value not equal to 0, the values of the selected functions are displayed as often as specified. The interval between 2 displays is <WAITTIME> seconds.

REPETITIONS=...
Number of times the display of the selected functions is repeated.

REPETITIONS=<integer 0 .. 2147483647>

- If REPETITIONS contains the value 0 and WAITTIME contains the value *NO, the values of the selected functions are displayed every 10 seconds until the program is terminated.
- If REPETITIONS contains the value 0 and WAITTIME contains a value not equal to *NO, the values of the selected functions are displayed every <WAITTIME> seconds until the program is terminated.
- If REPETITIONS contains a value not equal to 0 and WAITTIME contains the value *NO, the values of the selected functions are displayed as often as specified. The interval between 2 displays is 10 seconds.
- If REPETITIONS contains a value not equal to 0 and WAITTIME contains a value not equal to *NO, the values of the selected functions are displayed as often as specified. The interval between 2 displays is <WAITTIME> seconds.

Relationship between WAITTIME and REPETITIONS:

		WAITTIME	
		*NO	>=1
REPETITIONS	0	Command is terminated after one display	Displayed every <waittime> seconds until the command is shutdown
	<>0	Displayed every 10 seconds for <repetitions> number of times	Displayed every <waittime> seconds for <repetitions> number of times

Relationship between WAITTIME and REPETITIONS

OUTPUT=...
Output redirection of values.

OUTPUT=*SYSOUT
The values are output to SYSOUT.

OUTPUT=<filename 1 .. 54 without-gen-vers>
The values are written to the <filename 1 .. 54 without-gen-vers> file.

If no operand which controls the output is selected when the command is executed, the command default value INTERFACE-VALUES=*YES is assumed implicitly.

If the command execution is aborted, e.g. with the K2 key, and the CMD0174 message is not answered with ’E’, this means that you are at procedure level 1 and all outputs are output to the specified file. Procedure level 0 and re-establishment of the original environment are implemented via the END-PROCEDURE command.

NETSTAT POSIX

- Installation
- Uninstallation
- Program call

Installation

Requirement: The POSIX subsystem must be started.

The NETSTAT program is located in the SINLIB.BCAM.250 library together with the installation procedures.

Installation is carried out under TSOS or SYSROOT with the following procedure:

```
/START-POSIX-INSTALLATION
```

Function: Install packages on POSIX

Name of product: BCAM

Version of product: 250

Uninstallation

Uninstallation is also carried out under TSOS or SYSROOT with the following procedure:

```
/START-POSIX-INSTALLATION
```

Function: Uninstalls POSIX program packages

Product name: BCAM

Product version: 250

Program call

The program is installed under `/usr/bin/netstat`. If it is called without options or with the -h or -? option, the following help text is shown:

```
netstat [-a][-ia][-h][-i [<ifname>[,...]]][-ir [<ifname>[,...]]][-is]
  [-isr][-d][-dsr][-g][-gm][-m][-ma][-mn][-mo][-mp][-r][-s][-si][-sc]
  [-st][-su][-t][-tl][-te][-tpo][-tw][-ac][-u][-?]
  [<waittime>][<repetitions>]
```

Description of the options

You can specify several options at the same time. The corresponding outputs are shown for every repetition.

-a
: Show IP addresses.
The display corresponds to the IP-ADDRESSES = *YES parameter under BS2000.

-ia
: Show own IP/IPv6 internet addresses.
The display corresponds to the INTERNET-ADDRESSES = *YES parameter under BS2000.

-h
: Show this help.
The help text described above is shown.

-i [<ifname>[,...]]:

: Show interface values.
If one or more comma-separated interface names are specified, only the values of the corresponding interfaces are shown. The display corresponds to the INTERFACE-VALUES =*YES parameter under BS2000.

-ir [<ifname>[,...]]:

: Show interface rate.
If one or more comma-separated interface names are specified, only the values of the corresponding interfaces are shown. The display corresponds to the INTERFACE-RATE =*YES parameter under BS2000.

-is
: Show sum of all interfaces.
The display corresponds to the INTERFACE-SUM =*YES parameter under BS2000.

-isr
: Show sum interface rate of all interfaces.
The display corresponds to the INTERFACE-SUM-RATE =*YES parameter under BS2000.

-d
: Show device connections.
Displays the device connections in BS2000.

-dsr
: Show sum device rate of all devices.

-g show global information in BCAM.
The display corresponds to the BCAM-GLOBAL =*YES parameter under BS2000.

-gm show memory information in BCAM.
The display corresponds to the BCAM-MEMORY =*YES parameter under BS2000.

-m Show MAC addresses.
The display corresponds to the MAC-ADDRESSES =*YES parameter under BS2000.

-ma Show all MAC addresses.
The display corresponds to the ALL-MAC-ADDRESS =*YES parameter under BS2000.

-mn Show all MAC addresses and all their corresponding IP addresses.

-mo Show own MAC addresses.
The display corresponds to the OWN-MAC-ADDRESS =*YES parameter under BS2000.

-mp Show partner MAC addresses.
The display corresponds to the PARTNER-MAC-ADDRESS =*YES parameter under BS2000.

-r Show routing information.
The display corresponds to the ROUTING=*YES parameter under BS2000.

-s Show ICMP, IP, TCP and UDP statistics.
The display corresponds to the ALL-STATISTICS=*YES parameter under BS2000.

-si Show IP statistics.
The display corresponds to the IP-STATISTICS=*YES parameter under BS2000.

-sc Show ICM statistics.
The display corresponds to the ICMP-STATISTICS=*YES parameter under BS2000.

-st Show TCP statistics.
The display corresponds to the TCP-STATISTICS=*YES parameter under BS2000.

-su Show UDP statistics.
The display corresponds to the UDP-STATISTICS=*YES parameter under BS2000.

-t Show TCP connections.
The display corresponds to the TCP-CONNECTIONS=*YES parameter under BS2000.

-tl Show TCP connections in state "listen".

-te Show TCP connections in state "established".

-tpo Show own proxy (tunnel) TCP connection, if available.

-tw Show TCP connections in state "timewait".

-ac Show all TCP connections.
The display corresponds to the ALL-CONNECTIONS=*YES parameter under BS2000.

-u Show opened UDP ports.
The display corresponds to the UDP-PORTS=*YES parameter under BS2000.

-? Show this help
Shows the help text described above.

<waittime>

Wait time (in seconds) between 2 displays of the selected functions.

<repetitions>

Number of times the display of the selected functions is repeated.

If you don’t specify the <waittime> parameter or the <repetitions> parameter, a display is shown and the program is terminated.

If you only specify the <waittime> parameter, the selected functions are output until the program is aborted (with @@C).

If you also specify the <repetitions> parameter, the program is terminated after the corresponding number of repetitions.

Logging events to SAT

The Security Audit Trail (SAT) is a component of SECOS and is used to log security-related events in BS2000.

BCAM informs SAT of specific events.

SAT can be set up to detect access attempts, and can detect the culprit in the event of security violations. SAT logs the events in SAT log files (SATLOG).

The SATUT utilities program evaluates the log files.

Specific security-critical events can be monitored without delay using the SAT alarm function. The alarm message appears on the operator console, so that the operator can decide what measures need to be taken.

Security personnel can specify whether the BCAM events should be recorded in SAT.

Additional information about SAT can be found in the “SECOS (BS2000)” manual.

The following events are logged in BCAM:

- TSAP opened successfully
- TSAP opened with errors
- TSAP closed successfully
- TSAP closed with errors
- Connection opened successfully
- Connection opened with errors
- Connection terminated successfully
- Connection terminated with errors

The following data is sent to SAT:

- Name type
- Application name
- Partner name
- Host name
- Partner/host name
- Application ID
- Connection ID
- Address type
- Own port number
- Partner port number
- Own IPv4 address
- Partner IPv4 address
- Own IPv6 address
- Partner IPv6 address
- Own ISO-TSEL
- Partner ISO-TSEL

- BCAM return code

For the assignment of logged data to events, see the “SECOS (BS2000) Security Control System” manuals in the “Information that can be logged for each object event” tables.

> **CAUTION!**
>
> Volume problems (shortage of memory) may occur if applications are not operating correctly and generate a large number of SAT messages.

BCAM control files

BCAM knows various control files which can be specified in the DCOPT/DCSTART command. The file names can be modified during ongoing operation using the BCMOD command. The following control files are available:

- Processor file
- Socket host file
- FQDN file
- Services file
- Application file

Processor, socket host and FQDN files have an influence on automatic end system creation, the application file and services on file access to applications.

The following rules apply for all control files:

- Format:
  File format: SAM
  File contents: EBCDIC
- The processor and socket host file must always be cataloged in the home pubset,otherwise errors may occur in connection with control files cataloged on data pubsets or shared pubsets.
- File contents that do not correspond to the appropriate syntax (see the related section) are reported in console message BCA0771, but are apart from that ignored. BCAM always attempts to read the complete file; the read operation is therefore not aborted in the event of an incorrect line.

The BCAM control files are only input files.

For ongoing operation BCAM uses work files with the suffix .IS1 or .IS2, and for the processor files also files with the suffix .AUT or .LOG.

Attributes of the .IS1, .IS2, .AUT and .LOG work files

The files with the suffix .IS1 or .IS2 are ISAM files. The .AUT and .LOG files created for the processor file are SAM files.

The following applies for these files:

- The .IS1 and .IS2 files are normally generated the first time BCAM starts.

  During ongoing operation BCAM checks periodically (at intervals of one minute) whether the control files have been modified in the monitored period. If they have, BCAM reads in the control file concerned and generates a current ISAM file from it. When this new file is generated, BCAM switches back and forth between the ISAM files . IS1 and .IS2 in order to coordinate usage and the update.

  Message BCA0750 shows that generation of an ISAM file has been completed. The file entries contained in this file are effective from this point in time.

  When very large files are involved, it can take some time to generate an ISAM file from a control file.
- The .AUT and .LOG files are generated during operation.

  The .AUT file contains the created partner end systems which are not contained in the processor file and cannot be found via DNS.

The .LOG file contains the information of the .AUT file in readable form and is used by the system administrator as a logging file for the created end systems.

- Both the ISAM files and the .AUT and .LOG files survive the BCEND and DCSTART operations, which means that their content is also available for the next session. If you do not want this to be so, you must delete these files explicitly.
- At startup BCAM checks whether corresponding ISAM files exist for the control files (and whether a .AUT file exists for the processor file) and what change dates these files have. If a file with the suffix .IS1 or .IS2 already exists which is more recent than the associated input file (and in the case of the processor file also more recent than the corresponding .AUT file), BCAM reads this file in. Otherwise BCAM uses the control file.
- With a BCMOD command the specified control file is always read in and a current ISAM file is generated from it.

Processor file

The processor file contains the assignments between the processor names and IP, IPv6 or ISO Internet addresses for partner end systems that were or can be added automatically.

A processor can be assigned multiple IP, IPV6 or ISO internet addresses. These addresses can be entered in the processor file.
The ISO internet, IP and IPV6 addresses must be unique. Their uniqueness must be guaranteed by the network administrator.
Own IP addresses must be defined if the BS2000 system has more than one line connection to an IP (sub)network. In this special case the own address is specified with the additional entry OWN-ADR/OWN-ADDR.
The processor name identifies the processor and gives the first route to this processor its name. If required, additional routes to this processor can also be generated automatically. These are then assigned an artificial name (see also section "Identifying automatically created end systems").

Note

DNS servers should always be entered in the FQDN file and not in the processor file, see section "FQDN file".

Handling multihoming problems

In configurations in which multiple lines are connected to one IP subnetwork then, in the case of client mode operation with local partner systems, no unique assignment of the BS2000 IP address that is to be used is possible on the basis of the partner IP address. In this case, the BS2000 system selects the first available local IP address.

This addressing problem, which is referred to as multihoming in the IP environment, can lead to problems if the affected partner systems do not know all the IP addresses.

These multihoming problems can be avoided by defining which IP address is to be used for the connection by additionally specifying the "OWN-ADR" parameter and the local IP address in the corresponding processor file entry (see definition of partner "PGTR3815“ in the "Example").

If a local IP address is specified by means of the "OWN-ADR" parameter then BCAM does not extend the configuration unless the specified local IP address is defined in BCAM.

Similar problems can occur with IPv6. In IPv6 it is therefore also possible to specify the local IPv6 address.

Name and content of the processor file

The name of the processor file is specified using the PROCESSOR-TABLE parameter of the DCOPT, DCSTART, or BCMOD command.

(Default name: $TSOS.SYSDAT.BCAM.PROCESSORS)

The following syntax rules apply to the file entries:

- Comment lines:

  1st. character = *
  A comment line is not evaluated further.
- Structure of all other lines (read from left to right)
  - processor name (max. 8 characters)
  - at least one blank
  - type of address: “IP”, "IPV6" or “INTF”

- at least one blank
- alternatively:
  - IP address if "IP" is set (in "dotted decimal notation")

  or

  - IPv6 address if "IPV6" is set (in ": notation")

  or

  - ISO Internet address, if “INTF” is set,
    the contents of the address are interpreted as a string of hexadecimal characters (max. 40 characters).
- at least one blank
- "OWN-ADR/OWN-ADDR",
- (optional if the own IP address is also specified, only evaluated if "IP" and "IPV6" set)
- at least one blank
- alternatively:
  - local IP address if "OWN-ADR/OWN-ADDR" and "IP"
    (in "dotted decimal notation")

  or

  - local IPv6 address if "OWN-ADR/OWN-ADDR" and "IPV6"
    (in ": notation")
- As of #, the remainder of the line is interpreted as a comment

Example

```
* Example for PROCESSOR-TABLE
D055ZE30 IP 129.25.17.9
PGTR3815 IP   139.22.16.35 OWN-ADR 139.22.16.1
BCAMSR03 IPV6 FE80::A00:6FF:FE0D:5C4F          # testhost1 IPv6
MIGRPC15 IPV6 ::139.25.17.9
BCAMVM03 IPV6 FE80::A00:6FF:FE08:9A62 OWN-ADR FE80:0:0:0:A00:6FF:FE08:9A6D
D088P1 INTF 4465178819                         # testhost1 ISO
SOLARIS IP 139.25.226.106
SOLARIS IP 139.25.226.138 OWN-ADR 139.25.82.128
SOLARIS IPV6 3FFE:1:1000:6000:A00:20FF:FEB2:2859
```

The ISO Internet and IP and IPV6 addresses must be unique. The uniqueness must be ensured by the network administrator.

Socket host file

The socket host file contains the assignment between the socket host names and IP or IPV6 addresses for partner end systems.

The socket host names and IP addresses must be unambiguous, i.e. they may only be specified once each. The unambiguousness must be guaranteed by the network administrator.

Name and content of the socket host file

The name of the socket host file is defined using the SOCKETHOST-TABLE parameter in the DCOPT, DCSTART, or BCMOD command.
(Default name: $TSOS.SYSDAT.BCAM.ETC.HOSTS).

The following syntax rules apply to the file entries:

- Comment lines:

  First character = * or #
- Structure of all other lines (read from left to right)
  - IP address in "dotted decimal notation" or IPv6 address
  - at least one blank
  - (primary) socket host name (max. 32 characters)
  - at least one blank
  - a maximum of 5 additional (secondary) socket host names (optional);
    (up to 32 characters each and separated by at least one blank)
  - as of the #, the rest of the line is interpreted as a comment

Example

```
* Example of SOCKETHOST-ADDRESS-TABLE
127.0.0.1 LOCALHOST localhost LOOPBACK *local
139.34.115.8 DFS114  # C30-1
::139.25.17.9 MIGRPC15
FE80::A00:6FF:FE08:9A62 BCAMVM03 bcamvm03
```

FQDN file

The FQDN file supports two functions:

- Function 1:
  Mapping of DNS names to BCAM processor names.
  This enables any DNS names of a DNS system to be mapped to defined BCAM processor names.

  This enables to enter partner systems to which are assigned unique BCAM names up to 8 characters and which can have variable addesses.
- Function 2:
  A DNS entry (assignment of an IP/IPV6 address to a DNS name) with additional mapping to a BCAM processor name.

  DNS entries can be generated which are only known locally.

  The FQDN file entries are also entered in the ISAM file of the processor file (to assign the BCAM name to an IP or IPv6 address).

Note

The DNS servers should always be entered in the FQDN file in order to make the DNS servers known to BCAM and to be able to use their function properly. See section "Settings for using DNS" for further information.

Name and content of the FQDN file

The name of the FQDN file is defined using the FQDN-TABLE parameter in the DCOPT, DCSTART und BCMOD commands.
(Default name: $TSOS.SYSDAT.BCAM.FQDN).

The following syntax rules apply for the file entries:

- Comment lines:

  1st character = * or #
- Format of all other lines (from left to right):

  Entry in the case of function 1:

  - FQDN
  - At least 1 blank
  - BCAM processor name (up to 8 characters)
  - At least 1 blank
  - From # the rest of the line is interpreted as a comment.

  Entry in the case of function 2:

  - FQDN
  - At least 1 blank
  - BCAM processor name (up to 8 characters)
  - At least 1 blank
  - IP address in "dotted decimal notation" or IPv6 address
  - From # the rest of the line is interpreted as a comment.

Example

```
MCH0448D.TS.FUJITSU.COM TESTPC01  172.25.52.183
MCH0448F.TS.FUJITSU.COM TESTPC02  172.25.52.184
SPEEDY.TS.FUJITSU.COM   TESTPC01
COMPANYSIGN0123456NB.TS.FUJITSU.COM C0123456 # bcam-name C0123456
```

Services file

The services file contains the assignment of services and protocols to port numbers.

The services file is known from the Unix/LINUX world as /etc/services. With the help of this file an application can determine the server port for a service under a particular protocol. Consequently the application does not need to be assigned a permanent port for a required service when generation takes place. In addition, it is possible to offer a service which is generally known locally on a port other than the default port.

Previously a static services table with the "well-known" port numbers from1-1023 was contained in SOCKETS (BS2000). It was not possible to extend or modify this table. The external table enables assignments to be specified over the entire port number range from 1-65535.

In the delivery status the services file is predefined under BCAM administration with the services currently registered by IANA in the port number range 1-1023.

Instead of an internal table, SOCKETS(BS2000) uses the services file managed by BCAM.

Name and content of the services file

The name of the services file is defined using the SERVICES-TABLE parameter in the DCOPT, DCSTART und BCMOD commands.
(Default name: $TSOS.SYSDAT.BCAM.ETC.SERVICES).

The following syntax rules apply for the file entries:

- Comment lines:

  1st character = * or #
- Format of all other lines (from left to right):

  Entry in the case of function 1:
  - service-name
  - At least 1 blank
  - port-number
  - separated by /
  - protocol
  - At least 1 blank
  - Optionally up to 4 further (secondary) service-names
  - (separated by at least 1 blank)
  - From # the rest of the line is interpreted as a comment.

Example

Examples can be found in the services file supplied.

Application file

The application file supports the mapping between applications and virtual hosts as well as the control of host-aliasing, see section "Operation of virtual hosts".
In addition, the application file can be used to reject and allow connection requests for certain NEA applications. With the command MODIFY-BCAM-OPTIONS you can specify whether the defined rules for connection requests should be applied or not (default: *OFF), see MODIFY-BCAM-OPTIONS / MDBCO: Modify BCAM options (BCAM, #315).

Name and contents of the application file

The name of the application file is set in the DCSTART or DCOPT command with the operand APPLICATION-TABLE (default name $TSOS.SYSDAT.BCAM.APPLICATIONS).

The following syntax rules apply for the file entries used to map applications to virtual hosts:

- Command lines

  1st character = *:
- Structure of all the other lines (left to right; no leading blanks permitted)
  - **Type** of application name:
    Permitted type names: **“NEA”**, **“ISO”**, **“ISOC”**, **“SOCKETS”** no abbreviations permitted;
  - At least 1 blank
  - alternatively:
    - **NEA application name** if Type=NEA
      Maximum 8 characters in length. If a shorter name is entered then BCAM inserts it left-aligned and adds x ‘40‘ to extend it to 8 characters. The first character must be an uppercase character or ‘$’, ‘#’ or ‘@’; the following characters must be uppercase characters, digits or ‘$’, ‘#’ or ‘@’.
      Alternatively, BS2000 placeholders of up to 32 characters are permitted provided they adhere to the syntax described in the general command description syntax. However, “-s” is not permitted.

      or
    - **ISO application name** if Type=ISO
      Maximum 5-part name, subdivided by X'00', with a maximum length of 78 bytes.This name is saved as a hexadecimal string. Permitted characters 0-F.

      or
    - **ISO application name** if Type=ISOC
      Maximum 78-byte name.
      This name is stored as a C string.

      or
    - **SOCKETS USER-ID** if Type=SOCKETS
      Maximum 8-character user ID. If a shorter name is entered, the remainder is extended to 8 characters using x‘40‘.
      The user ID is only evaluated in the case of applications with STREAMS interface functionality.
  - At least 1 blank

    > ¡ This means that all socket applications that are started under a corresponding ID are assigned to the same virtual host!

- **Host name**
  Maximum 8-character user ID. If a shorter name is entered, the remainder is extended to 8 characters using x ‘40‘.
  Host on which the application should be started.
  Entering -NOALIAS prevents host aliasing for the relevant application.

Example

```
* Example for APPLICATION-TABLE
NEA     TESTAPP              VHOST001
NEA     $FJAM*               -NOALIAS
NEA     $CON<RRR:TTT>E       VHOST8
NEA     <Q:S>EST<30:70>AT    VHOST9
NEA     SAMBA                VHOST001
ISO     5445535400414E57     VHOST002
ISOC    TESTBIRNE            VHOST001
SOCKETS HUHU                 VHOST002
```

The following syntax rules apply for the file entries for rejecting and allowing connection requests for certain NEA applications:

- Command lines
  1st character = *:
- Structure of all the other lines (left to right; no leading blanks permitted)
  - **Access rule type**
    either blocks a NEA application or defines one or more exceptions to it:
    - **Blocking a NEA application:**
      - **-APP**
        causes connection requests for a specific NEA application to be rejected (for example $DIALOG or $FJAM).
        All NEA applications are supported.
        STUNNEL connections are still possible regardless of this configuration.
    - **Exception to a blockade:**
      - **+IP4**
        causes connection requests for a NEA application blocked with -APP to be allowed from explicitly specified IPv4 addresses.
      - **+IP6**
        causes connection requests for a NEA application blocked with -APP to be allowed from explicitly specified IPv6 addresses.
      - **+PRO**
        causes connection requests for a NEA application blocked with -APP to be allowed from explicitly specified processor names.

- At least 1 blank
- **NEA application name**
  Maximum 8 characters in length.
- At least 1 blank
- **Definition of the exception**
  for the NEA application (only if access rule is not -APP) for:
  - **IPv4-address** if access rule type is +IP4
    possible with and without leading zeros or a mix of both.
    IPv4-address, from which the connection for the NEA application is possible even despite rejection by „-APP“.
  - **IPv6-address** if access rule type is +IP6
    possible with and without leading zeros or a mix of both.
    IPv6-address, from which the connection for the NEA application is possible even despite rejection by „-APP“.
  - **Processor name** if access rule type is +PRO
    processor, from which the connection for the NEA application is possible even despite rejection by „-APP“.

Example

```
* Example of rules for rejecting and allowing connection requests for specific NEA
applications
-APP    $FJAM
+IP4    $FJAM      77.6.100.72
-APP    $DIALOG
+IP4    $DIALOG    77.6.100.72
+IP6    $DIALOG    8701:7ac8:0:9a3:319:8a2e:370:7344
+PRO    $DIALOG    H3PPEXN0
```

BCAM functions

This chapter describes the following BCAM fucntions:

- Automatic end system creation
- Network and host redundancy
- VLAN support
- Link aggregation
- Support of Fully Qualified Domain Names
- BCAM mapping

Automatic end system creation (AEC)

Automatic end system creation (AEC) permits automatic generation of a partner system and/or its route at the time of the first communication relationship. AEC enables you to operate BCAM with a minimum network configuration by means of dynamic or static generation. The minimum configuration comprises the accesses to the network and the connected routers.

You enable and disable AEC using the BCOPTION ... AUTOMATIC-ES-CREATE command. Here you can also filter according to protocol types and triggering events, see the section "Activating AEC" (General control using BCAM options).

The following control options are also available which are effective when AEC is enabled:

- You can use the BCAM control files to set AEC for specific partners, see the chapter "BCAM control files" and the section "Open and controlled server operation".
- You can permit AEC via DNS access, see the chapter "DNS Resolver connection".
- You have a further option for partners who are created neither via BCAM control files nor via DNS:

  You can enable open, unhindered access to local or remote applications which must be defined using their port numbers. You use the BCOPTION ... ADD(-REMOTE)-SERVER-PORTS command to do this, see the section "BCOPTION: Change mode options".

  When this option is set, only access to the port numbers concerned is granted regardless of the control file contents, i.e. the partner can only communicate with these applications.

- You can define the IP address ranges permissible for communication. You use the BCOPTION ... ADD /REMOVE-IP-RANGE command to do this, see section"BCOPTION: Change mode options". This setting is also independent of the control file contents.

AEC generates an entry in the BCAM routing tables which has a limited period of validity. The entries generated in this way are released with a time delay after communication with the partner concerned has terminated. The release interval is at least 20 minutes.

Examples of AEC are provided in the section "Examples of automatic end system creation".

Open and controlled server operation

The automatic end system creation function and the processor file are connected to each other. The connection is established using the ACCESS parameter in the PROCESSOR-TABLE operand of the DCOPT, DCSTART and BCMOD commands.

With ACCESS you define the mode for server operation:

ACCESS=READ

Controlled server operation with restricted access to the host.

The partner end systems with the specified processor names which are described in the processor file can be created.

Further end systems may be created only when at least one of the following conditions is satisfied:

- Creation of the socket host file is permitted
- An entry exists for the end system in DNS and the use of DNS is enabled
- The end system is permitted via a permitted server port
- The IP address is entered in an IP range using a BCOPTION command

ACCESS=UPDATE

Open server operation with unrestricted access to the host.

Any partner end system may be created.

If the name of the partner end system is not contained in the processor file (or in the sources which are mentioned in the description for ACCESS=READ), it is permitted nevertheless and entered in the .AUT, .LOG and ISAM files. Furthermore, IP, IPv6 and ISO internet partners are entered retroactively in the .AUT and .LOG files.

ACCESS=ALLOW

Open server operation with unrestricted access to the host.

Any partner end system may be created, but is not entered in the.AUT, .LOG and ISAM files, i.e.:

If the name of the partner end system is not contained in the processor file (or in the sources which are mentioned in the description for ACCESS=READ), it is permitted nevertheless. In contrast to ACCESS=UPDATE, no creation takes place in the .AUT, .LOG and ISAM files. Furthermore, IP, IPv6 and ISO internet partners are not entered retroactively by means of dynamic generation.

Note

The partner end systems whose IPv6 Interface Identifiers are temporarily randomly generated and not, as suggested in the IPv6 Basis RFC, derived from the MAC address lead to non-unique entries in the .AUT, .LOG and ISAM files in the case of pure ACCESS=UPDATE. Precisely this is avoided with the setting ACCESS=ALLOW.

Switching to controlled server operation

Proceed as follows to switch from open to controlled server operation:

> Use the BCMOD command to switch from ACCESS=UPDATE or ACCESS=ALLOW to ACCESS=READ. When switching from ACCESS=ALLOW to ACCESS=READ, no further steps are required.

> With the help of the .LOG file also include the processors which are still to have access in the original processor file.

> Replace the artificial processor names by the processor names you wish to use.

> In order to remove the artificial processor names in the .IS1 and .IS2 files, too, use the BCMOD command to temporarily specify a processor file which is identical to the original.

> Delete the derived .IS1 and .IS2 files of the original processor file.

> Delete the .AUT and .LOG files of the original processor file.

> Use the BCMOD command to specify the original processor file again.

Details on .IS1, .IS2, .AUT and .LOG files are provided on "BCAM control files".

Controlling automatic end system creation

- General control using BCAM options
- Control procedure

General control using BCAM options

Prerequisites

In order to provide the desired functionality, BCAM (automatically) activates the following system options internally, provided this has not already been done by means of the BCOPTION or MODIFY-BCAM-OPTIONS command:

For connections via IP:

- ARP=QUIET
- BROADCAST=ON

For connections via ISO8473:

- ISO9542=ON

Activating AEC

Automatic end system creation must be explicitly activated using the following command:

```
/BCOPTION AUTOMATIC-ES-CREATE=ON(PROFIL=...,REASON=...,)
```

With the PROFIL parameter you select the profiles for which extension is to take place.

- PROFIL=IP
  The configuration extension occurs only for IP protocols.
- PROFIL=IPV6
  The configuration extension occurs only for IPv6 protocols.
- PROFIL=ISO8473
  The configuration extension occurs only for ISO8473/ISO9542 protocols.
- PROFIL=*ALL
  The configuration extension occurs for IP and IPv6 as well as for ISO8473/ISO9542 protocols.

With the REASON parameter you specify the events for which the configuration extension is to occur:

- REASON=INCOMING-DATA
  The extension occurs in the event of incoming messages from the network (e.g. connection setup by a previously unknown PC).
- REASON=OUTGOING-DATA
  The extension occurs as a result of actions in the local system which require the dispatch of messages to the network, e.g. connection setup by a previously unknown PC).
- REASON=ROUTING-PROTOCOL
  The extension occurs when routing protocol elements from the network (e.g. ISO9542 ISH-PDU) are received from a previously unknown intermediate system.
- REASON=ROUTING-DATA
  The extension occurs as a result of routing data elements that are not sent via an IP broadcast.
  This setting requires the entries PROFILE=IP and IP-ROUTING=ON.
- REASON=INCOMING-BROADCAST
  The extension is triggered by incoming IP broadcast data.
  This entry is only evaluated for PROFILE=IP and PROFILE=*ALL.

- REASON=SNMP
  The extension occurs on receiving SNMP write accesses (required setting: BCOPTION SNMP-WRITE=ON). This entry is only evaluated for PROFILE=IP.
- REASON=*ALL
  The extension is required for each of the above reasons.

As soon as DNS is to be used, you must also set the following:

```
/MODIFY-BCAM-OPTION DNS-OPTIONS=*PARAMETERS(DNS-USAGE=*ON)
```

All these specifications have a cumulative effect. If a particular subfunction is no longer desired, it must be explicitly deactivated. The configuration is extended as soon as the function is activated, provided a corresponding routing table entry does not already exist. If the function is deactivated with BCOPTION AUTOMATIC-ES-CREATE=OFF, no further entries are made in the routing tables.
If certain routing table entries are no longer accessed, the corresponding system must be shut down explicitly by means of a BCDAC or BCOUT command.

Do not issue the BCOPTION command until all the routers have been entered and all the required server ports released.

Control procedure

In multiple steps BCAM checks whether a partner end system may be created automatically. You can control the type and scope of automatic end system creation using, among other things, the following input files:

- Processor file
- Socket host file
- FQDN file

These files have no direct influence on the BCAM routing tables, but influence only the bahavior of automatic end system creation.

If BCAM cannot determine the end system from the BCAM tables as it is known neither through generation nor through AEC, BCAM checks whether one of the following criteria is satisfied (if this is the case, it is created as a partner end system):

- The partner end system is contained in the ISAM file derived from the processor file. Information from both the processor file and from the FQDN file is used to create this ISAM file.
- The partner end system is contained in the socket host file.
- The partner end system is known to DNS, is located in the permissible range, and the use of DNS is enabled.

i
- You define the permissible range, i.e. the namespace or IP address range concerned (for both IPv4 and IPv6) using MODIFY-DNS-ACCESS.
- As the DNS server resides on a partner system, it must either be made known using CREATE commands or be entered in the processor file.

If BCAM was unable to determine the partner system using these checks, it proceeds as follows:

- If ACCESS=UPDATE is set for the processor file, the partner end system is always created.
- If the server port was permitted using the BCOPTION ... ADD(-REMOTE)-SERVER-PORTS command. access from/to the associated partner system is permitted. Up to 64 server ports can be specified which are granted the option of open, unhindered access to applications.
- When the partner end system which begins a communication relationship is within the permissible IP address ranges, it is created.
  You define the permissible address ranges using the BCOPTION ... ADD/REMOVE-IP-RANGE command.

Identifying automatically created end systems

Once, following all these checks, permission has been granted to create the partner end system, a processor and /or route entry is created if required.

If a name is found, this name is used, otherwise an artificial name is generated for the partner end system which has been created.

The following rules apply for the artificially created processor and/or route names:

- When adding a new processor:
  ##xxxxxx (000001 <= xxxxxx <= 999999)
- When adding a new route to an already known processor:
  #$xxxxxx (000001 <= xxxxxx <= 999999)
- When a derived DNS name already exists, the following must be formed as an alternative:
  @@xxxxxx (000001 <= xxxxxx <= 999999)

This processor or route name can be used to address (e.g. deactivate) the corresponding end system by means of BCAM commands. The relevant extensions can be displayed, for example, using the command SHOW-ROUTE or SHOW-ROUTE-ATTRIBUTES.

Firewall entries in BCAM

A prerequisite for this procedure is that ACCESS=READ mode is set for the processor file (see also "Open and controlled server operation").

If BCAM cannot determine a partner end system (see the section “Control procedure”), the associated address is entered in a BCAM-internal firewall table. Systems with addresses which are entered in this table have no name and **no** way of accessing the host.

The SHOW-ROUTE and SHOW-ROUTE-PATH commands for the IP address or SHOW-BCAM-FIREWALL enable you to check whether a firewall entry exists for a particular address.

If you wish to grant a system which is entered in the firewall table access to the host, you must remove this system from the firewall table. The following alternatives are available to you to do this:

- Enter the system in the processor file and then delete the processor and its route(s) using the DELETE-ROUTE command. Enter the IP address or IPv6 address as the ROUTE-NAME. A new route will be created when a connection is set up.
- Delete the processor and its route(s) using the DELETE-ROUTE command. Enter the IP address or IPv6 address as the ROUTE-NAME. Then create the processor using BCAM commands.
- If DNS is used, make the partner end system known in DNS.

Releasing routing table entries

Following termination of the communication link to the corresponding partner, entries that were created using automatic end system creation are released after an interval of at least 20 minutes.

Note:

In addition, it is also possible to delete end system entries for IP, IPv6 and INTF explicitly by means of the DELETE-PROCESSOR or DELETE-ROUTE commands. Deletion of the route and the processor generally takes a little time.

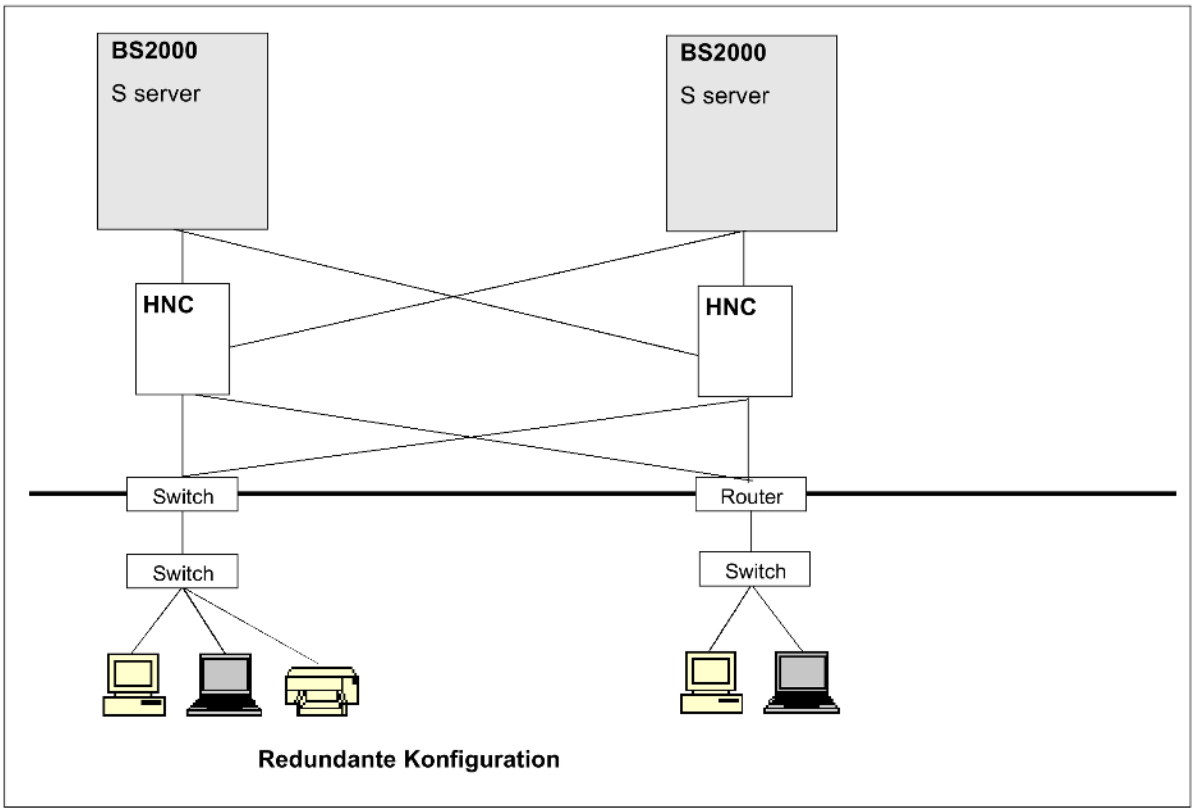
If access to particular routing table entries is no longer to be possible, the systems concerned must be taken out of service explicitly using a BCDAC or BCOUT command.

Redundant network topology

- Redundant network topology to increase fault tolerance
- Failure of components
  - Failure of a channel adapter
  - Failure of an IP router
  - Failure of an IPv6 / ISO9542 router
- Definition of (line) redundancy
  - Redundant lines to a node
  - Groups of redundant lines to a node
- Parameter settings for redundancy
  - Basic settings using BCAM options
  - Line definitions and settings
  - Changing the line settings
  - Administering the redundant lines
- Principle of line monitoring
- Switching routes when a line fails

Redundant network topology to increase fault tolerance

Redundant network topology



Redundant topology

Exacting requirements are also placed on the ability of corporate networks to offer a failureproof level of security. This can be enhanced by means of a redundant network topology, where certain central hardware components are installed on the network more than once. If one network component fails, the intact components take over the functions of the one that has failed.
The redundancy concept can be implemented for Ethernet/Fast and Gigabit Ethernet by using High-Speed Net Connect (HNC) as the network access product. This approach is illustrated in the above diagram. Routers, concentrators, channel adapters and cables are all duplicated, thus allowing operation to be maintained even if one component should break down.

BCAM supports the redundant network topology both with the TCP/IP or IPv6 and ISO protocols (for example ISO9542).

TCP/IP or IPv6 and ISO protocols support automatic rerouting in the event of an error, provided the corresponding network topology and settings for the BCAM operands are available. To increase fault tolerance, BCAM uses ARP and ICMP protocols as well as OSPF protocol information (if present). The partners involved are expected to use ARP dynamically. The IP routers, in particular, must respond to ICMP echo requests with ICMP redirect messages if the partner system addressed is reached via a different route. In the ISO sector, ISO9542 is always used.

Failure of components

- Failure of a channel adapter
- Failure of an IP router
- Failure of an IPv6 / ISO9542 router

Failure of a channel adapter

BCAM detects the failure of a channel adapter which will lead to the failure of a line and issues a console message (failure message, i.e. one of the messages BCA0990, BCA0991, BCA0996 or BCA0999). In such a case, BCAM automatically connects all the partner end systems assigned to the failed line to a line that is still operational and displays this end system switchover by means of console message BCA07B2. Existing connections are generally retained.

For active line monitoring BCAM uses a process based on ARP and reports problems it detects with a console message (timeout message, one of the messages BCA0925, BCA0955 or BCA0965).

> ¡ To avoid impairing the functionality of this line monitoring mechanism, do not connect any components that perform filtering between the channel adapter and ethernet.

In addition, when the lines are activated BCAM switches all routes to the line which was the first one activated successfully. This action is also documented with the console message BCA07B2. The switchover can be prevented by initially defining the lines withAUTO-ROUTE-SWITCHING=*OFF and ROUTE-RESWITCHING=*OFF. Only after the lines and the associated node have been activated should the switching operations be permitted.

Once the reason for the failure has been removed, the original configuration can be restored while the system is running (reconfiguration). This can be done manually (see "Operation of routes").
Automatic reconfiguration occurs only when the lines concerned were edited with MODIFY(-VLAN)-LINE, AUTO-ROUTE-SWITCHING=*ON, ROUTE-RESWITING=*ON and SLOW-POLL=*ON. In other words, all the routes associated with a failed line will be reenabled with this setting only when the line is reactivated.

In the case of a VLAN, SLOW-POLL=*ON must be set in the assigned devices using the MODIFY-VLAN-DEVICE command.

Failure of an IP router

As described below, BCAM attempts to switch to alternative routers if transmission problems occur. If no alternative routers are available or the redundancy is implemented transparently via a corresponding protocol (e.g. HSRP) for BCAM, we recommend to deactivate this functionality with BCOPTION ROUTER-REDUNDANCE=OFF.

All routes which are local on the node can be used as alternative routers. By preference routes are used which are managed and selected by routing protocols.

Failure of an IPv6 / ISO9542 router

The time monitoring of the router entries that is defined in the associated protocols recognizes the failure of IPv6 or ISO9542 routers. Router failure is handled as specified in the provisions for the protocol in question.

Definition of (line) redundancy

BCAM knows the following redundancy settings in redundant configurations:

- Redundant lines to a node (default)
- Groups of redundant lines to a node

Examples of redundancy topics are provided in the section “Examples of redundancy”.

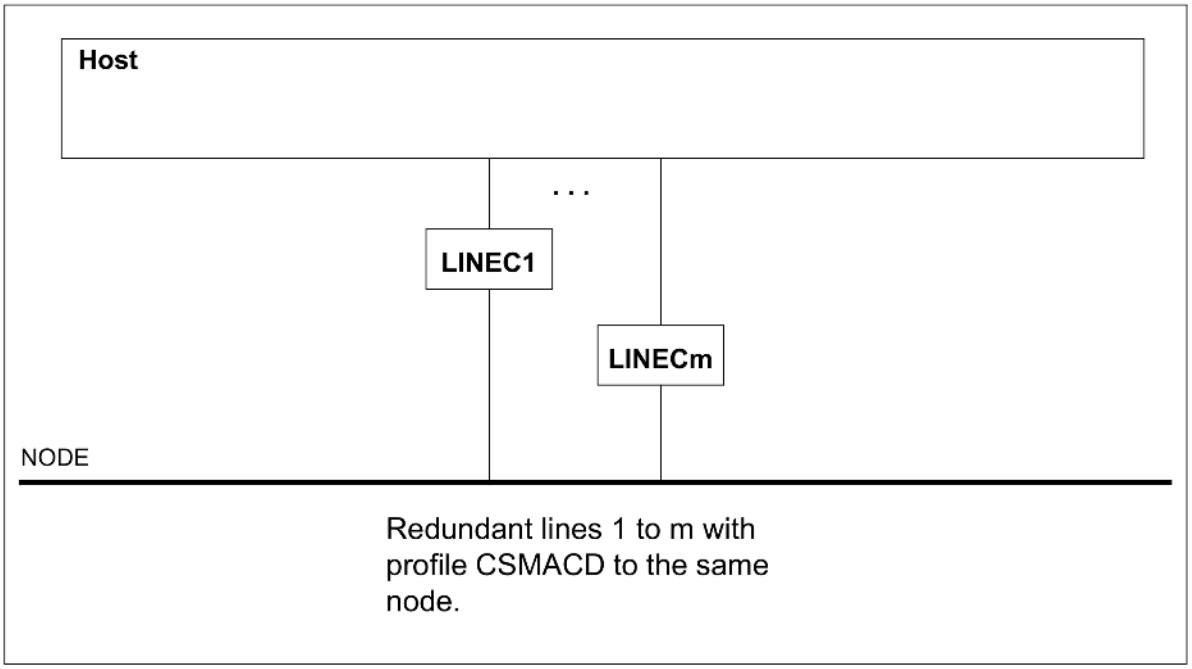
Redundant lines to a node

In BCAM the term line redundancy or redundancy for short (default) is used when at least two lines connected to a node are defined with the same profile.

The profile for lines can be specified in the CREATE-LINE command using the CSMACD value of the L2-PROTOCOL operand. By contrast, the CSMACD is accepted implicitly for VLAN lines.

All lines and VLAN lines with the same profile which are connected to a node are thus defined redundantly.

The figure below shows the default concept to date without group formation:



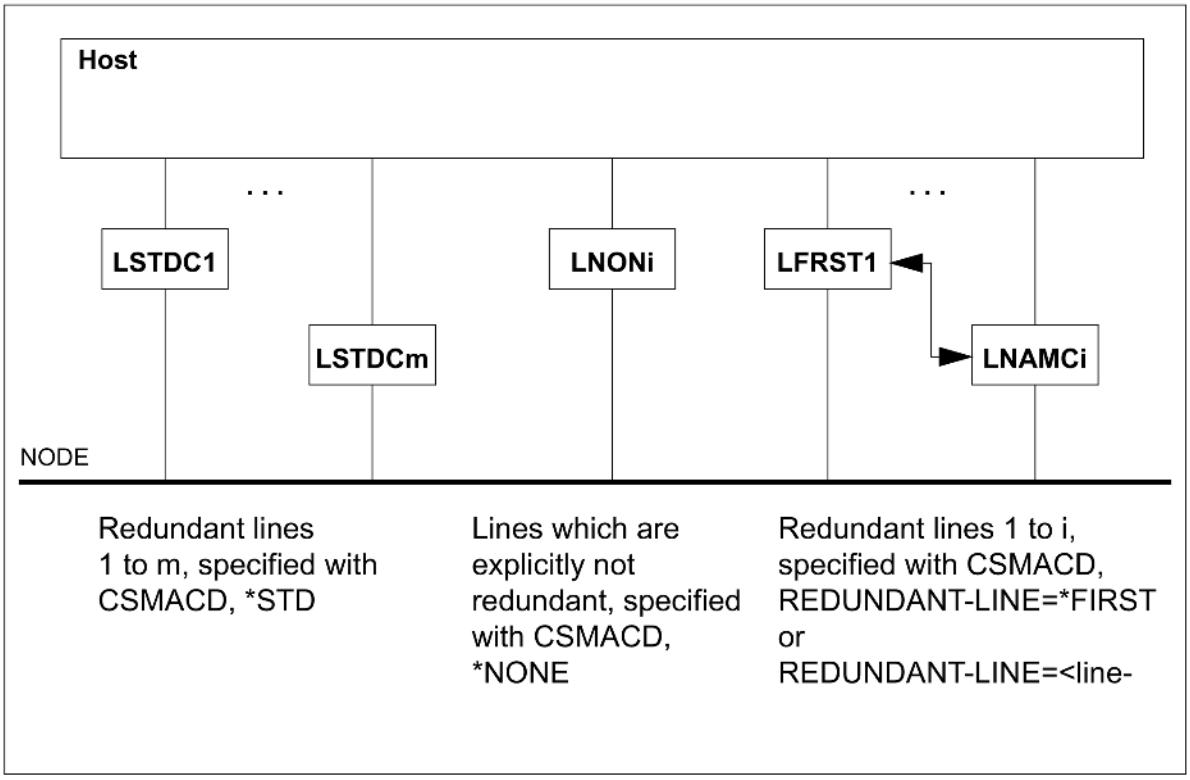
Redundancy on one node without group formation

Groups of redundant lines to a node

Also groups and subgroups of redundant lines can be created with BCAM, thereby enhancing the definition of redundant configurations. This enables you to specify precisely which lines to a node are to be regarded as redundant and which lines are not to take part explicitly in a switchover. Groups of lines which are redundant among themselves can thus be formed on a node. The subgroup is used to control which lines are to be used preferentially as alternatives.

This group formation is defined by a simple extension to the CREATE-LINE and CREATE-VLAN-LINE commands.

The figure below shows the extended concept of redundancy with group formation:



Redundancy on a node with group formation

Parameter settings for redundancy

A few settings are required in BCAM to support redundancy.

Basic settings using BCAM options

> Use the LINE-SUPERVISION operand to ensure that line monitoring is enabled (*ON, the default value:

  This setting can be changed as follows:

```
/MODIFY-BCAM-OPTIONS AVAILABILITY-OPTIONS=*PARARMETERS( -
/       LINE-SUPERVISION=...)
```

  Monitoring is implemented by exchanging ARP messages. For this reason it is necessary to assign an IP address to each line which is used. Monitoring does not function if the alternate line has not been assigned an IP address, because then no messages can be exchanged.

> Set the display and acknowledgment behavior of BCAM messages using the following command:

```
/MODIFY-BCAM-OPTIONS AVAILABILITY-OPTIONS=*PARAMETERS( -
/       ACKNOWLEDGE-MSG=)
```

  These messages can then be displayed using the STA msg or SHOW-PENDING-MSG command.

  The following messages can be set in this way:

  BCA07B2, BCA0990, BCA0991, BCA0996 and BCA0999.

  The BCA09* messages provide information on whether there was an input/output problem. The message BCA07B2 also specifies the line to which the routes via the failed line have been transferred.

Line definitions and settings

The following operands must be set in the CREATE-LINE or CREATE-VLAN-LINE command to define how the line switchover is to take place.

```
AUTO-ROUTE-RESWITCHING=...
ROUTE-RESWITCHING=...
SLOW-POLL=...
```

Note:

SLOW-POLL is also an operand of the CREATE-VLAN-DEVICE command. The value of SLOW-POLL must therefore be coordinated in the relevant commands.

In a general redundant configuration the setting of the LPDU-SIZE must be uniform, i.e. all the lines involved must have an identical setting. As the LPDU SIZE is set on a devicedependent basis, this setting must be checked separately before being used:

```
MAX-LPDU-SIZE= ...
```

Note:

MAX-LPDU-SIZE is also an operand of the CREATE-VLAN-DEVICE command. The value of MAX-LPDU-SIZE must therefore be coordinated in the relevant commands.

Group redundancy is controlled using the following operands:

```
REDUNDANT-LINE= ...
REDUNDANT-SUBGROUP= ...
```

Changing the line settings

You can modify the values you have set later using the MODIFY-LINE or MODIFY-VLAN-LINE command.

Use the MODIFY-LINE or MODIFY-VLAN-LINE command to define that a (VLAN) line is to be deactivated when the TIMEOUT message BCA0925 (line), BCA0955 (vlan line) or BCA0965 (vlan device) is issued for it:

```
TIMEOUT-PROCESSING=*DEACTIVATE-LINE
```

The line is then deactivated and a switchover to a redundant configuration is initiated. Note that the default value is *KEEP-LINE.

The messages BCA0570 (line) and BCA0571 (vlan line) provide information on which local addresses apply for which line or VLAN line.

Administering the redundant lines

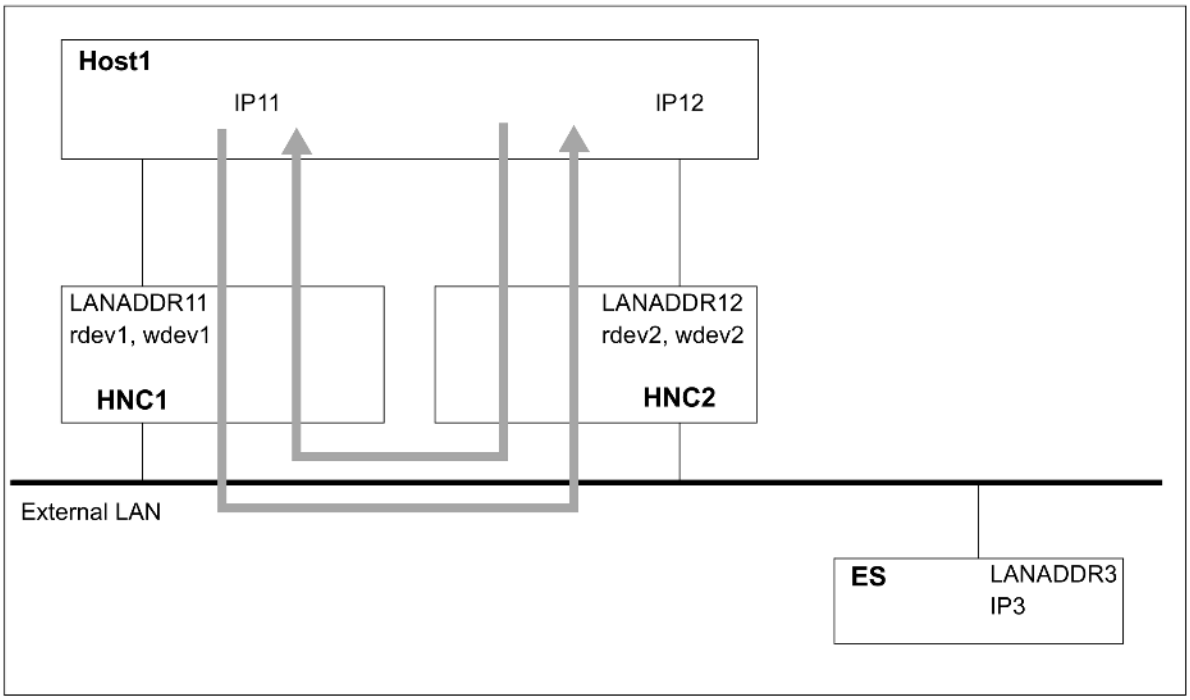
Use the ACTIVATE-LINE/DEACTIVATE-LINE or ACTIVATE-VLAN-LINE/DEACTIVATE-VLAN-LINE command to activate or deactivate the lines and VLAN lines as these commands take into account the settings which have been made and leave them unchanged.

You can use the SHOW-LINE(-ATTRIBUTES) and SHOW-VLAN-LINE(-ATTRIBUTES) commands to display the settings, the activation states and the current local address assignments.

You can obtain a quick overview of lines, VLAN devices and VLAN lines using the SHOW-BCAM-OBJECTS ... OBJECT=*LINE command for lines and the SHOW-BCAM-OBJECTS ... OBJECT=(*VLAN-LINE,*VLAN-DEVICE) command for VLAN configurations.
As an alternative to the differentiated specification, you can specify SHOW-BCAM-OBJECTS ... OBJECT=*INTERFACE.

Principle of line monitoring

In the figure below the BS2000 server "Host1" (IP addresses "IP11" and "IP12", LAN addresses "LANADDR11" and "LANADDR12") and the end system "ES" (IP address "IP3", "LANADDR3") are linked via the HNCs "HNC1" and "HNC2" and a real network.



Line monitoring

The arrows in the diagram show how line monitoring functions in principle. Two tests are used for this purpose:

- Incoming messages are time monitored by sending monitoring messages which are expected at regular intervals on the receiving side.
- Outgoing messages are monitored directly by detecting I/O errors.

General information on the configuration

- If a dummy address such as 10.1.1.3 is specified for line monitoring for IP12, this line is not used productively
- If both lines are to be used productively, both addresses must be made visible on the outside. It is possible that one part of the end systems uses the address of the 1st line and the other part the address of the 2nd line. When one line fails, the routes are transferred to the line which is still operational.
- AUTO-ROUTE-SWITCHING and ROUTE-RESWITCHING must be set to *ON to permit the routes to be switched over and back:
  - If the operands are already set in the CREATE-LINE or CREATE-VLAN-LINE command, the switchover is performed when activation takes place as lines and VLAN lines are activated one after another.
  - If the operands are set later using a MODIFY-LINE or MODIFY-VLAN-LINE command, switching operations are prevented when activation takes place. This procedure is consequently recommended.

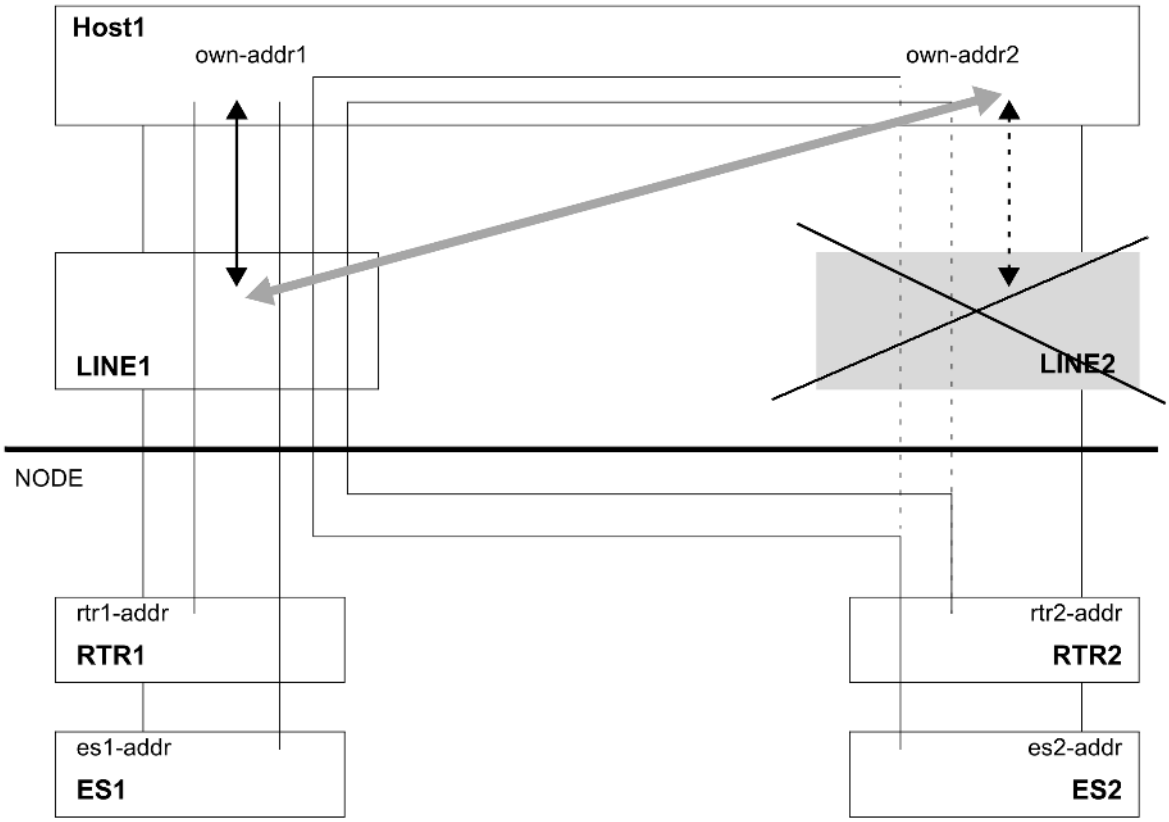
  As a rule both lines should already be active after the ACTIVATE-LINE or ACTIVATE-VLAN-LINE command. Switching operations (for local IP addresses) are executed only after the MODIFY-LINE or MODIFY-VLAN-LINE commands. If one line unexpectedly does not become active, the BCACT command takes effect for the node and permits the switching operation to take place.

- A BCACT command for the node activates the network which, from the BCAM viewpoint, is situated behind this node. Only then is connection setup from the network possible via this node.
- You should use the ACTIVATE-LINE and DEACTIVATE-LINE commands to activate and deactivate lines as these leave the line settings you have made unchanged, in contrast to the line-specific BCACT and BCDAC commands.

Switching routes when a line fails

When a switching operation takes place in a redundant configuration - i.e. at least 2 (VLAN) lines belong to a node - the local address of the failed line is temporarily taken over by the line which is still operational. You can have this displayed using the SHOW-LINE-ATTRIBUTES INF=*ADDRESS command.

Routes which were connected via the failed line are then switched to the line which is still active, which then takes over the local address of the failed line. In addition to its own local address, this line manages the failed line's local address as long as this is necessary. The basic property of a route - the invariance of the address pair - is thus observed here and a switching operation is consequently permitted.



Switching the routes when a line fails

The original paths for the routes can no longer be used; own-addr2 is assigned to LINE1 after the switchover. This switching operation is initiated by the failed line LINE2.

Host redundancy

However, host redundancy cannot be supported by BCAM alone, switching functions are also required in other components (for example router systems, partner end systems). This means that host redundancy is complex for generation and administration purposes. Automatic administration of the virtual hosts requires the use of the product HIPLEX AF.

Definition of a virtual host

BCAM supports generation of multiple hosts on the user's own end systems (hosts) on one mainframe. The first host is known as the standard host; the second and every subsequent host are known as virtual hosts.
A virtual host must be defined with the CREATE-VIRTUAL-HOST command in a BCAM command file.
Each virtual host can be assigned any network addresses and network descriptions in the form of the definition of nodes, link aggregations, lines, VLAN devices and VLAN lines. In addition, processors and routes can be defined in an analogous manner to a standard host. The standard host is regarded as active if the BCAM assigned to it is active on a specific mainframe and can thus be reached from the network.
Virtual hosts, and consequently the network descriptions assigned to them, can, when necessary, also be placed in and taken out of service by means of a console command.

A dynamic configuration extension can be performed from the standard host as well as the virtual host.

Automatic end system creation is also possible on virtual hosts, provided routes between the virtual host and the corresponding router have been defined.

An example of how to define virtual hosts is provided in the section "Example of host redundancy" (Example of host redundancy).

Definition of an application file

Applications are generally assigned to the default host and started there. If an application is to be started on a virtual host, existing applications do not have to be modified.
Instead, a corresponding entry must be made in the application file (see DCSTART/DCOPT APPLICATION-TABLE=...).

Failure of a BCAM host

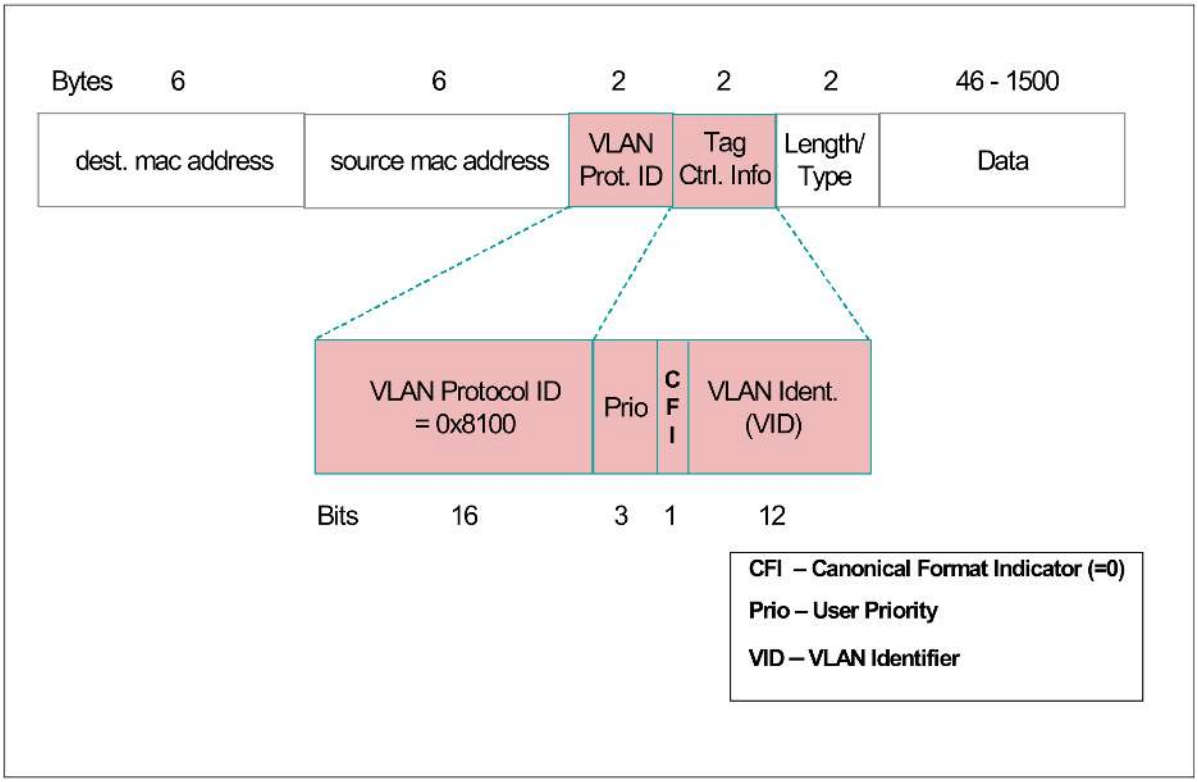
When a BS2000 system (BCAM) with a defined virtual host fails, this virtual host can be activated on another BS2000 system provided it is defined there in the same way. It is therefore possible to assign (in part) the operations of a failed mainframe to another intact backup mainframe. HIPLEX AF can be used to do this.
It is important that each network address is assigned to just one active host at any given time, i.e. that a virtual host with its network configuration may also only be active on just one BS2000 system at any given time, otherwise problems can occur throughout the entire network.

VLAN support in BCAM

In this section only a short explanation is provided from the BCAM point of view in that only a few central VLAN features are dealt with briefly.

> Detailed information on VLANs is available on the internet, for example at *IEEE 802.1q, http://standards.ieee.org/getieee802/download/8021Q-2003.pdf*

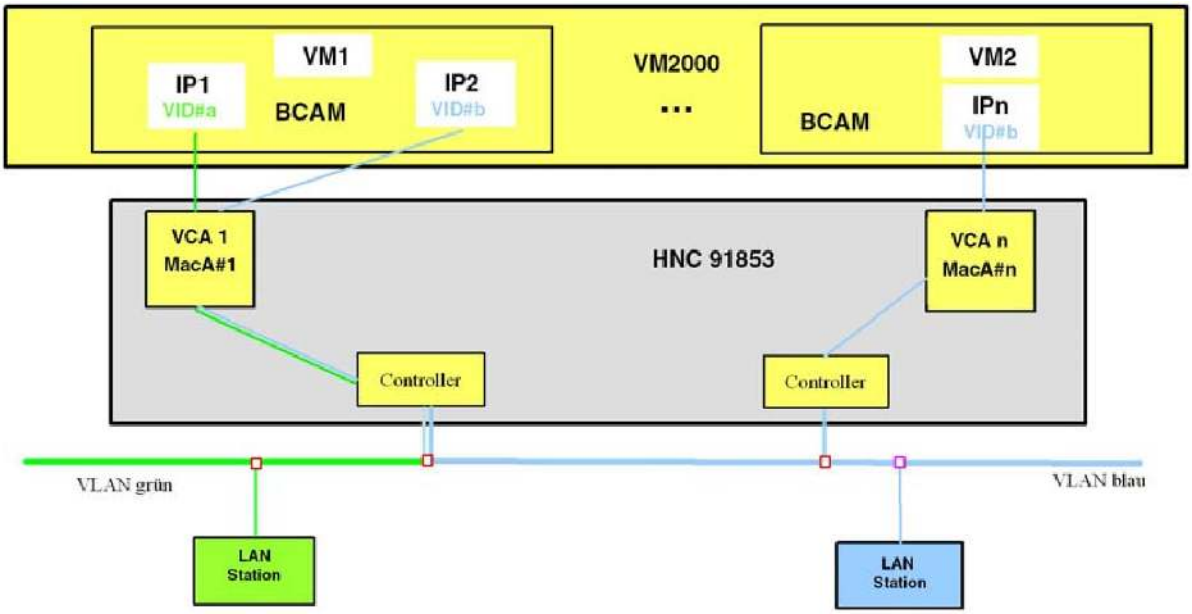
VLAN support (IEEE 802.1Q) - VLAN-tagged Ethernet frame



Note

- Format of the VLAN tag (arranged bitwise), a 4-byte insert:
  00-15: VLAN protocol ID = 0x8100
  16-18: User priority, accepts values from an integer area
  19-19: CFI Canonical Format Indicator (=0)
  20-32: VLAN ID, accepts values from an integer area
- Definitions for the VLAN ID and user priority can be specified via BCAM commands, especially the CREATE-NODE command that has been extended as of BCAM V19.0A. This VLAN feature is propagated to all objects assigned to this node. BCAM supports processing of VLAN tags from BCAM V19.0A on.

VLAN support taking HNC 91853 as an example



Note

The HNC 91853 or a newer model is a prerequisite for the VLAN capability of BCAM. A BS2000 VLAN configuration with an HNC 91853 as the network connection is shown in the figure.

How a VLAN configuration can be specified using BCAM commands is shown step by step in the examples on BCAM VLAN support.

BCAM commands for VLAN support

A number of new commands have been introduced to define VLANs which supplement the existing BCAM commands. The new commands are listed side by side with the existing BCAM commands for LAN administration in the table below.

VLAN	Normal LAN
CREATE-VLAN-DEVICE Specifies the device mnemonic of the network connection with VLAN capability (e.g. HNC 91853)	No analogous command exists
CREATE-NODE Node of type LAN-TYPE=*VIRTUAL VLAN ID, user priority selectable Propagated to objects defined below it	CREATE-NODE Node of the type LAN-TYPE=*NORMAL
CREATE-VLAN-LINE Establishes reference to the VLAN device Specifies the local addresses	CREATE-LINE Specifies the device mnemonic Specifies the local addresses
ACTIVATE-VLAN-DEVICE Activates VLAN device	No analogous command exists
ACTIVATE-VLAN-LINE Activates VLAN line	ACTIVATE-LINE Activates line
DEACTIVATE-VLAN-DEVICE Dectivates VLAN device	No analogous command exists
DEACTIVATE-VLAN-LINE Dectivates VLAN line	DEACTIVATE-LINE Dectivates line
MODIFY-VLAN-DEVICE Modifies VLAN device attributes	No analogous command exists
MODIFY-VLAN-LINE Modifies VLAN line attributes	MODIFY-LINE Modifies line attributes
MODIFY-VLAN-ASSIGNMENT Establishes reference from IP, IPv6 address ranges to VLAN	No analogous command exists

Comparison of the commands for defining a VLAN and a normal LAN

Note

The use of BCAM commands for VLAN is shown in the section "Examples of VLAN support in BCAM".

Link aggregation

- Link aggregation support
- Definition of a link aggregation

Link aggregation support

With link aggregation (line aggregation) BCAM provides a number of functions which support high-performance and reliable network operation. Link aggregation is offered only for Fibre Channels. A suitable power supply is required to use link aggregation. Use of link aggregation cannot be recognized by the communications partners. BS2000 requires only a MAC address and an IP address.

Enhancing the communication performance

Link aggregation enables multiple device connections to be grouped together and operated as a single device. It is unimportant whether the devices, as logical devices, serve a physical Fibre Channel or multiple Fibre Channels. Virtual and real channel adapters can be operated simultaneously.
Link aggregation on the one hand utilizes the good multiplex characteristics of the FC port in BS2000 when multiple logical devices use one channel. On the other hand multiple channels can be used simultaneously without additional measures being required for configuring the network.
In BCAM the number of configurable devices of a link aggregation is limited to 256.

Enhancing the availabilty

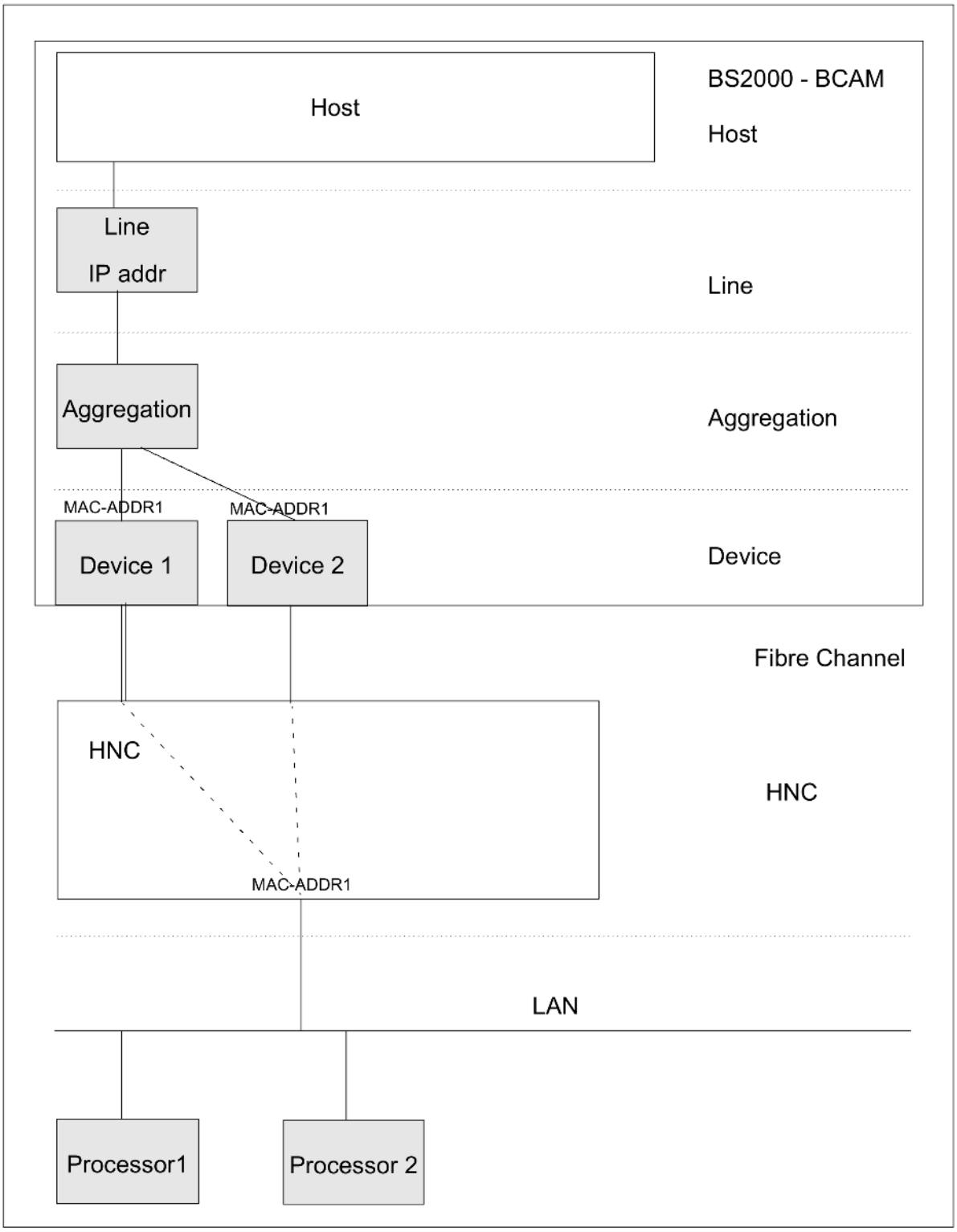
Parallel operation of multiple real channels not only results in better communication performance, but also enhances the availability of the network connection. If one of the channels fails, all logical devices assigned to this channel are deactivated and the communication load is automatically distributed over the remaining devices in the aggregation.

Load distribution

The various distinguishable data streams are assigned automatically by BCAM or by the connected device. The distribution algorithms in BCAM and in the device are independent of each other. Packets of a data stream which are sent from BCAM to the device can be transferred over a different channel than packets of the same data stream which are sent from the device to BCAM. The data streams are identified in both BCAM and the device on the basis of the protocol and its attributes which are transported in the IP. As a result, load distribution is not limited to the communication relationships between computers, but takes into account individual application pairs and individual transport connections.

Administration in BCAM

Link aggregations are configured in BCAM. BCAM transfers configuration measures to the connected device with the help of channel commands. Here BCAM recognizes whether the connected device supports the link aggregation and when the device’s capacity limits are exceeded.



Literature about link aggregation

To find information on literature relating the topic of link aggregation, please refer to the paper IEEE Standards 802.3 or search on the internet.

Definition of a link aggregation

The BCAM commands below are also required to administer link aggregations:

- CREATE-LINK-AGGREGATION
- ACTIVATE-LINK-AGGREGATION
- DEACTIVATE-LINK-AGGREGATION
- SHOW-LINK-AGGREGATION(-ATTRIBUTES)

These commands are offered with the administration commands for VLAN devices, VLAN lines and nodes in order to define link aggregations in BCAM. For this purpose the existing CREATE-VLAN-DEVICE and CREATE-VLAN-LINE commands were extended by the specification of the AGGREGATION-NAME.

Enter *UNTAGGED for the devices for configurations which are not operated with VLAN, and the VLAN ID *UNTAGGED in the CREATE-NODE command in BCAM.

Define a link aggregation together with the devices and lines used with the command below. Here multiple device pairs can be assigned to a link aggregation. Enter the IP address(es) in the line definition.

- CREATE-LINK-AGGREGATION
- CREATE-VLAN-DEVICE
- CREATE-NODE
- CREATE-VLAN-LINE

Activate the link aggregation to make the device aggregation effective to the outside. Use the commands below for this purpose:

- ACTIVATE-LINK-AGGREGATION
- ACTIVATE-VLAN-DEVICE
- ACTIVATE-VLAN-LINE
- BCACT NODE=

Note

The use of BCAM commands for link aggregations is shown in the section "Examples of link aggregations".

Supporting Fully Qualified Domain Names (FQDNs)

In BCAM V21 and higher “long computer names” can be used to identify hosts (also virtual hosts) and processors. This means that DNS names – more precisely Fully Qualified Domain Names (FQDNs) – are administered in BCAM. An FQDN is unique within the Domain Name System. An addressable object, e.g. an internet server, is identified unambiguously by an FQDN. An object can be identified by more than one FQDN. FQDNs which identify the same object are called aliases.

A domain name is a structured character string which complies with specific syntax rules. A domain name consists of labels which are separated from each other by a period. The maximum length of a label is 63 characters (bytes). The maximum length of an FQDN is 255 characters, including periods. The number of labels in an FQDN is limited only by the maximum length of the FQDN. The structure of valid DNS names is described in RFC1034 and RFC1035. Please also note the adjustments and enhancements to the RFCs from more recent RFCs.

BCAM and SOCKETS applications can use the same name for the same object, which makes diagnosis and identification considerably easier.

Obtaining the FQDN names

The FQDN names can be obtained from the FQDN file or from DNS.

Obtaining the FQDN name from the FQDN file

At BCAM system startup, the FQDN file is read in after the processor file. The FQDN file is searched for lines which contain both a BCAM processor name and an IP address. IP addresses and the associated processor names are entered in the processor file if they are both not yet known, or they are ignored if at least one of the two already exists. The FQDNs are ignored in this processing step.

When the FQDN file is processed, the processor file is accessed using an existing IP address. A corresponding entry must be found, and the following entries must match:

- BCAM processor name of the line of the FQDN file which is currently being edited
- BCAM processor name of the entry in the processor file which is found

The BCAM processor name is thus assigned the FQDN which is defined in the FQDN file, see also the section "FQDN file".

FQDNs whose computer label is longer than the eight characters of a valid processor name can thus be mapped to valid processor names.

Note

With the help of the FQDN file it is only possible to define DNS aliases using lines which have identical BCAM processor names.

Obtaining the FQDN name from DNS

During ongoing operation BCAM attempts to obtain DNS information (FQDN) on the known hosts and processors. A prerequisite here is that a DNS server which can be reached and which is known in BCAM is entered in the LWRESD configuration file.

When automatic end system creation takes place, the FDQNs are obtained by means of querying the DNS server in the case of (actively) initiated and (passively) accepted communication relationships.

In the cases mentioned the FQDNs are assigned to the hosts and processors.

Settings for using DNS

This section summarizes what settings you must specify to use DNS. The settings are largely familiar from BCAM's history.

Two variants for using DNS are always offered:

- The Light Weight Resolver Daemon LWRESD is accessible locally (continue with section "Local use of the LWRESD").
- The Light Weight Resolver Daemon LWRESD is accessible remotely under BS2000 or another platform (continue with section "Remote use of the LWRESD").

Local use of the LWRESD

- Specify /DCOPT or /DCSTART ...,LWRESD=YES, or use START-LWRESD to start up manually or using a procedure after BCAM has started.
- Enter DNS server in the SYSDAT.LWRESD.nnn.RESOLV.CONF file.
- Enter the DNS server(s) in the FQDN file of BCAM with IP or IPv6 address, with BCAM name and with DNS name. As a result an entry in the processor file is no longer required, and unnecessary accesses to the DNS server are avoided. Automatic end system creation must be permitted!
- If necessary define restrictions to DNS access with /MODIFY-DNS-ACCESS.
- Issue MODIFY-BCAM-OPTIONS DNS-OPTIONS=*PARAMETERS(DNS-USAGE=*ON).
- You can display the settings specified most recently with SHOW-DNS-ACCESS.
- Enter the desired (and necessary) settings for automatic end system creation in the. SOF file.
- It must be ensured that the active LWRESD is configured appropriately, i.e. that at least a reachable and functional DNS server is entered, and the own domains which are to be used should be made known.
  A description of LWRESD and its settings is provided in chapter "DNS Resolver connection"

> Aliases are known in BCAM only if a computer is addressed via an alias. LWRESD does not enable aliases to be queried.
>
> The mapping of DNS names to BCAM names introduced in BCAM remains unchanged. If a name clash occurs (which can happen when prefixes are identical), BCAM guarantees a locally unambiguous name.

Remote use of the LWRESD

- Specify /DCOPT or /DCSTART ...,LWRESD=*NO.
- With this use no DNS server need be entered in the SYSDAT.LWRESD.nnn.RESOLV.CONF file. The entry could, however, make sense, because when DIG and NSLOOKUP are used, no server would need to be specified in the call.
- Enter the DNS server(s) and also LWRESD in the FQDN file of BCAM with IP or IPv6 address, with BCAM name and with DNS name. As a result an entry in the processor file is no longer required, and unnecessary accesses to the DNS server are avoided. Automatic end system creation must be permitted!
- Use /MODIFY-DNS-ACCESS to make the IP/IPv6 address of LWRESD and the port of the LWRESD known in BCAM if the default port is not used. If an LWRESD under BS2000 is used, these entries must also be made on the host on which LWRESD is active.
- If necessary define restrictions to DNS access with /MODIFY-DNS-ACCESS.
- Issue /MODIFY-BCAM-OPTIONS DNS-OPTIONS=*PARAMETERS(DNS-USAGE=*ON).
- You can display the settings specified most recently with /SHOW-DNS-ACCESS.
- Enter the desired (and necessary) settings for automatic end system creation in the SOF file.
- It must be ensured that the active LWRESD is configured appropriately, i.e. that at least an accessible and functional DNS server is entered, and the own domains which are to be used should be made known.
  A description of LWRESD and its settings is provided in the chapter "DNS Resolver connection"

Displaying the FQDN names

Existing commands which affect hosts and processors have been extended to display FQDN names. Furthermore, the new display function knows both objects. The interface of the BCAM commands is described in the chapter “BCAM commands”. As the objects host and processor have now been assigned FQDNs, it is possible to make the name associations visible in BCAM.

The SHOW functions offered are listed below:

- SHOW-HOST-ATTRIBUTES (extended in BCAM V21.0A and higher)
- SHOW-PROCESSOR-ATTRIBUTES (extended in BCAM V21.0A and higher)
- SHOW-BCAM-NAMES (in BCAM V21.0 and higher)

Examples for determining BCAM and DNS names and diagnostics

This section explains how you use the BCAM commands which establish the association between BCAM names and DNS names. The command sequences which are needed to obtain the required information for specific tasks are shown.

Example: DNS name known

All the connections which currently exist to a computer whose DNS name is known are to be displayed.

1. Use the SHOW-BCAM-NAMES command to ascertain the BCAM name.

   ```
   /SHOW-BCAM-NAMES NAME=*DNS(DNS-NAME='PC123456.mycompany.NET')
   ```

2. Use the SHOW-CONNECTION command to display the connections to this computer, selecting the BCAM name which was previously ascertained.

   ```
   /SHOW-CONNECTION CONNECTION=*VIA-PROCESSOR(PROCESSOR-NAME=PC123456)
   ```

Example: BCAM name known

All the connections which currently exist to a computer whose BCAM name is known are to be displayed. The DNS name of the processor and the DNS name of the BCAM host are also to be determined.

1. Use the SHOW-CONNECTION command to display the connections to this computer directly, selecting the BCAM name.

   ```
   /SHOW-CONNECTION CONNECTION=*VIA-PROCESSOR(PROCESSOR-NAME=PC123456)
   ```

2. Use the SHOW-BCAM-NAMES command to ascertain the DNS name for the BCAM name.

   ```
   /SHOW-BCAM-NAMES NAME=*BCAM(BCAM-NAME=PC123456),OBJECT-TYPE=*PROCESSOR
   ```

3. Ascertain the DNS name of the BCAM host in the same way.
4. Take the name of the BCAM host - e.g. BCAMHOST - from message BCAM08A1 and use it to ascertain the *DNS name.

   ```
   /SHOW-BCAM-NAMES NAME=*BCAM(BCAM-NAME=BCAMHOST),OBJECT-TYPE=*HOST
   ```

Diagnostics example

The DNS names used in BCAM can be displayed in ASTRID. The NAME TYPE=*DNS command enables all DNS name which are assigned to the BCAM hosts and the processors to be output.

In a similar way you can obtain some of the information using the SHOW-BCAM-NAMES command.

```
/SHOW-BCAM-NAMES NAME=*ALL,OBJECT-TYPE=*ANY,INF=*DNS-NAMES
```

Note

The following commands which establish a reference to the DNS names are offered for diagnostics:

- SHOW-BCAM-INFO-BASIC
- SHOW-BCAM-INFO-ADDRESS
- SHOW-BCAM-INFO-NAME

BCAM mapping function

> The mapping function can only be used if BCAM mapping has already been explicitly started with BCMAP FUNCT=INIT.

When creating the mapping definition (FUNCT=DEFINE), you make the following specifications:

- With SUBFUNCT= you specify the validity range of the definition.
- With LOCAL, you assign, for example, ISO and/or TCP/IP attributes to a single application in the local host.
- With SUBFUNCT=GLOBAL you declare a corresponding name in the local system for a particular application in the partner system.
- SPECIAL defines the connection between a specific application in the local host and an application in the partner system.

Mapping entries are temporary BCAM entries, i.e. all entries are lost following a BCEND command or when the mapping function is terminated with BCMAP FUNCT=TERM, unless the entries are saved with BCMAP FUNCT=SAVE, FILE=filename. The saved definitions can be re-entered in BCAM with BCMAP FUNCT=ADD, FILE=<filename> when restarting BCAM (DCSTART) or the mapping function (BCMAP FUNCT=INIT).

Another option is to use the command GENERATE-BCMAP-FILE (see "GENERATE-BCMAP-FILE") to store the saved entries in a readable and editable command file. This approach is suitable for diagnostics, for example, or for editing purposes. The mapping definitions can then be copied back with the command CALL-BCAM-COMMANDS.

The following command can be used to check whether the mapping function is active:

```
/BCMAP FUNCT=SHOW,SUBFUNCT=STATE
```

Examples

```
/BCMAP FUNCT=DEFINE,SUBFUNCT=GLOBAL,NAME=UNKNOWN, -
/      ES=EXTERNPRO,PTSEL-I=X'4142434445'
```

This is the definition of the partner application UNKNOWN, which is located in the end system EXTERNPRO. The partner application is assigned the OSI transport selector X'4142434445'.

```
/BCMAP FUNCT=DEFINE,SUBFUNCT=GLOBAL,NAME=ANWENDXY,    -
/      ES=FREMDPRO,ROUTES=(ROUTE#1,ROUTE#5)
```

This command defines the possible routes used when actively setting up a connection to the partner application ANWENDXY. The course of the routes is defined in the generation.

GENERATE-BCMAP-FILE

The command GENERATE-BCMAP-FILE converts a mapping save file into a readable format (command file). GENERATE-BCMAP-FILE is a dialog command.

The mapping definitions can be subsequently reimported from the command file with the command CALL-BCAM-COMMANDS.

GENERATE-BCMAP-FILE
FILE-NAME = <filename> ,**CMDFILE =** <filename>

FILE-NAME=<filename>
Corresponds to the name of the mapping save file that was generated with the command /BCMAP FUNCT=SAVE, FILE=filename.
Do not choose a temporary filename as the filename here.

CMDFILE=<filename>
Name of the file containing the mapping definitions in readable format.

Example

Create the mapping save file MAPPING.FILE.TEST with the command:
`BCMAP FUNCT=SAVE,FILE=MAPPING.FILE.TEST.`

This file serves as the input for the conversion. The file assigned as the output is CBC.MAPPING.FILE.TEST:

```
GENERATE-BCMAP-FILE FILE-NAME=MAPPING.FILE.TEST,CMDFILE=CBC.MAPPING.FILE.TEST
```

This makes the mapping functions available in a readable and editable format in the file CBC.MAPPING.FILE.TES.

If required, you can reimport the file CBC.MAPPING.FILE.TEST as a command file with the command:
`CALL-BCAM-COMMANDS CBC.MAPPING.FILE.TEST`

BCAM commands

- Syntax of the command description
- Overview of the BCAM commands
- ACTIVATE-LINE / AVLN: Activate line
- ACTIVATE-LINK-AGGREGATION / AVLAG: Activate link aggregation
- ACTIVATE-OWN-ADDRESS / AVOAD: Activate own address
- ACTIVATE-VLAN-DEVICE/ AVVLDV: Activate VLAN device
- ACTIVATE-VLAN-LINE / AVVLLN: Activate VLAN line
- ADD-OWN-ADDRESS / ADOAD: Add local address
- BCACT: Activate communication components
  - BCACT: Activate host
  - BCACT: Activate processor
  - BCACT: Activate line
  - BCACT: Activate LAN node
  - BCACT: Activate route
- BCAPPL: Activate or deactivate application
- BCCONN: Shut down connections
- BCCONP: Connection proposal for application
- BCDAC: Deactivate communication components
  - BCDAC: Deactivate virtual host
  - BCDAC: Deactivate line
  - BCDAC: Deactivate LAN node
  - BCDAC: Deactivate processor
  - BCDAC: Deactivate route
- BCEND: Terminate BCAM in BS2000 system
- BCGEN: Modify processor names and addresses
- BCIN: Initialize/generate communication components
  - BCIN: Initialize communication components
    - BCIN: Initialize host
    - BCIN: Initialize line
    - BCIN: Initialize processor
    - BCIN: Initialize LAN node
    - BCIN: Initialize route
  - BCIN: Dynamically generate communication components
    - BCIN: Dynamically generate LAN node
    - BCIN: Dynamically generate LAN processor
    - BCIN: Dynamically generate LAN router processor
    - BCIN: Dynamically generate tunnel router processor

- BCMAP: Control BCAM mapping function
  - BCMAP: Define mapping entries
  - BCMAP: Delete mapping entries
  - BCMAP: Modify mapping entries
  - BCMAP: Display mapping entries
  - BCMAP: Manage mapping function
- BCMOD: Modify limit values specified with DCSTART
- BCMON: Control BCAM monitoring
- BCOPTION: Change mode options
- BCOUT: Close down communication components
  - BCOUT: Close down virtual host
  - BCOUT: Close down line
  - BCOUT: Close down LAN node
  - BCOUT: Close down processor
  - BCOUT: Close down route
- BCSET: Set diagnostics and maintenance parameters
  - BCSET: Change trace lengths
  - BCSET: Switch on trace selection
  - BCSET: Switch off trace selection
  - BCSET: Set diagnostic operands
- BCSHOW: Display BCAM information
  - BCSHOW: BCAM info on hosts
  - BCSHOW: BCAM info on lines
  - BCSHOW: BCAM info on LAN nodes
  - BCSHOW: BCAM info on processors
  - BCSHOW: BCAM info on routes
  - BCSHOW: BCAM info on applications
  - BCSHOW: BCAM info on global values
- BCSWP: Switch PORT
- BCTIMES: Define BCAM time intervals
- CALL-BCAM-COMMANDS: Process commands from a file
- CREATE-LINE / CRLN: Create line
- CREATE-LINK-AGGREGATION / CRLAG: Create link aggregation
- CREATE-NODE / CRND: Create LAN/VLAN node
- CREATE-PROCESSOR / CRPRR: Create processor
- CREATE-ROUTE / CRRT: Create route
  - CREATE-ROUTE: Create LAN node route
  - CREATE-ROUTE: Create ROUTER route
  - CREATE-ROUTE: Create tunnel route

- CREATE-VIRTUAL-HOST / CRVTHT: Create virtual host
- CREATE-VLAN-DEVICE / CRVLDV: Create VLAN device
- CREATE-VLAN-LINE / CRVLLN: Create VLAN line
- DCDIAG: Control DCAM traces
- DCOPT: Predefine DCSTART parameters
- DCSTART: Start the data communication system in BS2000
- DEACTIVATE-LINE/ DVLN: Deactivate line
- DEACTIVATE-LINK-AGGREGATION / DVLAG: Deactivate link aggregation
- DEACTIVATE-OWN-ADDRESS / DVOAD: Deactivate own- address
- DEACTIVATE-VLAN-DEVICE/ DVVLDV: Deactivate VLAN device
- DEACTIVATE-VLAN-LINE/ DVVLLN: Deactivate VLAN line
- DELETE-PROCESSOR / DLPRR: Delete processor
- DELETE-ROUTE / DLRT: Delete route
- EDIT-BCAM-OBJECT / EDBCOB: Edit BCAM objects
- EDIT-BCAM-OPTIONS / EDBCO: Edit BCAM options
- EDIT-HOST-ATTRIBUTES / EDHTA: Edit BCAM host attributes
- EDIT-LINE/ EDLN: Edit BCAM line
- EDIT-ROUTE-ATTRIBUTES / EDRTA: Edit BCAM route attributes
- EDIT-VLAN-DEVICE/ EDVLDV: Edit BCAM VLAN device
- EDIT-VLAN-LINE/ EDVLLN: Edit BCAM VLAN line
- GENERATE-BCAM-CMD-FILE / GBCF: Output the BCAM configuration to a file
- GENERATE-BCMAP-FILE: Convert mapping save file to command file
- MODIFY-ADDRESS-ASSIGNMENT / MDADA: Modify address assignment
- MODIFY-BCAM-OPTIONS / MDBCO: Modify BCAM options
- MODIFY-DNS-ACCESS / MDDNA: Modify DNS access in BCAM
- MODIFY-HOST-ATTRIBUTES / MDHTA: Modify HOST attributes
- MODIFY-LINE / MDLN: Modify line
- MODIFY-OWN-ADDRESS / MDOAD: Reassign own address
- MODIFY-ROUTE / MDROUTE: Modify routes
- MODIFY-ROUTE-ATTRIBUTES / MDRTA: Modify route attributes
- MODIFY-ROUTE-PATH / MDRTP: Modify route path
- MODIFY-VLAN-ASSIGNMENT / MDVLA: Modify VLAN assignment
- MODIFY-VLAN-DEVICE / MDVLDV: Modify VLAN device
- MODIFY-VLAN-LINE / MDVLLN: Modify VLAN line
- PICK-BCAM-INFO / PKBCI: Finding information in the output
- PREP-BCAM-INFO-MSG / PPBCIM: Find information in prepared BCAM notification output
- SET-COMMUNICATION-TRACE: Control DCM-DIAG
- SHOW-ADDRESS-ASSIGNMENT / SHADA: Show information about BCAM gateway tables
- SHOW-AEC-OPTIONS / SHAECO: Show information on automatic end system creation

- SHOW-APPLICATION / SHAP: Output information on applications
- SHOW-APPLICATION-BASICS / SHAPBA: Output information on applications
- SHOW-BCAM-ADDRESS / SHBCAD: Show information on addresses
- SHOW-BCAM-ATTRIBUTES / SHBCAM: Show mode parameters
- SHOW-BCAM-DEVICE-VALUES / SHBDV: Show information on BCAM device values
- SHOW-BCAM-ENVIRONMENT / SHBCENV: Show BCAM environment of a processor
- SHOW-BCAM-FIREWALL / SHBCFW: Show BCAM firewall entries
- SHOW-BCAM-INFO-ADDRESS / SHBCIA: Show BCAM information on an address
- SHOW-BCAM-INFO-BASIC / SHBCIB: Show BCAM basic information
- SHOW-BCAM-INFO-CONFIG / SHBCIC: Show BCAM configuration information
- SHOW-BCAM-INFO-NAME / SHBCIN: Show BCAM information on a name
- SHOW-BCAM-INFO-TOOLS / SHBCIT: Show BCAM information on BCAM tools
- SHOW-BCAM-IP-RANGE / SHBIR: Show information on BCAM IP ranges
- SHOW-BCAM-NAMES / SHBCNA: Show information on BCAM names
- SHOW-BCAM-OBJECTS / SHBCOB: Show BCAM objects in compact form
- SHOW-BCAM-OPTIONS / SHBCO: Show BCAM options information
- SHOW-BCAM-PARAMETERS / SHBCP: Show BCAM parameter information
- SHOW-BCAM-ROUTER / SHBCRTR: Show BCAM routers
- SHOW-BCAM-SERVER-PORTS / SHBCPT: Show BCAM server port information
- SHOW-BCAM-START-PARAMETERS / SHBCSRP: Show BCAM start parameter information
- SHOW-BCAM-TIMER / SHBCTI: Show BCAM timer information
- SHOW-CONNECTION / SHCN: Show connection information
- SHOW-CONNECTION-BY-NAME / SHCNN: Show connection information about names
- SHOW-DNS-ACCESS / SHDNA: Show information about DNS access in BCAM
- SHOW-HOST / SHHT: Show host information
- SHOW-HOST-ATTRIBUTES / SHHTA: Show host attribute information
- SHOW-LINE / SHLN: Show lines
- SHOW-LINE-ATTRIBUTES / SHLNA: Show line information
- SHOW-LINK-AGGREGATION / SHLAG: Show link aggregation
- SHOW-LINK-AGGREGATION-ATTR / SHLAGA: Show attributes of a link aggregation
- SHOW-MAPPING-ENTRIES / SHMPE: Show BCAM mappings
- SHOW-MAPPING-STATUS / SHMPS: Show mapping information
- SHOW-NET-STATISTICS / NETSTAT: Show network connection information
- SHOW-NODE / SHND: Show LAN node information
- SHOW-NODE-ATTRIBUTES / SHNDA: Show LAN node information
- SHOW-OWN-ADDRESS / SHOAD: Show local address
- SHOW-PROCESSOR / SHPRR: Show processor information
- SHOW-PROCESSOR-ATTRIBUTES / SHPRA: Show processor information
- SHOW-ROUTE / SHROUTE: Show route attributes

- SHOW-ROUTE-ATTRIBUTES / SHRTA: Show route attributes
- SHOW-ROUTE-PATH / SHRTP: Show route path
- SHOW-TSAP-OPEN / SHTO: Show information on TSAP
- SHOW-VLAN-ASSIGNMENT / SHVLA: Show information on VLAN assignments in BCAM
- SHOW-VLAN-DEVICE / SHVLDV: Show VLAN device information
- SHOW-VLAN-DEVICE-ATTRIBUTES / SHVLDVA: Show information on VLAN device
- SHOW-VLAN-LINE / SHVLLN: Show VLAN lines
- SHOW-VLAN-LINE-ATTRIBUTES/ SHVLLNA: Show information on VLAN lines

Syntax of the command description

The syntax of the BCAM command language is explained in the following three tables. Although BCAM commands are not primarily SDF commands, their presentation is similar to the SDF format.

Table 1: Metasyntax

Certain characters and representation formats are used in the command/statement formats. These are explained in Table 1.

Table 2: Data types

Variable operand values are represented in BCAM by data types. Each data type represents a particular set of values. The number of data types available is limited to those described in Table 2.

The description of data types applies to all commands and statements. For this reason, only deviations from Table 2 are explained in the corresponding operand descriptions.

Table 3: Data type suffixes

Data type suffixes identify additional input rules for data types. The suffixes extend or restrict the possible range of values. In the manual, the following suffixes are represented in abbreviated form:

lower-case	generation
version	low
gen	vers

The description of the data type suffixes applies to all commands and statements. For this reason, only deviations from Table 3 are explained in the corresponding operand descriptions.

Table 1: Metasyntax

Representation	Meaning	Examples
UPPERCASE LETTERS	Uppercase letters denote keywords (command, statement or operand names, keyword values) and constant operand values. Keyword values begin with *	**HELP-SDF** **SCREEN-STEPS = *NO**
UPPERCASE LETTERS in boldface	Uppercase letters printed in boldface denote guaranteed or suggested abbreviations of keywords.	**GUID**ANCE **-MODE** = ***Y**ES
=	The equals sign connects an operand name with the associated operand values.	**GUID**ANCE **-MODE** = ***NO**
< >	Angle brackets denote variables whose range of values is described by data types and suffixes (see Tables "Data types" and "Data type suffixes").	**SYNTAX-F**ILE = <filename 1..54>
Underscoring	Underscoring denotes the default value of an operand.	**GUID**ANCE **-MODE** = ***NO**
/	A slash serves to separate alternative operand values.	**NEXT-FIELD** = ***NO** / ***Y**ES
(...)	Parentheses denote operand values that initiate a structure.	, **UNGUID**ED**-DIA**LOG = ***Y**ES (...) / ***NO**
[ ]	Square brackets denote operand values which introduce a structure and are optional. The subsequent structure can be specified without the initiating operand value.	**SELECT** = [***BY-ATTR**IBUTES](...)
Indentation	Indentation indicates that the operand is dependent on a higher-ranking operand.	,**GUID**ED**-DIA**LOG = ***Y** ES (...) ***Y** ES(...) | **SCREEN-STEPS** = ***NO** / | ***Y**ES
| | |	A vertical bar identifies related operands within a structure. Its length marks the beginning and end of a structure. A structure may contain further structures. The number of vertical bars preceding an operand corresponds to the depth of the structure.	**SUP**PORT = ***TAPE**(...) ***TAPE(...)** | **VOL**UME = ***ANY** (...) | ***ANY** (...) | | ...

,	A comma precedes further operands at the same structure level.	**GUID**ANCE**-MODE** = ***NO** / ***Y**ES ,**SDF-COM**MANDS = ***NO** / ***Y**ES
,list-poss(n):	The entry “list-poss” signifies that a list of operand values can be given at this point. If (n) is present, it means that the list must not have more than n elements. A list of more than one element must be enclosed in parentheses.	list-poss: ***SAM** / ***ISAM** list-poss(40): <structured-name 1..30> list-poss(256): ***OMF** / ***SYSLST**(...) / <filename 1..54>
Alias:	The name that follows represents a guaranteed alias (abbreviation) for the command or statement name.	**HELP-SDF** Alias: **HPSDF**
*none *default *unchanged	Underlined lowercase characters indicate operand values that can only be specified by omitting the operand or operand value.	**DIAG** = *none / **STOP**
*ALL	*all indicates operand values that can only be specified by omitting the operand value.	**A-IP** = *all / <x-string 1 .. 8>

Metasyntax

Table 2: Data types

Data type	Character set	Special rules
name	A...Z 0...9 $, #, @	Must not begin with 0...9.
group-name host-name line-name node-name processor-name	A...Z 0...9 # ,@, $ Length: maximum 8 characters	
application-name rout-name	A...Z 0...9 # ,@, $ Length: maximum 8 characters	$ as the first character in application-name is only permitted for systems applications
sokhost-name	A...Z 0...9 #, @, $, -, /, !, ", +, *, >, <, ?, ., & & and / can only be specified in C‘ ‘ and must be doubled Length: maximum 32 characters	Alphanumeric string which can be subdivided into multiple substrings separated by a period or hyphen
nea-name	Alphanumeric characters Length: 16 characters	Consists of the first eight characters of the application name and the first eight characters of the host name, both left-aligned and filled with spaces. If only the application name part is specified then BCAM forms the HOST name part on the basis of the command.
osi-name	Alphanumeric characters; Length: maximum 78 characters	
socket-name	Alphanumeric characters; Length: maximum 78 characters	
alphanum-name	A...Z 0...9 $, #, @	

cat-id	A...Z 0...9	Not more than 4 characters; must not begin with the string PUB
command-rest	freely selectable	
composed-name	A...Z 0...9 $, #, @ hyphen period catalog ID	Alphanumeric string that can be split into multiple substrings by means of a period or hyphen. If a file name can also be specified, the string may begin with a catalog ID in the form : cat: (see data type filename).
c-string	EBCDIC character	Must be enclosed within single quotes; the letter C may be prefixed; any single quotes occurring within the string must be entered twice.
date	0...9 Structure identifier: hyphen	Input format: yyyy-mm-dd yyyy: year; optionally 2 or 4 digits mm: month dd: day
device	A...Z 0...9 hyphen	Character string, max. 8 characters in length, corresponding to a device available in the system. In guided dialog, SDF displays the valid operand values. For notes on possible devices, see the relevant operand description.
fixed	+, - 0...9 period	Input format: [sign][digits].[digits] [sign]: + or - [digits]: 0...9 must contain at least one digit, but may contain up to 10 characters (0...9, period) apart from the sign.
filename	A...Z 0...9 $, #, @ hyphen period	Input format: [:cat:][$user.] { file | file(no) | group group { (*abs) | (+rel) | (-rel) } } :cat: optional entry of the catalog identifier; character set limited to A...Z and 0...9; maximum of 4 characters; must be enclosed in colons; default value is the catalog identifier assigned to the user ID, as specified in the user catalog. $user.

		optional entry of the user ID; character set is A...Z, 0...9, $, #, @; maximum of 8 characters; first character cannot be a digit; $ and period are mandatory; default value is the user's own ID. $. (special case) system default ID file file or job variable name; may be split into a number of partial names using a period as a delimiter: $name_1[.name_2[...]]$ $name_i$ does not contain a period and must not begin or end with a hyphen; file can have a maximum length of 41 characters; it must not begin with a $ and must include at least one character from the range A...Z.
filename (continued)		#file (special case) @file (special case) # or @ used as the first character indicates temporary files or job variables, depending on system generation. file(no) tape file name no: version number; character set is A...Z, 0...9, $, #, @. Parentheses must be specified. group name of a file generation group (character set: as for “file”) group { (*abs) | (+rel) | (-rel) } (*abs) absolute generation number (1-9999); * and parentheses must be specified. (+rel) (-rel) relative generation number (0-99); sign and parentheses must be specified.
integer	0...9, +, -	+ or -, if specified, must be the first character.
partial-filename	A...Z 0...9 $, #, @ hyphen period	Input format: [:cat:][$user.][partname.] :cat: see filename $user. see filename

		partname optional entry of the initial part of a name common to a number of files or file generation groups in the form: $name_1$.[$name_2$.[...]] $name_i$ (see filename). The final character of “partname” must be a period. At least one of the parts :cat:, $user. or partname must be specified.
posix-filename	A...Z 0...9 special characters	String with a length of up to 255 characters; consists of either one or two periods or of alphanumeric characters and special characters. The special characters must be escaped with a preceding \ (backslash); the / is not allowed. Must be enclosed within single quotes if alternative data types are permitted, separators are used, or the first character is a ?, ! or ^ A distinction is made between uppercase and lowercase.
posix-pathname	A...Z 0...9 special characters structure identifier: slash	Input format: [/]$part_1$/.../$part_n$ where $part_i$ is a posix-filename; max. 1023 characters; must be enclosed within single quotes if alternative data types are permitted, separators are used, or the first character is a ?, ! or ^
product-version	A...Z 0...9 period single quote	Input format: [[C]'][V][m]m.naso['] | | | correction status release status where m, n, s and o are all digits and a is a letter. Whether the release and/or correction status may/must be specified depends on the suffixes to the data type (see suffixes without-corr, without-man, mandatory man and mandatory-corr in "Data type suffixes"). product-version may be enclosed within single quotes (possibly with a preceding C). The specification of the version may begin with the letter V.
structured-name	A...Z 0...9 $, #, @ hyphen	Alphanumeric string which may comprise a number of substrings separated by a hyphen. First character: A...Z or $, #, @
text	freely selectable	For the input format, see the relevant operand descriptions.

time	0...9
	structure identifier: colon
		Time-of-day entry:
		Input format: `{ hh:mm:ss |`
		`hh:mm |`
		`hh }`
		hh: hours
		mm: minutes
		ss: seconds
		Leading zeros may be omitted.

vsn	a) A...Z 0...9	a) Input format: pvsid.sequence-no max. 6 characters pvsid: 2-4 characters; PUB must not be entered sequence-no: 1-3 characters
	b) A...Z 0...9 $, #, @	b) Max. 6 characters; PUB may be prefixed, but must not be followed by $, #, @.
x-string	Hexadecimal: 00...FF	Must be enclosed in single quotes; must be prefixed by the letter X. There may be an odd number of characters.
x-text	Hexadecimal: 00...FF	Must not be enclosed in single quotes; the letter X must not be prefixed. There may be an odd number of characters.

Data types

Table 3: Suffixes for data types

Suffix	Meaning
x..y *unit*	With data type “integer”: interval specification x minimum value permitted for “integer”. x is an (optionally signed) integer. y maximum value permitted for “integer”. y is an (optionally signed) integer. *unit* with “integer” only: additional units. The following units may be specified: *days* *byte* *hours* *2Kbyte* *minutes* *4Kbyte* *seconds* *Mbyte*
x..y *special*	With the other data types: length specification For data types catid, date, device, product-version, time and vsn the length specification is not displayed. x minimum length for the operand value; x is an integer. y maximum length for the operand value; y is an integer. x=y the length of the operand value must be precisely x. *special* Specification of a suffix for describing a special data type that is checked by the implementation. “special” can be preceded by other suffixes. The following specifications are used: *arithm-expr* arithmetic expression (SDF-P) *bool-expr* logical expression (SDF-P) *string-expr* string expression (SDF-P) *expr* freely selectable expression (SDF-P) *cond-expr* conditional expression (JV)
with	Extends the specification options for a data type.
-compl	When specifying the data type “date”, SDF expands two-digit year specifications in the form yy-mm-dd to: 20jj-mm-tt if jj < 60 19jj-mm-tt if jj >= 60
-low	Uppercase and lowercase letters are differentiated.

<table>
<tr><td>-pathcompl</td><td>For specifications for the data type “filename”, SDF adds the catalog and/or user ID if these have not been specified.</td></tr>
<tr><td>-under</td><td>Permits underscores (_) for the data type “name”.</td></tr>
<tr><td>with (contd.)

-wild(n)</td><td>Parts of names may be replaced by the following wildcards.
n denotes the maximum input length when using wildcards.
Due to the introduction of the data types posix-filename and posixpathname, SDF now accepts wildcards from Unix-based systems (referred to below as POSIX wildcards) in addition to the usual BS2000 wildcards. However, as not all commands support POSIX wildcards, their use for data types other than posix-filename and posix-pathname can lead to semantic errors.
Only POSIX wildcards or only BS2000 wildcards should be used within a search pattern.
Only POSIX wildcards are allowed for the data types posixfilename and posix-pathname. If a pattern can be matched more than once in a string, the first match is used.
<table>
<tr><td>BS2000 wildcards</td><td>Meaning</td></tr>
<tr><td>*</td><td>Replaces an arbitrary (even empty) character string. If the string concerned starts with *, then the * must be entered twice in succession if it is followed by other characters and if the character string entered does not contain at least one other wildcard.</td></tr>
<tr><td>Terminating period</td><td>Partially-qualified entry of a name.
Corresponds implicitly to the string “./*”, i.e. at least one other character follows the period.</td></tr>
<tr><td>/</td><td>Replaces any single character.</td></tr>
<tr><td><s $_x$:s $_y$ ></td><td>Replaces a string that meets the following conditions:
It is at least as long as the shortest string (s_x or s_y)
It is not longer than the longest string (s_x or s_y)
It lies between s_x and s_y in the alphabetic collating sequence; numbers are sorted after letters (A...Z0...9)
s_x can also be an empty string (which is in the first position in the alphabetic collating sequence)
s_y can also be an empty string, which in this position stands for the string with the highest possible code (contains only the characters X'FF')</td></tr>
<tr><td><s_1,...></td><td>Replaces all strings that match any of the character combinations specified by s. s may also be an empty string. Any such string may also be a range specification “s_x:s_y” (see above).</td></tr>
</table></td></tr>
<tr><td>with-wild(n) (continued)</td><td>-s
Replaces all strings that do not match the specified string s. The minus sign may only appear at the beginning of string s. Within the data types filename or</td></tr>
</table>

		partial-filename the negated string -s can be used exactly once, i.e. -s can replace one of the three name components: cat, user or file.
	Wildcards are not permitted in generation and version specifications for file names. Only system administration may use wildcards in user IDs. Wildcards cannot be used to replace the delimiters in name components cat (colon) and user ($ and period).	
	POSIX wildcards	Meaning
	*	Replaces any single string (including an empty string). An * appearing at the first position must be duplicated if it is followed by other characters and if the entered string does not include at least one further wildcard.
	?	Replaces any single character; not permitted as the first character outside single quotes.
	[c_x -c_y]	Replaces any single character from the range defined by c_x and c_y , including the limits of the range. c_x and c_y must be normal characters.
	[s]	Replaces exactly one character from string s. The expressions [c_x -c_y] and [s] can be combined into [s_1c_x-c_ys_2].
	[!c_x -c_y]	Replaces exactly one character not in the range defined by c_x and c_y, including the limits of the range. c_x and c_y must be normal characters. The expressions [!c_x -c_y] and [!s] can be combined into [!s_1c_x-c_ys_2].
	[!s]	Replaces exactly one character not contained in string s. The expressions [!s] and [!c_x-c_y] can be combined into [!s_1c_x-c_ys_2].
with (contd.) wild-constr (n)	Specification of a constructor (string) that defines how new names are to be constructed from a previously specified selector (i.e. a selection string with wildcards). See also with-wild. n denotes the maximum input length when using wildcards. The constructor may consist of constant strings and patterns. A pattern (character) is replaced by the string that was selected by the corresponding pattern in the selector. The following wildcards may be used in constructors:	
	Wildcard	Meaning
	*	Corresponds to the string selected by the wildcard * in the selector.
	Terminating period	Corresponds to the partially-qualified specification of a name in the selector; corresponds to the string selected by the terminating period in the selector.
	/ or ?	Corresponds to the character selected by the / or ? wildcard in the selector.
	<n>	Corresponds to the string selected by the n-th wildcard in the selector, where n is an integer.
	Allocation of wildcards to corresponding wildcards in the selector: All wildcards in the selector are numbered from left to right in ascending order (global index). Identical wildcards in the selector are additionally numbered from left to right in ascending	

order (wildcard-specific index).
Wildcards can be specified in the constructor by one of two mutually exclusive methods:

1. Wildcards can be specified via the global index: <n>
2. The same wildcard may be specified as in the selector; substitution occurs on the basis of the wildcard-specific index. For example: the second “/” corresponds to the string selected by the second “/” in the selector

with-wild-constr (continued)

The following rules must be observed when specifying a constructor:

- The constructor can only contain wildcards of the selector.
- If the string selected by the wildcard <...> or [...] is to be used in the constructor, the index notation must be selected.
- The index notation must be selected if the string identified by a wildcard in the selector is to be used more than once in the constructor. For example: if the selector “A/” is specified, the constructor “A<n><n>” must be specified instead of “A//”.
- The wildcard * can also be an empty string. Note that if multiple asterisks appear in sequence (even with further wildcards), only the last asterisk can be a non-empty string, e. g. for “****” or “*//*”.
- Valid names must be produced by the constructor. This must be taken into account when specifying both the constructor and the selector.
- Depending on the constructor, identical names may be constructed from different names selected by the selector. For example: “A/*” selects the names “A1” and “A2”; the constructor “B*” generates the same new name “B” in both cases.
  To prevent this from occurring, all wildcards of the selector should be used at least once in the constructor.
- If the constructor ends with a period, the selector must also end with a period. The string selected by the period at the end of the selector cannot be specified by the global index in the constructor specification.

with-wild-constr (continued)

Examples:

Auswahlmuster	Auswahl	Konstruktionsmuster	neuer Name
A//*	AB1 AB2 A.B.C	D<3><2>	D1 D2 D.CB
C. <A:C>/<D,F>	C.AAD C.ABD C.BAF C.BBF	G.<1>.<3>.XY<2>	G.A.D.XYA G.A.D.XYB G.B.F.XYA G.B.F.XYB
C.<A:C>/<D,F>	C.AAD C.ABD C.BAF C.BBF	G.<1>.<2>.XY<2>	G.A.A.XYA G.A.B.XYB G.B.A.XYA G.B.B.XYB
A//B		G/XY/	

	ACDB ACEB AC.B A.CB GCXYD GCXYE GCXY [1] G.XYC 1) The period at the end of the name may violate naming conventions (e.g. for fully-qualified file names).
without	Restricts the specification options for a data type.
-cat	Specification of a catalog ID is not permitted.
-corr	Input format: [[C]'][V][m]m.na['] Specifications for the data type product-version must not include the correction status.
-gen	Specification of a file generation or file generation group is not permitted.
-man	Input format: [[C]'][V][m]m.n['] Specifications for the data type product-version must not include either release or correction status.
-odd	The data type x-text permits only an even number of characters.
-sep	With the data type “text”, specification of the following separators is not permitted: ; = ( ) < > `'BLANK'` (i.e. semicolon, equals sign, left and right parentheses, greater than, less than, and blank).
-temp-file	Specification of a temporary file is not permitted (see #file or @file under filename).
without (contd.)	
-user	Specification of a user ID is not permitted.
-vers	Specification of the version (see “file(no)”) is not permitted for tape files. The file types posix-filename and posix-pathname must not contain a pattern (character).
-wild	The file types posix-filename and posix-pathname must not contain a pattern (character).
mandatory	Certain specifications are necessary for a data type.
-corr	Input format: [[C]'][V][m]m.naso['] Specifications for the data type product-version must include the correction status and therefore also the release status.
-man	Input format: [[C]'][V][m]m.na[so]['] Specifications for the data type product-version must include the release status. Specification of the correction status is optional if this is not prohibited by the use of the suffix without-corr.
-quotes	Specifications for the data types posix-filename and posix-pathname must be enclosed in single quotes.

Data type suffixes

BCAM commands in alphabetical order

The BCAM commands are represented in alphabetical order. At the beginning of every command description, there is a table which lists the possible command sources for this command. At the end of each command description, there is a table with the messages and acknowledgments for this command.

You use the DCSTART, DCOPT, BCMOD and BCOPTION commands to customize your BCAM settings. The section "Operand settings" provides an overview of the period of validity, function and default values of these BCAM settings.

Overview of the BCAM commands

The BCAM commands chapter offers a complete description of all BCAM commands. These are available in the SDF format. To guarantee compatibility, commands are also offered in the ISP format. Commands in the ISP format are mapped to the SDF format and extensions will only be provided in the SDF format.

In this chapter you will find an overview of all BCAM commands and their syntax in the SDF and ISP format.

With a few exceptions, all BCAM commands require the privilege NET-ADMINISTRATION or TSOS; OPERATING is also permitted for consol commands. If a BCAM command can be executed with the privilege STD-PROCESSING, this is noted on the corresponding manual page.

The following table displays the current BCAM commands (SDF format) and their corresponding old commands (ISP format):

Command	**Corresponding command (ISP format)**
ACTIVATE-LINE	BCIN LINE=<line>,ACT=YES BCACT LINE=<line>
CREATE-PROCESSOR	BCIN GEN=N or BCIN GEN=R,... dynamic BCIN at node or remote processor
CREATE-NODE	Subfunction of BCIN GEN=L,...
CREATE-LINE	Subfunction of BCIN GEN=L,...
CREATE-ROUTE	BCIN GEN=N,NAME-OF-ROUTE,.. or. BCIN GEN=R,NAME-OF-ROUTE,...
CREATE-VIRTUAL-HOST	CREATE-HOST (extended by job variable STATUS-JV, old command does not provide this function)
DELETE-ROUTE	—
DELETE-PROCESSOR	—
MODIFY-ADDRESS-ASSIGNMENT	Subfunction of MODIFY-ROUTE
MODIFY-LINE	—
MODIFY-ROUTE-ATTRIBUTES	Subfunction of MODIFY-ROUTE
MODIFY-ROUTE-PATH	Subfunction of MODIFY-ROUTE
SHOW-APPLICATION	Subfunction of BCSHOW (SHOW=APPL) direct mapping
SHOW-CONNECTION	Subfunction of BCSHOW (SHOW=CONN) direct mapping

SHOW-HOST	Subfunction of BCSHOW (SHOW=HOST) direct mapping
SHOW-LINE	—
SHOW-MAPPING-ENTRIES	Subfunction of BCMAP for privileged users not a console command OPS variable
SHOW-MAPPING-STATUS	Subfunction of BCMAP for privileged users not a console command OPS variable
SHOW-NODE	Subfunction of BCSHOW (SHOW=NODE) direct mapping
SHOW-PROCESSOR	Subfunction of BCSHOW (SHOW=PROCESSOR) direct mapping
SHOW-ROUTE-ATTRIBUTES	Subfunction of SHOW-ROUTE command direct mapping
SHOW-ROUTE-PATH	Subfunction of SHOW-ROUTE command direct mapping

Overview of new and corresponding old commands as of V16.0A

To help you when entering new command sequences in V16.0A or higher, the following table provides an overview of the old command sequences and the new ones which replace them.

Old command (sequence)	**To be replaced by the following command sequence**
BCACT/BCIN LINE=	ACTIVATE-LINE
BCIN GEN=L,LAN,... (LAN node)	CREATE-NODE CREATE-LINE
BCIN GEN=N,KR (node processor)	[CREATE-NODE] [CREATE-LINE] prerequisite CREATE-PROCESSOR (node processor) CREATE-ROUTE
BCIN GEN=R,RR (remote processor)	[CREATE-NODE] [CREATE-LINE] [CREATE-PROCESSOR] (node processor) [CREATE-ROUTE] prerequisite CREATE-PROCESSOR (remote processor) CREATE-ROUTE
BCMAP FUNCT=SHOW,SU=STATE Status information	SHOW-MAPPING-STATUS
BCMAP FUNCT=SHOW,SU=... Mapping entries	SHOW-MAPPING-ENTRIES

MODIFY-ROUTE (route attributes)	MODIFY-ROUTE-ATTRIBUTES
MODIFY-ROUTE (path modification)	MODIFY-ROUTE-PATH
MODIFY-ROUTE (networks)	MODIFY-ADDRESS-ASSIGENMENT
BCSHOW (applications)	SHOW-APPLICATION
BCSHOW (connections)	SHOW-CONNECTION
BCSHOW (hosts)	SHOW-HOST, SHOW-HOST-ATTRIBUTES
BCSHOW (nodes)	SHOW-NODE
BCSHOW (processors)	SHOW-PROCESSOR
SHOW-ROUTE (attributes)	SHOW-ROUTE-ATTRIBUTES
SHOW-ROUTE (paths)	SHOW-ROUTE-PATH

Overview of old and corresponding new command sequences as of V16.0A

ACTIVATE-LINE / AVLN: Activate line

You use the ACTIVATE-LINE command to activate a line connection. Comparable “old” commands are BCACT LINE=<line-name> and BCIN LINE=<line-name>,ACT=YES (see also section "New BCAM commands and corresponding old commands").

The alias name AVLN exists for ACTIVATE-LINE in order to provide SNMP support.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

ACTIVATE-LINE / **AVLN**
LINE-NAME = <composed-name 1..8> / <c-string 1 .. 8> ,**SLOW-POLL** = ***UNCHANGED** / ***ON** / ***OFF**

LINE-NAME=<composed-name 1..8>
Name of the line that is to be activated.

SLOW-POLL=...
This operand specifies the SLOW-POLL behavior of the line.
SLOW-POLL=*ON results in automatic reactivation after line failure.

SLOW-POLL=*UNCHANGED
The SLOW-POLL setting of the line remains unchanged

SLOW-POLL=*ON
SLOW-POLL is activated on the line.

SLOW-POLL=*OFF
SLOW-POLL is deactivated on the line

Command logging

If processing is successful it is acknowledged with News BCA067C, otherwise with News BCA06CC.
A description of the error messages that may be issued during command processing is provided in the table below.

Commando return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
2	0	BCA06CC	Line activation aborted
0	1	BCA0768	Syntax error in command
0	64	BCA07A2	LINE-NAME not found
0	64	BCA0767	Command is being processed
0	128	BCA0760	A command is being executed for the line
0	128	BCA0814	BCAM is terminating abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Example

Activate line:

```
/ACTIVATE-LINE LINE=L#LAN#1
```

Comparable “old” commands:

```
/BCACT LINE=L#LAN#1
```

or

```
/BCIN LINE=L#LAN#1,ACT=YES
```

ACTIVATE-LINK-AGGREGATION / AVLAG: Activate link aggregation

You use the ACTIVATE-LINK-AGGREGATION command to activate a link aggregation.

The alias name AVLAG exists for ACTIVATE-LINK-AGGREGATION to provide SNMP support.

BS2000 console	BS2000-SDF command	Command/ SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

ACTIVATE-LINK-AGGREGATION / **AVLAG**
AGGREGATION-NAME = <composed-name 1..8>

AGGREGATION-NAME=<composed-name 1..8>
Name of the link aggregation that is to be activated.

Command logging

If processing is successful it is acknowledged with News BCA067F, otherwise with News BCA06CF.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	1	BCA0768	Syntax error in command
0	64	BCA07A7	Aggregation name not known
0	64	BCA0770	Parameter invalid
0	64	BCA0773	Incorrect data type for aggregation name
0	128	BCA0814	BCAM is terminating abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Example

Activate link aggregation:

```
/ACTIVATE-LINK-AGGREGATION AGGREGATION-NAME=AGGRNA01
```

ACTIVATE-OWN-ADDRESS / AVOAD: Activate own address

You use ACTIVATE-OWN-ADDRESS to activate an own address to a (VLAN) line.

The alias name AVOAD exists for ACTIVATE-OWN-ADDRESS to provide SNMP support.

BS2000 console	BS2000-SDF command	Command/ SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

ACTIVATE-OWN-ADDRESS / **AVOAD**

ADDRESS = ***IP**(...) / ***IPV6**(...)

***IP**(...)

| **IP-ADDRESS** = <text 7 .. 15>

***IPV6**(...)

| **IPV6-ADDRESS** = <text 9 .. 45>

ADDRESS=...
own address which is to be activated.
Activation of the address is logged with message BCA0572 for lines and with BCA0573 for VLAN lines.

ADDRESS=*IP(...)
own IP address which is to be activated.

IP-ADDRESS=<text 7..15> / <x-string 7..8>
Under IP-ADDRESS you specify the own IP address which is to be activated.
Syntax of the own IP address: <IPv4-address>.

ADDRESS=*IPV6(...)
own IPv6 address which is to be activated.

IPV6-ADDRESS=<text 9..45> / <c-string 9..45>
Under IPV6-ADDRESS you specify the own IPv6 address which is to be activated.
Syntax of the own IPv6 address: <IPv6-address>.

Command logging

Activation of an own address is reported with message BCA0572 for lines and BCA0573 for VLAN lines.
If processing is successful it is acknowledged with News BCA0670, otherwise with News BCA06C0.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Bedeutung
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	1	BCA0768	Syntax error in command
2	0	BCA06C0	Command aborted
0	64	BCA079F	Address unknown
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	128	BCA0766	BCAM is not active

ACTIVATE-VLAN-DEVICE/ AVVLDV: Activate VLAN device

You use the ACTIVATE-VLAN-DEVICE command to activate a VLAN device.

The alias name AVVLDV exists for ACTIVATE-VLAN-DEVICE in order to provide SNMP support.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

ACTIVATE-VLAN-DEVICE / **AVVLDV**
DEVICE-NAME = <composed-name 1..8> ,**SLOW-POLL** = ***UNCHANGED** / ***ON** / ***OFF**

DEVICE-NAME=<composed-name 1..8>
Name of the VLAN device that is to be activated.

SLOW-POLL=...
This operand specifies the SLOW-POLL behavior of the device.
SLOW-POLL=*ON results in automatic reactivation after device failure.

SLOW-POLL=*UNCHANGED
The SLOW-POLL setting of the device remains unchanged.

SLOW-POLL=*ON
SLOW-POLL is activated on the device.

SLOW-POLL=*OFF
SLOW-POLL is deactivated on the device.

Command logging

If processing is successful it is acknowledged with News BCA067D, otherwise with News BCA06CD.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
2	0	BCA05BB	Link aggregation not active
2	0	BCA06CD	VLAN line activation aborted
0	1	BCA0768	Syntax error in command
0	64	BCA07A5	VLAN device unknown
0	64	BCA0767	Command is being processed
0	128	BCA0760	A command is being executed for the device
0	128	BCA0814	BCAM is terminating abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Example

Activate VLAN device:

```
/ACTIVATE-VLAN-DEVICE DEVICE-NAME=L#DEV#1
```

ACTIVATE-VLAN-LINE / AVVLLN: Activate VLAN line

You use the ACTIVATE-VLAN-LINE command to activate a VLAN line.

The alias name AVVLLN exists for ACTIVATE-VLAN-LINE in order to provide SNMP support.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

ACTIVATE-VLAN-LINE / **AVVLLN**
LINE-NAME = <composed-name 1..8> ,**SLOW-POLL** = ***UNCHANGED** / ***ON** / ***OFF**

LINE-NAME=<composed-name 1..8>
Name of the line that is to be activated.

SLOW-POLL=...
This operand specifies the SLOW-POLL behavior of the line.
SLOW-POLL=*ON results in automatic reactivation after line failure.

SLOW-POLL=*UNCHANGED
The SLOW-POLL setting of the line remains unchanged.

SLOW-POLL=*ON
SLOW-POLL is activated on the line.

SLOW-POLL=*OFF
SLOW-POLL is deactivated on the line.

Command logging

If processing is successful it is acknowledged with News BCA067B, otherwise with News BCA06CB.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
2	0	BCA05BB	Link aggregation not active
2	0	BCA05DB	VLAN device not active
2	0	BCA06CB	VLAN line activation aborted
0	1	BCA0768	Syntax error in command
0	64	BCA07AA	VLAN line name not found
0	64	BCA0767	Command is being processed
0	128	BCA0760	A command is being executed for the line
0	128	BCA0814	BCAM is terminating abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Example

Activate VLAN line:

```
/ACTIVATE-VLAN-LINE LINE-NAME=L#VLAN#1
```

ADD-OWN-ADDRESS / ADOAD: Add local address

ADD-OWN-ADDRESS creates an additional local address for a line/VLAN line.

The alias name ADOAD exists for ADD-OWN-ADDRESS in order to provide SNMP support.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

ADD-OWN-ADDRESS / ADOAD
LINE-NAME = <composed-name 1..8>
,**HOST-NAME** = ***STD** / <composed-name 1 .. 8>
,**IP-ADDRESS** = ***NONE** / <text 7 .. 18>
,**IPV6-ADDRESS** = ***NONE** / <text 9 .. 49> / <c-string 9 .. 49>

LINE-NAME=
Name of the line/VLAN line for which an additional local address is to be created.

> **LINE-NAME=<composed-name 1..8>**
> Name of the line/VLAN line.

HOST-NAME=...
You use HOST-NAME to specify the name of the host for which the additional local address is defined.

> **HOST-NAME=*STD**
> The name of the standard host is used as the host name (host name from the DCSTART or DCOPT command).
>
> **HOST-NAME=<composed-name 1..8>**
> Name of the host to which the line/VLAN line is connected.

IP-ADDRESS=...
You use IP-ADDRESS to specify the additional local IP address via which the host can be addressed over the line /VLAN line.

> **IP-ADDRESS=*NONE**
> No local IP address is defined via which the host can be addressed over the line/VLAN line.
>
> **IP-ADDRESS=<text 7..18>**
> Local IP address, if required with specification of the prefix length via which the host can be addressed over the line/ VLAN line. If the prefix length is not specified, the default prefix length which matches the IPv4 address is determined.
> Address syntax: <IPv4-address>/<IPv4-prefix-length> or <IPv4-address>.

IPV6-ADDRESS=...
You use IPV6-ADDRESS to specify the local IPv6 address, together with the IPv6 prefix length, via which the host can be addressed over the line/VLAN line.

IPV6-ADDRESS=*NONE
No local IPv6 address is defined via which the host can be addressed over the line/VLAN line.

IPV6-ADDRESS=<text 9..49> / <c-string 9..49>
Local IPv6 address, together with the IPv6 prefix length, via which the host can be addressed over the line/VLAN line. Address syntax: <IPv6-address>/<IPv6-prefixlength>.

Command logging

The generation of each local address is reported with the message BCA057A for lines and BCA057B for VLAN lines.
Positive acknowledgments are supplied in news BCA0678, and negative acknowledgments in news BCA06C8.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	1	BCA0768	Syntax error in command
2	0	BCA06C8	Command aborted
0	64	BCA0770	Parameter error
0	64	BCA07A2	LINE-NAME is unknown
0	64	BCA07A4	HOST-NAME is unknown
0	64	BCA07AD	Line does not lead to a LAN node
0	128	BCA0814	BCAM is terminating abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCACT: Activate communication components

Using this command, you activate during the current session communication components which have the state INCLUDED

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x		x	x	

List of valid command sources

BCACT Operand overview

HOST = <host-name 1 .. 8>, ... / **PROCESSOR** = <processor-name 1 .. 8>, ... /

LINE = <line-name 1 .. 8>, ... / **NODE** = <node-name 1 .. 8>, ... /

ROUTE = <rout-name 1 .. 8>, ...

,**ACT** = **ONLY**, ... / **LOCAL**, ... / **NODE**, ... / **ALL**, ...

, ...

| **CONFIGURATION** = **UPDATE** / **PRIMARY** / **NO**

| ,**LINK-DOWN** = **KEEP-CONNECTION** / **DISCONNECT**

| ,**SLOW-POLL** = **OFF** / **ON**

BCACT: Activate host

BCACT on the local host

HOST = <host-name 1 .. 8>

,**ACT** = **ONLY** , ... / **LOCAL**, ... / **NODE**, ... / **ALL**, ...

LOCAL, ...

| ,**SLOW-POLL** = **OFF** / **ON**

NODE, ...

| ,**SLOW-POLL** = **OFF** / **ON**

ALL, ...

| ,**SLOW-POLL** = **OFF** / **ON**

HOST=<host-name 1..8>
Name of host to be activated

ACT=...
Specifies the group of objects to be activated in addition to the host.

ACT=ONLY
The operation is only performed for the specified host.

ACT=LOCAL
The host is activated together with all LAN nodes directly connected to it, including the relevant lines and routes.

ACT=NODE
The operation is performed for the host and all LAN nodes as well as all processors directly connected to the LAN which are accessible via these LAN nodes.

ACT=ALL
The operation is performed for the host and all objects which can be accessed from it.

SLOW-POLL=...
Defines the SLOW-POLL behavior for line ports to LAN nodes.
SLOW-POLL is only set if the affected connection is not active.

SLOW-POLL=OFF
No reactivation following a line failure.

SLOW-POLL=ON
Causes automatic reactivation following a line failure. This reactivation is attempted every 15 seconds until it succeeds or until a BCDAC or BCOUT command is issued.

Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0763, and negative acknowledgments in news BCA0762, followed by the message NBR0740. In addition, for positive

acknowledgments, the messages BCA08D1 and BCA0622 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0623	Activation aborted
0	1	BCA0768	Syntax error in command
0	64	BCA07A4	Host does not exist
0	64	BCA0856	Host is not in operation
0	64	BCA08E5	Host is unknown
0	128	BCA0760	BCACT returned, BCACT already running
0	128	BCA0814	BCAM is terminating abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCACT: Activate processor

You use a BCACT command on a processor to activate the processor itself along with any processors which can be accessed via this processor.

BCACT on a processor

PROCESSOR = <processor-name 1 .. 8>

,**ACT** = **ONLY** , ... / **LOCAL**, ... / **NODE**, ... / **ALL**, ...

ONLY, ...

| ,**CONFIGURATION** = **UPDATE** / **PRIMARY** / **NO**

| ,**LINK-DOWN** = **KEEP-CONNECTION** / **DISCONNECT**

LOCAL, ...

| ,**CONFIGURATION** = **UPDATE** / **PRIMARY** / **NO**

| ,**LINK-DOWN** = **KEEP-CONNECTION** / **DISCONNECT**

NODE, ...

| ,**CONFIGURATION** = **UPDATE** / **PRIMARY** / **NO**

| ,**LINK-DOWN** = **KEEP-CONNECTION** / **DISCONNECT**

ALL, ...

| ,**CONFIGURATION** = **UPDATE** / **PRIMARY** / **NO**

| ,**LINK-DOWN** = **KEEP-CONNECTION** / **DISCONNECT**

PROCESSOR=<processor-name 1..8>
Name of the processor to be activated

ACT=...
Specifies the group of objects to be activated in addition to the processor.

ACT=ONLY / LOCAL / NODE
The operation is only performed for the processor.

ACT=ALL
The operation is performed for the processor and all objects which can be accessed from it.

CONFIGURATION=...
The operand specifies whether or not the network configuration for the processor must be modified using the routing protocol function. Specification is only possible for processors to which routes with the L3 profile IP, IPv6 or INTF exist.

CONFIGURATION=UPDATE
Route modifications resulting from routing protocol functions lead to modifications to the BCAM routing tables and remain effective for this BCAM session.

CONFIGURATION=PRIMARY
Route modifications resulting from routing protocol functions are to be canceled. The original configuration information is used again.

CONFIGURATION=NO
Route modifications resulting from routing protocol functions are not permitted.

LINK-DOWN=...
The operand specifies whether or not the transport connections assigned to the route are shut down in the event of a route failure.

LINK-DOWN=KEEP-CONNECTION
In the event of a route failure, transport connections assigned to this route are not shut down.

LINK-DOWN=DISCONNECT
In the event of a route failure, all transport connections assigned to this route are shut down.

Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0763, and negative acknowledgments in news BCA0762, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA08DB and BCA0622 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0623	Activation aborted
2	0	BCA08D7	Computer already active
0	1	BCA0768	Syntax error in command
0	64	BCA07A0	Computer does not exist
0	64	BCA0834	Line to computer is not active
0	64	BCA0856	Computer is not in operation
0	64	BCA08D8	Computer was not activated
0	64	BCA08E5	Computer is unknown
0	128	BCA0760	BCACT returned, BCACT is already running
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCACT: Activate line

You use a BCACT command for a line to activate that line only.

BCACT on a line
LINE = <line-name 1 .. 8> ,**SLOW-POLL** = **OFF** / **ON** ,**CONFIGURATION** = **UPDATE** / **PRIMARY** / **NO**

LINE=<line-name 1..8>
Name of line to be activated

SLOW-POLL=...
Defines the SLOW-POLL behavior for line ports to LAN nodes.
SLOW-POLL is only set if the affected connection is not active.
If the line is active SLOW-POLL can be set using BCACT LINE = <line-name> or BCOPTION SLOW-POLL LINE = <line-name>.

SLOW-POLL=OFF
No reactivation following a line failure.

SLOW-POLL=ON
Causes automatic reactivation following a line failure. This reactivation is attempted every 15 seconds until it succeeds or until a BCDAC or BCOUT command is issued.

CONFIGURATION=...
The operand specifies whether or not IP, IPv6 and INTF routes which are assigned to the line to be activated can be assigned to an alternative line if the one to be activated fails, for example, or on activating the line for the first time.

CONFIGURATION=UPDATE
IP, IPv6 and INTF routes may be assigned to an alternative line.

CONFIGURATION=PRIMARY
IP, IPv6 and INTF routes are assigned to the line to be activated on activating the line.If the line to be activated fails, the IP, IPv6 and INTF routes may be reassigned to an alternative line.
In contrast to UPDATE, the routes are switched back to the specified line when that line becomes active again.

CONFIGURATION=NO
IP, IPv6 and INTF routes are always assigned to the line to be activate.
If the line to be activated fails, no alternative line is assigned for IP, IPv6 and INTF routes.

Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0763, and negative acknowledgments in news BCA0762, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA08DC, BCA08DD and BCA0622 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0623	Activation aborted
0	1	BCA0768	Syntax error in command
0	64	BCA07A2	Line is unknown
0	64	BCA08E5	Line is unknown
0	128	BCA0760	BCACT returned, a BCACT is already running
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCACT: Activate LAN node

BCACT on a LAN node

NODE = <node-name 1 .. 8>

,**ACT** = **ONLY**, ... / **LOCAL**, ... / **NODE** , ... / **ALL**, ...

ONLY, ...

| **SLOW-POLL** = **OFF** / **ON**

LOCAL, ...

| **SLOW-POLL** = **OFF** / **ON**

NODE, ...

| **SLOW-POLL** = **OFF** / **ON**

ALL, ...

| **SLOW-POLL** = **OFF** / **ON**

You use a BCACT command for a LAN node to activate the LAN node and the processors which can be accessed via this node.
The setting of the BROADCAST, ARP, RARP and ISO9542 operands of the BCOPTION command is OFF. A possible change to this setting must be made before activation of the LAN node.

- BROADCAST=ON

  must be set if L2 broadcast messages (e.g. ARP requests) are to be received via the LAN channel adapter.
- ARP=QUIET / ON

  must be set if ARP requests are sent for updating the local assignment of IP addresses to LAN addresses. This is always necessary where IP partners are generated without LAN addresses, or automatic end system creation is to be used in the IP area.
- ISO9542=ON

  must be set if the ISO9542 routing protocol is used. This is only useful if partner end systems exist which support the corresponding protocol. ISO9542 is an ES – IS (end system – intermediate system) protocol and is required for use in networks with routers and for automatic end system creation in the ISO area.
- RARP=ON

  must be set if RARP requests are processed. This is only useful if partner systems are defined with RARP=YES during generation.

NODE=<node-name 1..8>
Name of the LAN node to be activated

ACT=...
Specifies the group of objects to be activated in addition to the LAN node.

ACT=ONLY / **LOCAL**
The operation is only performed for the specified LAN node.

ACT=NODE
The operation is performed for the LAN node itself and for all processors directly connected to the LAN which can be accessed via this LAN node.

ACT=ALL
The operation is performed for the LAN node itself and for all processors which can be accessed via the LAN.

SLOW-POLL=...
Defines the SLOW-POLL behavior for line ports to LAN nodes.
SLOW-POLL is only set if the affected connection is not active.

SLOW-POLL=OFF
No reactivation following a line failure.

SLOW-POLL=ON
Causes automatic reactivation following a line failure. This reactivation is attempted every 15 seconds until it succeeds or until a BCDAC or BCOUT command is issued.

Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0763, and negative acknowledgments in news BCA0762, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA08D2 and BCA0622 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0623	Activation aborted
0	1	BCA0768	Syntax error in command
0	64	BCA07A3	LAN node is unknown
0	64	BCA0856	LAN node in not in operation
0	64	BCA08E5	LAN node is unknown
0	128	BCA0760	BCACT returned, a BCACT is already running
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCACT: Activate route

BCACT on a route
ROUTE = <rout-name 1 .. 8> ,**CONFIGURATION** = **UPDATE** / **PRIMARY** / **NO** ,**LINK-DOWN** = **KEEP-CONNECTION** / **DISCONNECT**

ROUTE=<rout-name 1..8>
Name of route to be activated

CONFIGURATION=...
The operand specifies whether or not the network configuration for the processor must be modified using the routing protocol function. Specification is only possible for processors to which routes with the L3 profile IP, IPv6 or INTF exist.

CONFIGURATION=UPDATE
Route modifications resulting from routing protocol functions lead to modifications to the BCAM routing tables and remain effective for this session.

CONFIGURATION=PRIMARY
Route modifications resulting from routing protocol functions are to be canceled. The original configuration information is used again.

CONFIGURATION=NO
Route modifications resulting from routing protocol functions are not permitted.

LINK-DOWN=...
The operand specifies whether or not the transport connections assigned to the route are shut down in the event of a route failure.

LINK-DOWN=KEEP-CONNECTION
In the event of a route failure, transport connections assigned to this route are not shut down.

LINK-DOWN=DISCONNECT
In the event of a route failure, all transport connections assigned to this route are shut down.

Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0763, and negative acknowledgments in news BCA0762, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA08DE and BCA0622 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0623	Activation aborted
0	1	BCA0768	Syntax error in command
0	64	BCA07A1	Route is unknown
0	64	BCA0834	Line to computer is not active
0	64	BCA0856	Computer is not in operation
0	64	BCA08E5	Route is unknown
0	128	BCA0760	BCACT returned, a BCACT is already running
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCAPPL: Activate or deactivate application

You use this command to activate or deactivate a predefined, or, alternatively, deactivate any selected application. System applications, i.e. applications which begin with $, can only be deactivated using the BCAPPL FORCED-DEACTIVATION command.
A predefined application can only be reopened after deactivation if it has been activated using BCAPPL MODE=ACTIVATE. However, an application which is not predefined can be reopened at any time after it has been deactivated.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x		x	x	

List of valid command sources

BCAPPL

APPLICATION = ([**NEA**] , <nea-name 1 .. 16> / <c-string 1 .. 16>) /

(**OSI** , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>) /

(**SOCKET**, <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>)

,**HOST** = *default / <host-name 1 .. 8>

,**MODE** = **ACTIVATE** / **DEACTIVATE** / **FORCED-DEACTIVATION**

DEACTIVATE, ...

| **TYPE** = **QUICK** / **NORMAL,** ...

| **NORMAL,** ...

| | **W** = **NO** / **YES**

APPLICATION=...
Name of the application to be activated or deactivated.

APPLICATION=([NEA],<nea-name 1..16>/ <c-string 1..16>)
NEA name of the application to be activated or deactivated.
For NEA names, the first eight characters of the application name and the first eight characters of the host name are to be used (one to eight alphanumeric characters in each case, left-justified, and padded with blanks). If the application name is shorter than eight characters, then the NEA name must be specified as a C string.
If only the name part containing the application name is specified, the part containing the HOST name is derived from the HOST operand.

APPLICATION=(OSI,<osi-name 1..78> / <c-string 1..78> / <x-string 1..156>)
OSI name of the application to be activated or deactivated.
(1 to 78 alphanumeric characters)

APPLICATION=(SOCKET,<socket-name 1..78> / <c-string 1..78> / <x-string 1..156>)
SOCKET name of the application to be activated or deactivated.
(1 to 78 alphanumeric characters)

HOST=...
Name of the host in which the application resides

HOST= *default
The default value for the host name is the entry from the DCSTART or DCOPT command

HOST=<host-name 1..8>
Name of the host

MODE=...
Specifies the function to be executed:

MODE=ACTIVATE
The application is to be activated.

MODE=DEACTIVATE
The application is to be deactivated.

MODE=FORCED-DEACTIVATION
The system application is to be deactivated.

TYPE=...
Specifies the type of connection shutdown, only valid for MODE=DEACTIVATE.

TYPE=QUICK
Connection shutdown does not occur in the network.

TYPE=NORMAL
A connection shutdown occurs in the network.

W=...
Mode for warning about connection shutdown, only valid for TYPE=NORMAL.

W=NO
Specifies that the application is not to be warned about connection shutdown.

W=YES
Specifies that the application is to be warned about connection shutdown. With W=YES, all applications receive a warning about connection shutdown. After the warning time has expired, all remaining connections are automatically shut down.
The length of warning time is determined by the specification for the time interval between warnings (WARN operand in the BCTIMES command).

Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0763, and negative acknowledgments in news BCA0762, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA08DF and BCA088F may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0637	Activate/deactivate not executed
0	1	BCA0768	Syntax error in command
0	64	BCA0791	Application is unknown
0	64	BCA08E5	Application is unknown
0	64	BCA0850	Warning has been output
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCCONN: Shut down connections

You use this command to shut down one or more connections.
One of the operands APPLICATION or PARTNER must be specified:
If only APPLICATION is specified, all connections for this application are shut down.
If PARTNER is specified, all connections to this partner are shut down for any application.If both APPLICATION and PARTNER are specified, all connections to the specified partner are shut down for the specified application.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x		x	x	

List of valid command sources

BCCONN

APPLICATION = *all / ([**NEA**] , <nea-name 1 .. 16> / [**NEA**] , <c-string 1 .. 16>) /

(**OSI** , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>) /

(**SOCKET** , <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>)

, **PARTNER** = *all / ([**NEA**] , <nea-name 1 .. 16> / [**NEA**] , <c-string 1 .. 16>) /

(**OSI** , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>) /

(**SOCKET** , <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>)

, **W** = **NO** / **YES**

APPLICATION=...
Name of application in the local processor

APPLICATION= *all
All connections which the partner application maintains (PARTNER) to applications in the local processor are to be shut down.
In this case, a valid value must be entered for PARTNER.

APPLICATION=([NEA],<nea-name 1..16> / **<c-string 1..16>)**
NEA name of the application.
For NEA names, the first eight characters of the application name and the first eight characters of the host name are to be used (one to eight alphanumeric characters in each case, left-justified, and padded with blanks). If the application name is shorter than eight characters, then the NEA name must be specified as a C string.
If only the name part containing the application name is specified, the part containing the HOST name is derived from the HOST specification when BCAM is started.

APPLICATION=(OSI,<osi-name 1..78> / **<c-string 1..78>** / **<x-string 1..156>)**
OSI name of the application.
(1 to 78 alphanumeric characters)

APPLICATION=(SOCKET,<socket-name 1..78> / **<c-string 1..78>** / **<x-string 1..156>)**
SOCKET name of the application.
(1 to 78 alphanumeric characters)

PARTNER=...
Name of the partner application

PARTNER= *all
All connections which APPLICATION maintains to any partners are to be shut down.In this case, a valid value must be entered for APPLICATION.

PARTNER=([NEA],<nea-name 1..16> / **<c-string 1..16>)**
NEA name of the partner application
For NEA names, you use the first eight characters of the NEA name and the first eight characters of the processor name (one to eight alphanumeric characters in each case, left-justified, and padded with blanks). If the application name is shorter than eight characters, the NEA name must be specified as a C string.
If only the part containing the NEA name is specified, the part containing the HOST name is derived from the HOST specification when BCAM is started.

PARTNER=(OSI,<osi-name 1..78> / **<c-string 1..78>** / **<x-string 1..156>)**
OSI name of the partner application.
(1 to 78 alphanumeric characters)

PARTNER=(SOCKET,<socket-name 1..78> / **<c-string 1..78>** / **<x-string 1..156>)**
SOCKET name of the partner application.
(1 to 78 alphanumeric characters)

W=...
Mode for warning about connection shutdown

W=NO
Specifies that the application is not to be warned about connection shutdown.

W=YES
Specifies that the application is to be warned about connection shutdown.
With W=YES, all applications receive a warning about connection shutdown. After the warning time has expired, all remaining connections are automatically shut down.
The length of warning time is determined by the specification for the time interval between warnings (WARN operand in the BCTIMES command).

Command logging

For reasons of compatibility, successful processing is acknowledged with news BCA0763, and unsuccessful processing with news BCA0762, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA0863, BCA086F and BCA063A may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA063B	Connection not established
0	1	BCA0768	Syntax error in command
0	64	BCA0862	No connection was found
0	64	BCA08E5	Connection is unknown
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCCONP: Connection proposal for application

You use the BCCONP command to request an application in the local system to establish a connection to an application in the local or remote system).

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x		x	x	

List of valid command sources

BCCONP
<application-name 1 .. 8>
,<processor-name 1 .. 8>
,**PART** = <application-name 1 .. 8>

<application-name 1..8>
Denotes the application to which the connection is to be set up.

<processor-name 1..8>
Denotes the partner system to which the connection is to be set up and in which the application resides.

PART=<application-name 1..8>
Denotes the application (application-name) in the local host, which receives the connection proposal.

Command logging

For reasons of compatibility, successful processing is acknowledged with news BCA0763, and unsuccessful processing with news BCA0762, followed by the message NBR0740. In addition, for positive acknowledgments the message BCA063E may appear.
A description of the error messages that can be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA063F	Connection proposal not executed
0	1	BCA0768	Syntax error in command
0	64	BCA07A4	Host does not exist
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCDAC: Deactivate communication components

Using this command, you deactivate the following during operation

- individual processors or groups of processors
- individual routes or groups of routes
- LAN nodes
- lines
- hosts

If the BCDAC command is specified for a processor, the transport connections are not shut down. If deactivation takes longer, transport connections may, however, fail (e.g. because of timers), since no more data exchange takes place for the deactivated systems.Applications or terminals on an 8170 Cluster Controller are deactivated using the BCAPPL command.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x		x	x	

List of valid command sources

BCDAC Operand overview

HOST = <host-name 1 .. 8> / **LINE** = <line-name 1 .. 8> / **NODE** = <node-name 1 .. 8>

PROCESSOR = <processor-name 1 .. 8> / **ROUTE** = <rout-name 1 .. 8>

,**DAC** = **ONLY** / **LOCAL** / **NODE** / **ALL**

,**TYPE** = **QUICK** / **NORMAL**

NORMAL ,...

| **W** = **NO** / **YES**

BCDAC: Deactivate virtual host

You use this BCDAC command to deactivate a virtual host and the processors that can be accessed from it. The default host is not deactivated.

BCDAC for the host
HOST = <host-name 1 .. 8> ,**DAC** = **ONLY** / **LOCAL** / **NODE** / **ALL**

HOST=<host-name 1..8>
Name of the virtual host

DAC=...
Specifies the group of objects to be activated.

DAC=ONLY
The operation is only performed for the specified host.

DAC=LOCAL
The operation is performed for all LAN nodes .

DAC=NODE
The operation is performed for all LAN nodes , as well as all processors directly connected to the LAN, which are accessible via this LAN node.

DAC=ALL
The operation is performed for all accessible objects.

Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0763, and negative acknowledgments in news BCA0762, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA08D5 and BCA0624 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0625	Deactivation aborted
0	1	BCA0768	Syntax error in command
0	1	BCA0857	Name of the executed BCAM not permitted
0	64	BCA07A4	Host does not exist
0	64	BCA08E5	Host is unknown
0	128	BCA08D3	Host is not active
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCDAC: Deactivate line

You use a BCDAC command for a line to deactivate the line.

BCDAC for a line
LINE = <line-name 1 .. 8> ,**ROUTE-SWITCH** = **NO** / **YES**

LINE=<line-name1..8>
Name of line to be deactivated

ROUTE-SWITCH=...
Controls the handling of routes with layer-3 profile IP, IPv6 and INTF which run via the line to be deactivated.

ROUTE-SWITCH=NO
Routes with layer-3 profile IP, IPv6 and INTF which run via the line to be deactivated are not switched.

ROUTE-SWITCH=YES
Routes with layer-3 profile IP, IPv6 and INTF, which run via the lines to be deactivated are switched to the next active line which is assigned to the same LAN node. If no appropriate line can be found, it cannot be switched.

Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0763, and negative acknowledgments in news BCA0762, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA0851 and BCA0624 may also appear. A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0625	Deactivation aborted
0	1	BCA0768	Syntax error in command
0	64	BCA07A2	Line does not exist
0	64	BCA07DE	Line is inactive
0	64	BCA08E5	Line is unknown
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCDAC: Deactivate LAN node

You use the BCDAC command for a LAN node to deactivate the LAN node and the processors which can be accessed via this LAN node.

BCDAC for a LAN node
NODE = <node-name 1 .. 8> ,**DAC** = **ONLY** / **LOCAL** / **NODE** / **ALL**

NODE=<node-name 1..8>
Name of the LAN node

DAC=...
Specifies the group of objects to be deactivated.

DAC=ONLY / **LOCAL**
The operation is only performed for the specified LAN node.

DAC=NODE
The operation is performed for the LAN node of all the processors directly connected to the LAN and which are accessible via this LAN node.

DAC=ALL
The operation is performed for all accessible objects.

Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0763, and negative acknowledgments in news BCA0762, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA08D6 and BCA0624 may also appear. A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processsed
2	0	BCA0625	Deactivation aborted
0	1	BCA0768	Syntax error in command
0	64	BCA07A3	LAN node unknown
0	64	BCA08E5	LAN node unknown
0	128	BCA08D4	LAN node is not active
0	128	BCA0814	BCAM is terminating abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCDAC: Deactivate processor

You use the BCDAC command for a processor to deactivate the processor and any additional processors which can be accessed via the processor.

BCDAC for a processor
PROCESSOR = <processor-name 1 .. 8> ,**DAC** = **ONLY** / **LOCAL** / **NODE** / **ALL**

PROCESSOR=<processor-name 1..8>
Name of the processor

DAC=...
Specifies the group of objects to be deactivated.

DAC=ONLY / LOCAL / NODE
The operation is performed for the specified processor.

DAC=ALL
The operation is performed for the specified processor and for all the processors which can be accessed via the processor.

Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0763, and negative acknowledgments in news BCA0762, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA0852 and BCA0624 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0625	Deactivation aborted
0	1	BCA0768	Syntax error in command
0	64	BCA07A0	Computer is unknown
0	64	BCA08E5	Computer is unknown
0	128	BCA0814	BCAM is terminating abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCDAC: Deactivate route

You use this BCDAC command to deactivate a route. Existing connections via this route are not shut down, provided the route was activated with the option LINK-DOWN=KEEP-CONNECTION (default) in the BCAC command.

BCDAC for a route
ROUTE = <rout-name 1 .. 8>

ROUTE=<rout-name 1..8>
Name of the route

Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0763, and negative acknowledgments in news BCA0762, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA0853 and BCA0624 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0625	Deactivation aborted
0	1	BCA0768	Syntax error in command
0	64	BCA07A1	Route is unknown
0	64	BCA08E5	Route is unknown
0	128	BCA0814	BCAM is terminating abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCEND: Terminate BCAM in BS2000 system

Using this command, you shut down the data communication system in BS2000. All open applications are closed, and communication with all 8170 Cluster Controllers and with all systems is terminated.
The trace function activated with DCDIAG is not affected by the BCEND command.

This command can only be issued to the local BS2000 system and can only be entered via the console. It is not supported by the network management facility, as this cannot be operated without BCAM.

> ¡ When using MSCF in multiprocessor networks, please note that MSCF must be terminated before BCEND is issued.
> You should also use MAX-MSCF-DELAY to define an interval that is long enough to ensure a structured shutdown of the MSCF connections before BCEND. This value will depend on the size of the network.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x		x	x	

List of valid command sources

BCEND

TYPE = **QUICK** / **NORMAL**

NORMAL, ...

| **W** = **NO** / **YES**

| **YES** , ...

| | **TERM** = **NO** / **YES**

| | , **TIME** = **10** / <integer 1 .. 32767>

,**MSG** = *unchanged / **ALL** / **NAK**

TYPE=...
Specifies the type of connection shutdown.

TYPE=QUICK
Connection shutdown does not occur in the network.

TYPE=NORMAL
A connection shutdown occurs in the network.

W=...
Mode for warning about connection shutdown, only valid for TYPE=NORMAL

W=NO
The applications are not to be warned.

This option must only be used in “emergencies”, as it does not permit controlled termination of applications in the data communication system.

W=YES
The applications are to be warned about the forthcoming termination.
The warning is issued, if necessary, to all applications which are opened in the BS2000 system. It consists of information specifying that the data communication system in the BS2000 system is to be terminated in a defined time. This permits controlled termination of applications. The warning time is 10 seconds, as long as no other time is specified for the WARN operand with the BCTIMES command. After the warning time has expired the applications are, where necessary, automatically closed.
After BCEND W=Y has been entered, no additional BCEND W=Y is accepted for processing, only BCEND.

TERM=...
Mode for connection shutdown, only valid for W=YES.

TERM=NO
Termination does not take place automatically, but must be initiated by a renewed BCEND command with the operands W=NO or TYPE=QUICK.

TERM=YES
Termination takes place automatically after the warning time has expired.

TIME=<integer 1..32767>
Warning time in seconds. This specification overwrites the value specified by the BCTIMES command.
1 ... 10 ... 32767 sec

MSG=...
The operand controls the extent of the message output

MSG= *unchanged
control of message output remains unchanged.
Default: ALL

MSG=ALL
All messages are to be output

MSG=NAK
Only negative messages for computer systems are to be output
The following positive messages are suppressed:
BCA0740
BCA0763 for the BCIN (format 1), BCACT, BCDAC, BCOUT commands
BCA082A
BCA083F
BCA0851 with reason 00/01/02
BCA0852
BCA0853
BCA0854 with reason 00/01/02
BCA0856
BCA085B with reason 00/01/02
BCA085F
BCA08D7
BCA08DB
BCA08DC
BCA08DD

BCA08DE
BCA08DF
BCA08E5

Command logging

If processing is successful the message BCA0716 appears.
A description of the error messages that can be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0893	SOF processing cancelled
0	1	BCA0768	Syntax error in command
0	128	BCA0814	BCAM is terminating abnormally
0	128	BCA0816	BCAM is terminating

BCGEN: Modify processor names and addresses

Using this command, you modify the name of a computer system.
The command is only executed if the system being addressed has not yet been activated using BCIN or shut down using BCOUT.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x		x	x	

List of valid command sources

BCGEN

CHANGE = (...)

(...)

| **PROCESSOR** = <processor-name 1 .. 8>

| ,**NEWNAME** = *unchanged / <processor-name 1 .. 8>

| ,**SOKHOST** = *unchanged / <sockethost-name 1 .. 32>

| ,**LANADR** = *unchanged / <x-string 1 .. 12>

| ,...

| | **OLD-LANADR** = *none / <x-string 1 .. 12>

| ,**INTADR** = *unchanged / <x-string 1 .. 40>

| ,...

| | **OLD-INTADR** = *none / <x-string 1 .. 40>

| ,**IPADR** = *unchanged / <composed-name 7..15> / <x-string 1 .. 8> / list-poss (4): <integer 0 .. 255>

| ,...

| | **OLD-IPADR** = *none / <composed-name 7..15> / <x-string 1 .. 8> /

| | list-poss (4): <integer 0 .. 255>

| ,**I6-ADDRESS** = *unchanged / <c-string 1 .. 45>

| ,...

| | **OLD-I6-ADDRESS** = *none / <c-string 1 .. 45>

CHANGE=(...)

PROCESSOR=<processor-name 1..8>
Existing processor name for which the configuration modification is to be made.

NEWNAME=>
New processor name

NEWNAME= *unchanged
The processor name remains unchanged.

NEWNAME=<processor-name 1..8>
Specification of new processor.

SOKHOST=...
New processor socket host name

SOKHOST= *unchanged
The processor socket host name remains unchanged.

SOKHOST=<sockethost-name 1..32>
Specification of new socket host name.

LANADR=...
Denotes the Ethernet address of the processor

LANADR= *unchanged
The Ethernet address of the processor remains unchanged.

LANADR=<x-string 1..12>
Hexadecimal value, 6 bytes, is issued left-justified, and extended with X'00'.
The X'00' entry is not permitted.

OLD-LANADR=...
The old Ethernet address to be replaced for the system.
This specification is only necessary if the processor has more than one Ethernet address.

OLD-LANADR= *none
The processor has only one old Ethernet address.

OLD-LANADR=<x-string 1..12>
Hexadecimal value, 6 bytes, is issued left-justified, and extended with X'00'.
The X'00' entry is not permitted.

INTADR=...
Denotes the Internet address of the processor

INTADR= *unchanged
The Internet address of the processor remains unchanged.

INTADR=<x-string 1..40>
New Internet address of the processor
Hexadecimal value, 1 - 20 byte

OLD-INTADR=...
The old Internet address to be replaced for the processor.
This specification is always necessary if the processor has more than one Internet address.

OLD-INTADR= *none
The processor has only one old Internet address.

OLD-INTADR=<x-string 1..40>
Hexadecimal value, 1 - 20 b

IPADR=...
Denotes the IP address of the processor

IPADR= *unchanged
The IP address of the processor remains unchanged.

IPADR=<composed-name 7..15> /<x-string 1..8> / list-poss (4): <integer 0..255>
Hexadecimal value, 4 bytes, is issued left-justified, and extended with X'00'.
Specification in the form (n,n,n,n) is also possible, where n is a number between 0 and 255.

OLD-IPADR=...
The old IP address to be replaced for the processor.
This specification is always necessary if the processor has more than one IP address.

OLD-IPADR= *none
The processor has only one old IP address.

OLD-IPADR=<composed-name 7..15> / <x-string 1..8> / listposs(4): <integer 0..255>
Hexadecimal, 4 bytes, issued left-justified, and extended with X'00'.
Specification in the form (n,n,n,n) is also possible, where n is a number between 0 and 255.

I6-ADDRESS=...
Designates the processor's IPv6 address

I6-ADDRESS= *unchanged
The processor's IPv6 address remains unchanged.

I6-ADDRESS=<c-string 1..45>
The processor's IPv6 address.

OLD-I6-ADDRESS=...
The processor's old IPv6 address that is to be replaced.
This specification is necessary whenever the processor possesses more than one IPv6 address.

OLD-I6-ADDRESS= *none
The processor possesses only an old IPv6 address.

OLD-I6-ADDRESS=<c-string 1..45>
The processor's old IPv6 address that is to be replaced.

Command logging

For reasons of compatibility the processing acknowledgment is supplied in news BCA0763 if it is positive and in news BCA0762 if it is negative.
A description of the error messages that can be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	0	BCA0643	Name/address not modified
0	1	BCA0768	Syntax error in command
0	1	BCA0770	Parameter is invalid. Cause:
0	64	BCA07A8	Computer is not shut down
0	64	BCA07A9	Route is not shut down
0	64	BCA0833	Name already defined
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCIN: Initialize/generate communication components

This command offers the following two functions:

- Communication components in the “excluded” status can be initialized.
- Communication components which have not yet been made known can be generated dynamically.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x		x	x	

List of valid command sources

Initialize (function 1)

The following communication components which are in the “excluded” status are activated with this command:

- hosts
- lines
- processors
- LAN nodes
- routes

Dynamically generate (function 2)

This command can be used to dynamically include objects, processors or LAN nodes, which are not known, in the BCAM data structure for the current BCAM session.
The function enables configuration changes and extensions. It is not possible to modify the operands of already known objects with this command. In a BCIN for a second route to an already known processor, the NAME-OF-ROUTE operand must be specified. You can generate virtual hosts during the current session only with the CREATE-VIRTUAL-HOST command (see "CREATE-VIRTUAL-HOST / CRVTHT: Create virtual host").

BCIN: Initialize communication components

- BCIN: Initialize host
- BCIN: Initialize line
- BCIN: Initialize processor
- BCIN: Initialize LAN node
- BCIN: Initialize route

BCIN: Initialize host

BCIN on the host

HOST = <host-name 1 .. 8>

,**INI** = **ONLY** , ... / **LOCAL**, ... / **NODE**, ... / **ALL**, ...

ONLY, ...

| **ACT** = **YES** , ... / **NO** / **ONLY**, ... / **LOCAL**, ... / **NODE**, ... / **ALL**, ...

| ,**SLOW-POLL** = *std / **OFF** / **ON**

LOCAL, ...

| **ACT** = **YES** , ... / **NO** / **ONLY**, ... / **LOCAL,** ... / **NODE**, ... / **ALL**, ...

| ,**SLOW-POLL** = *std / **OFF** / **ON**

NODE, ...

| **ACT** = **YES** , ... / **NO** / **ONLY**, ... / **LOCAL**, ... / **NODE**, ... / **ALL**, ...

| ,**SLOW-POLL** = *std / **OFF** / **ON**

ALL, ...

| **ACT** = **YES** , ... / **NO** / **ONLY**, ... / **LOCAL**, ... / **NODE**, ... / **ALL**, ...

| ,**SLOW-POLL** = *std / **OFF** / **ON**

HOST=<host-name 1..8>
Name of the host

INI=...
Specifies the objects to be initialized in addition to the host.

INI=ONLY, ...
The operation is only performed for the specified host.

INI=LOCAL, ...
The operation is performed for the host as well as for all LAN nodes.

INI=NODE, ...
The operation is performed for the host, all LAN nodes, as well as all processors directly connected to the LAN which are accessible via this LAN node.

INI=ALL, ...
The operation is performed for all accessible objects.

ACT=...
Specifies which objects are to be activated.

ACT=YES
Only those objects which are defined by INI are activated.

ACT=NO
No activations whatsoever take place.

ACT=ONLY
Only the host is activated.

ACT=LOCAL
The host is activated together with all LAN nodes.

ACT=NODE
Activation takes place for the host, all connected LAN nodes, and all processors directly accessible via this LAN node.

ACT=ALL
Activation takes place for the specified host as well as for all processors or LAN nodes activated.

SLOW-POLL=...
Defines the SLOW-POLL behavior for lines to LAN nodes.
SLOW-POLL is only set if the affected connection is not active.

SLOW-POLL= *std
The general SLOW-POLL default setting (MODIFY-BCAM-OPTION command) is used.

SLOW-POLL=OFF
No reactivation following a line failure.

SLOW-POLL=ON
Causes automatic reactivation following a line failure. This reactivation is attempted every 15 seconds until it succeeds or until a BCDAC or a BCOUT command is issued.

Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0763, and negative acknowledgments in news BCA0762, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA0830, BCA083F, BCA08D1 and BCA0620 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0621	Startup aborted
0	1	BCA0768	Syntax error in command
0	64	BCA07A4	Host does not exist
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCIN: Initialize line

BCIN on a line

LINE = <line-name 1 .. 8>

,**ACT** = **YES** / **NO**

,**SLOW-POLL** = *std / **OFF** / **ON**

,**CONFIGURATION** = **UPDATE** / **PRIMARY** / **NO**

LINE=<line-name 1..8>
Name of the line

ACT=...
Specifies which objects are to be activated.

ACT=YES
The line is activated.

ACT=NO
The line is not activated.

SLOW-POLL=...
Defines the SLOW-POLL behavior for lines to LAN nodes. SLOW-POLL is only set if the affected connection is not active.

SLOW-POLL= *std
The general SLOW-POLL default setting (MODIFY-BCAM-OPTION command) is used.

SLOW-POLL=OFF
No reactivation following a line failure.

SLOW-POLL=ON
Causes automatic reactivation following a line failure. This reactivation is attempted every 15 seconds until it succeeds or until a BCDAC or BCOUT command is issued.

CONFIGURATION=...
The operand specifies whether or not IP, IPv6 and INTF routes which are assigned to the line to be activated can be assigned to an alternative line if the one to be activated fails, for example, or on activating the line for the first time.

CONFIGURATION=UPDATE
IP, IPv6 and INTF routes may be assigned to an alternative line.

CONFIGURATION=PRIMARY
IP, IPv6 and INTF routes are assigned to the line to be activated on activating the line.If the line to be activated fails, the IP, IPv6 and INTF routes may be reassigned to an alternative line.
In contrast to UPDATE, the routes are switched back to the specified line when that line becomes active again.

CONFIGURATION=NO
IP, IPv6 and INTF routes are always assigned to the line to be activated.
If the line to be activated fails, no alternative line is assigned for IP and INTF routes.

Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0763, and negative acknowledgments in news BCA0762, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA083F and BCA0620 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0621	Startup aborted
2	0	BCA0777	DMS-GETKY interface used for RDF
0	1	BCA0768	Syntax error in command
0	64	BCA08E5	Object is unknown
0	64	BCA0998	Configuration error in device ... of the line ...
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCIN: Initialize processor

BCIN on a processor

PROCESSOR = <processor-name 1 .. 8>

,**INI** = **ONLY** , ... / **ALL**, ... /

ONLY, ...

| **ACT** = **YES** / **NO** / **N** / **ONLY** / **ALL**

| ,**CONFIGURATION** = **UPDATE** / **PRIMARY** / **NO**

| ,**LINK-DOWN** = **KEEP-CONNECTION** / **DISCONNECT**

ALL, ...

| **ACT** = **YES** / **NO** / **N** / **ONLY** / **ALL**

| ,**CONFIGURATION** = **UPDATE** / **PRIMARY** / **NO**

| ,**LINK-DOWN** = **KEEP-CONNECTION** / **DISCONNECT**

PROCESSOR=<processor-name 1..8>
Name of the processor

INI=...
Specifies which objects are to be initiated in addition to the processor.

INI=ONLY,...
The operation is only performed for the specified processor.

INI=ALL
The operation is performed for all accessible objects.
INI=ALL is not valid for processors defined in the RDF, but without name specification.

ACT=...
Specifies which objects are to be activated.

ACT=YES
Only those objects which are defined by INI are activated.

ACT=NO / **N**
No activations whatsoever take place.

ACT=ONLY
Only the processor is activated.

ACT=ALL
Activation takes place for the specified processor and for all running processors that can be reached via that processor.
ACT=ALL is not valid for processors that have been defined in the RDF, but without name specifications.

CONFIGURATION=...
The operand specifies whether or not the network configuration for the processor can be modified using the routing protocol function. Specification is only possible for processors to which routes with the L3 profile IP, IPv6 or INTF exist.

CONFIGURATION=UPDATE
Route modifications resulting from routing protocol functions lead to modifications to the BCAM routing tables and remain effective for this BCAM session.

CONFIGURATION=PRIMARY
Route modifications resulting from routing protocol functions are to be canceled. The original configuration information is used again.

CONFIGURATION=NO
Route modifications resulting from routing protocol functions are not permitted.

LINK-DOWN=...
The operand specifies whether or not the transport connections assigned to the route are shut down in the event of a route failure.

LINK-DOWN=KEEP-CONNECTION
In the event of a route failure, the transport connections assigned to this route are not shut down.

LINK-DOWN=DISCONNECT
In the event of a route failure, all transport connections assigned to this route are shut down.

Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0763, and negative acknowledgments in news BCA0762, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA083F and BCA0620 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0621	Startup aborted
2	0	BCA0777	DMS-GETKY interface used for RDF
0	1	BCA0768	Syntax error in command
0	1	BCA077A	Definition of the route to computer invalid
0	64	BCA08E5	Object is unknown
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCIN: Initialize LAN node

BCIN on the LAN node

NODE = <node-name 1 .. 8>

,**INI** = **ONLY**, ... / **NODE** , ... / **ALL**, ...

ONLY, ...

| **ACT** = **YES** / **NO** / **ONLY** / **NODE** / **ALL**

| ,**SLOW-POLL** = *std / **OFF** / **ON**

NODE, ...

| **ACT** = **YES** / **NO** / **ONLY** / **NODE** / **ALL**

| ,**SLOW-POLL** = *std / **OFF** / **ON**

ALL, ...

| **ACT** = **YES** / **NO** / **ONLY** / **NODE** / **ALL**

| ,**SLOW-POLL** = *std / **OFF** / **ON**

The setting of the BROADCAST, ARP, RARP and ISO9542 operands of the
BCOPTION command is OFF. A possible change to this setting must be made before activation of the LAN node.

- BROADCAST=ON

  must be set if L2 broadcast messages (e.g. ARP requests) are received via the LAN channel adapter.
- ARP=QUIET / ON

  must be set if ARP requests are sent for updating the local assignment of IP addresses to LAN addresses. This is always necessary where IP partners are generated without LAN addresses, or automatic end system creation is to be used in the IP area.
- ISO9542=ON

  must be set if the ISO9542 routing protocol is used. This is only useful if partner end systems exist which support the corresponding protocol. ISO9542 is an ES – IS (end system – intermediate system) protocol and is required for use in networks with routers and for automatic end system creation in the ISO area.
- RARP=ON

  must be set if RARP requests are processed. This is only useful if partner systems are defined with RARP=YES during generation.

NODE=<node-name 1..8>
Name of the LAN node

INI=...
Specifies the objects to be started in addition to the LAN node.

INI=ONLY
The operation is only performed for the LAN node.

INI=NODE
The operation is only performed for the LAN node and all processors directly connected to the LAN which are accessible via this LAN node.

INI=ALL
The operation is performed for all objects accessible via the LAN node.

ACT=...
Specifies which objects are activated.

ACT=YES
Only those objects which are defined by INI are activated.

ACT=NO
No activations whatsoever take place.

ACT=ONLY
Only LAN nodes are activated.

ACT=NODE
The operation is carried out for the LAN nodes themselves and all computers directly connected to and accessible via the LAN.

ACT=ALL
Activation takes place for all processors accessible via the LAN node as well as for all processors or LAN nodes activated.

SLOW-POLL=...
Defines the SLOW-POLL behavior for lines to LAN nodes.
SLOW-POLL is only set if the affected connection is not active.

SLOW-POLL= *std
The general SLOW-POLL default setting (MODIFY-BCAM-OPTION command) is used.

SLOW-POLL=OFF
No reactivation following a line failure.

SLOW-POLL=ON
Causes automatic reactivation following a line failure. This reactivation is attempted every 15 seconds until it succeeds or until a BCDAC or BCOUT command is issued.

Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0763, and negative acknowledgments in news BCA0762, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA083F, BCA08D2, BCA0831 and BCA0620 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0621	Startup aborted
0	1	BCA0768	Syntax error in command
0	64	BCA07A3	LAN node is unknown
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	128	BCA0766	BCAM is not active

BCIN: Initialize route

You use a BCIN command for a route to start a route and the associated processor.

BCIN to a route
ROUTE = <rout-name 1 .. 8> ,**ACT** = **YES** / **NO** ,**CONFIGURATION** = **UPDATE** / **PRIMARY** / **NO** ,**LINK-DOWN** = **KEEP-CONNECTION** / **DISCONNECT**

ROUTE=<rout-name 1..8>
Name of the route

ACT=...
Specifies which objects are activated.

ACT=YES
The route and its processor are activated.

ACT=NO
No activations whatsoever take place.

CONFIGURATION=...
The operand specifies whether or not the network configuration for the processor is to be modified using the routing protocol function. The specification is only possible for the processor to which routes with the L3 profile IP, IPv6 or INTF exist.

CONFIGURATION=UPDATE
Route modifications resulting from routing protocol functions lead to modifications to the BCAM routing tables and remain effective for this BCAM session.

CONFIGURATION=PRIMARY
Route modifications resulting from routing protocol functions are to be canceled. The original configuration information is used again.

CONFIGURATION=NO
Route modifications resulting from routing protocol functions are not permitted.

LINK-DOWN=...
The operand specifies whether or not the transport connections assigned to the route are shut down in the event of a route failure.

LINK-DOWN=KEEP-CONNECTION
In the event of a route failure, the transport connections assigned to this route are not shut down.

LINK-DOWN=DISCONNECT
In the event of a route failure, all transport connections assigned to this route are shut down.

Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0763, and negative acknowledgments in news BCA0762, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA083F, BCA083E and BCA0620 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0621	Startup aborted
2	0	BCA0777	DMS-GETKY interface used for RDF
0	1	BCA0768	Syntax error in command
0	1	BCA077A	Definition of the route to computer invalid
0	64	BCA08E5	Object is unknown
0	64	BCA0998	Configuration error at device ... of the line ...
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCIN: Dynamically generate communication components

BCIN function 2

This command can be used to dynamically include objects, processors or LAN nodes, which are not generated, in the BCAM data structure for the current BCAM session.
The function enables configuration changes to be made without the need for regeneration. It is not possible to modify the operands of generated processors with this command.

BCIN (function 2) - Overview

<name 1 .. 8>

,**NAME-OF-ROUTE =** *default / <rout-name 1 .. 8>

,**GEN = LOCAL** / **NODE** / **REMOTE**

,**MAXTSDU =** <integer 4096 .. 65530>

,**SOKHOST =** <sokhost-name 1 .. 32>

,**SLOW-POLL =** *std / **ON** / **OFF**

,**WAIT-TIME = SHORT** / **LONG**

,**ACT = YES** / **NO**

,**MAP = YES** / **NO**

,**PROFIL =** <profil4> / <, profil3> / <, profil2>

,**LANADR =** <x-string 1 .. 12>

,**INTADR =** <x-string 1 .. 40>

,**IPADR =** <composed-name 7 ..15> / <x-string 1..8> / list-poss(4): <integer 0 .. 255>

,**IPSNMASK =** <x-string 1 .. 8> / list-poss (4): <integer 0 .. 255>

,**I6-ADDRESS** = <c-string 1..49>

,**ISO-NET =** <x-string 1 .. 40> / ***UNKNOWN**

,**IP-NET =** <composed-name 7..15> / <x-string 1 .. 8> / list-poss (4): <integer 0 .. 255> / ***UNKNOWN**

,**OWN-INTADR =** <x-string 1 .. 40>

,**OWN-IPADR =** <composed-name 7..15> / <x-string 1 .. 8> / list-poss (4): <integer 0 .. 255>

,**OWN-I6-ADDRESS** = <c-string 1..49>

,**DEV =** list-poss (2): <device 2 .. 4>

,**ROUTE =** <rout-name 1 .. 8>

,**TUNNEL-ROUTE** = <rout-name>

,**GATE =** <gate-name 1 .. 8>

,**HOST =** <host-name 1 .. 8>

, **ADM = BCAM** / **UNKNOWN**

, **LINK-DOWN = DISCONNECT** / **KEEP-CONNECTION**

,**CONFIGURATION = UPDATE** / **PRIMARY** / **NO**

,**MAXNETL = CSMACD**

,**RARP = YES** / **NO**

,**MAX-LPDU-SIZE** = <integer 1514 .. 10240>

,**ROUTE-SELECT = *SEQUENTIAL-WITH-RETRY** / ***SEQUENTIAL** / ***BALANCED-WITH-RETRY** /
***BALANCED**

,**ROUTE-SEQUENCE-NUM =** <integer 0..99>

,**LINE =** <line-name 1 .. 8>

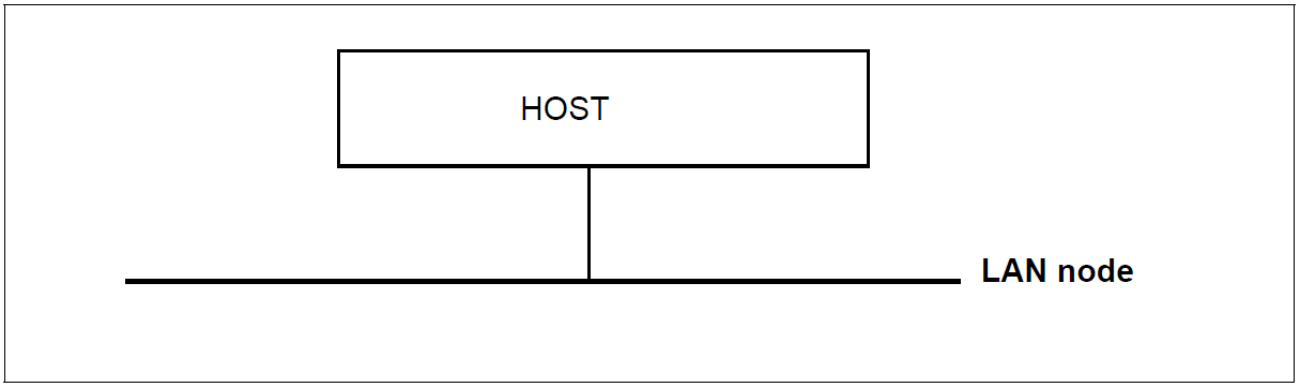
,**TCONMF =** <integer 1 .. 65535>

,**NCONFC =** <integer 1 .. 99>

,**USAGE** = list-poss (2): **ES** / **ROUTER**

,**TRANSON-USAGE = *OFF** / ***ON**

BCIN: Dynamically generate LAN node



For examples of the generation of a LAN node, refer to the section "Examples of dynamic generation". Examples LAN1#5 and LAN1#6 (on "ISO end system connected directly to a LAN (LAN1#5)" or "Local and remotely accessible end systems (LAN1#6)") are relevant for LAN nodes.

BCIN for a LAN node (format 2)

<node-name 1 .. 8>

,**LINE** = *default / <line-name 1 .. 8>

,**GEN = LOCAL**

,**PROFIL =** (, , **CSMACD**)) /

(, **IP** , **CSMACD**) /

(, **IPV6** , **CSMACD**) /

(, **INTF** , **CSMACD**) /

(, (**IP** , **IPV6)** , **CSMACD**) /

(, (**IP** , **INTF**) , **CSMACD**) /

(, (**IPV6** , **INTF**) , **CSMACD**) /

(, (**IP** , **IPV6** , **INTF**) , **CSMACD**)

(, **IP** , xxx) , ...

| **IPADR =** <composed-name 7..15> / <x-string 1 .. 8> / list-poss (4): <integer 0 .. 255>

| ,**IPSNMASK =** *default / <composed-name 7.15> / <x-string 1 .. 8> / list-poss (4): <integer 0 .. 255>

(, **IPV6** , xxx) , ...

| **I6-ADDRESS** = <c-string 1.. 49>

(, **INTF** , xxx) , ...

| **INTADR =** <x-string 1 .. 40>

(, (**IP** , **IPV6**) , xxx) , ...

| **IPADR** = <composed-name 7..15> / <x-string 1..8> / list-poss(4): <integer 0..255>

| , **IPSNMASK =** *default / <composed-name 7.15> / <x-string 1 .. 8> / list-poss (4): <integer 0 .. 255>

| , **I6-ADDRESS** = <c-string 1.. 49>

(, (**IP** , **INTF**) , xxx) , ...

| **IPADR =** <composed-name 7..15> / <x-string 1 .. 8> / list-poss (4): <integer 0 .. 255>

| , **IPSNMASK =** *default / <composed-name 7..15> / <x-string 1 .. 8> / list-poss (4): <integer 0 .. 255>

| , **INTADR =** <x-string 1 .. 40>

(, (**IPV6** , **INTF**) , xxx) , ...

| **I6-ADDRESS** = <c-string 1.. 49>

| , **INTADR =** <x-string 1 .. 40>

(, (**IP** , **IPV6** , **INTF**) , xxx) , ...

| **IPADR =** <composed-name 7..15> / <x-string 1 .. 8> / list-poss (4): <integer 0 .. 255>

| , **IPSNMASK =** *default / <composed-name 7..15> / <x-string 1 .. 8> / list-poss (4): <integer 0 .. 255>

| , **I6-ADDRESS** = <c-string 1.. 49>

| , **INTADR =** <x-string 1 .. 40>

, **DEV =** list-poss (2): <device 2 .. 4>

, **LANADR =** *none / <x-string 1 .. 12>

, **MAX-LPDU-SIZE** = *none / <integer 1514 .. 10240 byte>

, **HOST** = *default / <host-name 1 .. 8>

, **ACT** = **YES** / **NO**

, **SLOW-POLL** = *std / **ON** / **OFF**

, **CONFIGURATION = UPDATE** / **PRIMARY** / **NO**

<node-name 1..8>
Name of the LAN node

LINE=...
Name of the line that is to be defined as a new (additional) line to the node. If there is already an existing line to this node that uses the line name as the node name, a line name must always be defined with LINE.

LINE= *default
The node name is used as the line name.

LINE=<line-name 1..8>
Defines a line name for the new or additional line leading to this node.

GEN = LOCAL
Using GEN=LOCAL, you specify that a directly connected LAN node is included in the BCAM data structure and activated.

PROFIL=...
Using PROFILE, you specify which Layer 2/Layer 3 protocol profile is used via the LAN node.
Layer 3 protocols not specified can be extended in additional BCIN commands for a LAN processor.

PROFIL=(,,CSMACD)
The LAN node is an ETHERNET LAN, which is operated with the Layer 3 protocol ISO8473 Zero Internet.
If no local IPv6 address is explicitly specified and the IPv6 autoconfiguration function has been activated by means of /BCOPTION IPV6-AUTO-CONFIG then a "link-local" IPv6 address (IPv6 prefix: FE80/10) is generated and used.

PROFIL=(,IP,CSMACD),...
The LAN node is an ETHERNET LAN, which is operated with the Layer 3 protocol IP.

IPADR=<composed-name 7..15> / <x-string 1..8> /list-poss (4): <integer 0..255>
Using IPADR, you specify the local IP address, with which the host is addressed on this LAN.

IPSNMASK=...
Using IPSNMASK, you specify the IP subnet mask to be used on this LAN.

IPSNMASK=*default
The IP subnet mask used on this LAN is derived from the IP address (IPADR operand).

IPSNMASK=<composed-name 7..15> / <x-string 1..8> / list-poss (4): <integer 0..255>
Definition of the IP subnet mask used on this LAN.

PROFIL=(,IPV6,CSMACD),...
The LAN node is an ETHERNET-LAN which is operated using the Layer 3 protocol IPv6.

I6-ADDRESS=
In I6-ADDRESS you enter the local IPv6 address at which the host can be addressed at this LAN together with the IPv6 prefix length.

I6-ADDRESS=<c-string 1..49>
In I6-ADDRESS you enter the local IPv6 address at which the host can be addressed at this LAN together with the IPv6 prefix length.
(Syntax: IPv6 address/IPv6 prefix length)

PROFIL=(,INTF,CSMACD),...
The LAN node is an ETHERNET LAN, via which the Layer 3 protocol ISO8473 Full Internet is used.

INTADR=<x-string 1..40>
Using INTADR, you specify the local ISO Internet address, with which the host is addressed on this LAN.

PROFIL=(,(IP,IPV6),CSMACD),...
The LAN node is an ETHERNET-LAN which is operated using the Layer 3 protocol IP and IPv6 together with the Layer 3 protocol ISO8473 Full Internet.

IPADR=<composed-name 7..15> / <x-string 1..8> /list-poss (4): <integer 0..255>
Using IPADR, you specify the local IP address, with which the host is addressed on this LAN.

IPSNMASK=...
Definition of the IP subnet mask used on this LAN.

IPSNMASK= *default
The IP subnet mask used on this LAN is derived from the IP address (IPADR operand).

IPSNMASK=<composed-name 7..15> / <x-string 1..8> / list-poss (4): <integer 0..255>
IP subnet mask used on this LAN.

I6-ADDRESS=
In I6-ADDRESS you enter the local IPv6 address at which the host can be addressed at this LAN together with the IPv6 prefix length.

I6-ADDRESS=<c-string 1..49>
In I6-ADDRESS you enter the local IPv6 address at which the host can be addressed at this LAN together with the IPv6 prefix length.
(Syntax: IPv6 address/IPv6 prefix length)

PROFIL=(,(IP,INTF),CSMACD),...
The LAN node is an ETHERNET LAN, via which the Layer 3 protocol IP and the Layer 3 protocol ISO8473 Full Internet are used.

IPADR=<composed-name 7..15> / <x-string 1..8> / list-poss (4): <integer 0..255>
Using IPADR, you specify the local IP address, with which the host is addressed on this LAN.

IPSNMASK=...
Using IPSNMASK, you specify the IP subnet mask used on this LAN.

IPSNMASK= *default
The IP subnet mask used on this LAN is derived from the IP address (IPADR operand).

IPSNMASK=<composed-name 7..15> / <x-string 1..8> / list-poss (4): <integer 0..255>
IP subnet mask used on this LAN.

INTADR=<x-string 1..40>
Using INTADR, you specify the local ISO Internet address, with which the host is addressed on this LAN.

PROFIL=(,(IPV6,INTF),CSMACD),...
The LAN node is an ETHERNET-LAN which is operated using the Layer 3 protocol IPv6 together with the Layer 3 protocol ISO8473 Full Internet.

I6-ADDRESS=
In I6-ADDRESS you enter the local IPv6 address at which the host can be addressed at this LAN together with the IPv6 prefix length.

I6-ADDRESS=<c-string 1..49>
In I6-ADDRESS you enter the local IPv6 address at which the host can be addressed at this LAN together with the IPv6 prefix length.
(Syntax: IPv6 address/IPv6 prefix length)

INTADR=<x-string 1..40>
Using INTADR, you specify the local ISO Internet address, with which the host is addressed on this LAN.

PROFIL=(,(IP,IPV6,INTF),CSMACD),...
The LAN node is an ETHERNET-LAN via which the Layer 3 protocol IP and IPv6 together with the Layer 3 protocol ISO8473 Full Internet are operated.

IPADR=<composed-name 7..15> / <x-string 1..8> / list-poss(4): <integer 0..255>
Using IPADR, you specify the local IP address, with which the host is addressed on this LAN.

IPSNMASK=...
Definition of the IP subnet mask used on this LAN.

IPSNMASK= *default
The IP subnet mask used on this LAN is derived from the IP address (IPADR operand).

IPSNMASK=<composed-name 7..15> / <x-string 1..8> / list-poss (4): <integer 0..255>
IP subnet mask used on this LAN.

I6-ADDRESS=
In I6-ADDRESS you enter the local IPv6 address at which the host can be addressed at this LAN together with the IPv6 prefix length.

I6-ADDRESS=<c-string 1..49>
In I6-ADDRESS you enter the local IPv6 address at which the host can be addressed at this LAN together with the IPv6 prefix length.
(Syntax: IPv6 address/IPv6 prefix length)

INTADR=<x-string 1..40>
Using INTADR, you specify the local ISO Internet address, with which the host is addressed on this LAN.

DEV=list-poss(2):<device 2..4>
Mnemonic device names for the line.
The two device names (listed) describe the following devices:

- 1. Device name : write device
- 2. Device name : read device

LANADR=...
Using LANADR, you specify the Ethernet address of the connection to this LAN. You must specify a LAN address if you want to operate a partner system with the profile (ISO4,INT0) via this line connection.

LANADR= *none
The Ethernet address of the LAN channel adapter is to be used.

LANADR=<x-string 1..12>
Ethernet address of the connection to this LAN.
The original Ethernet address of the LAN channel adapter is overwritten with the specified Ethernet address.

MAX-LPDU-SIZE=<integer 1514..10240>
With MAX-LPDU-SIZE you specify the maximum frame data length on the line in bytes.
Default: 1514 for CSMACD

HOST=...
With HOST, you specify the name of the host to which the LAN node is connected.

HOST= *default
The name of the default host (host name from the DCSTART or DCOPT command) is used as the host name.

HOST=<host-name 1..8>
Name of the host to which the LAN node is connected.

ACT=...
Specifies whether the LAN node is activated.

ACT=YES
The LAN node is activated.

ACT=NO
The LAN node is not activated.

SLOW-POLL=...
Defines the SLOW-POLL behavior for lines to LAN nodes.
SLOW-POLL is only set if the affected connection is not active.

SLOW-POLL= *std
The general SLOW-POLL default setting (MODIFY-BCAM-OPTION command) is used.

SLOW-POLL=ON
Causes automatic reactivation following a line failure. This reactivation is attempted every 15 seconds until it succeeds or until a BCDAC or BCOUT command is issued.

SLOW-POLL=OFF
No reactivation following a line failure.

CONFIGURATION=...
The operand specifies whether or not the network configuration for the line connection is modified using the routing protocol function or as a result of line failures or variable activation speeds. The specification is only possible for line connections with the L3 profile IP, IPv6 or INTF exist.

CONFIGURATION=UPDATE
Route modifications resulting from routing protocol functions lead to modifications to the BCAM routing tables and remain effective for this BCAM session.

CONFIGURATION=PRIMARY
Route modifications resulting from routing protocol functions are canceled. The original configuration information is used again.

CONFIGURATION=NO
Route modifications resulting from routing protocol functions are not permitted.

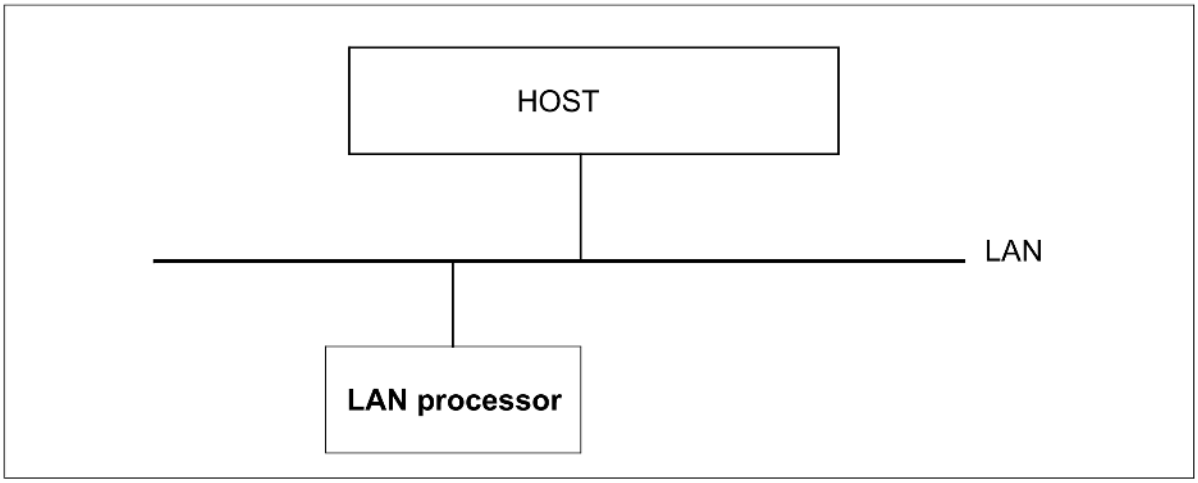
Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0763, and negative acknowledgments in news BCA0762, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA083F, BCA083E and BCA0631 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0621	Start-up aborted
0	1	BCA0768	Syntax error in command
0	64	BCA0833	Name already defined
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCIN: Dynamically generate LAN processor



You can use the MODIFY-ADDRESS-ASSIGNMENT command to assign IPv6 network domains that can be accessed via a LAN processor.

BCIN for a LAN processor (format 2)

<processor-name 1 .. 8>

,**NAME-OF-ROUTE =** *default / <rout-name 1 .. 8>

,**GEN = NODE**

,**PROFIL =** (**TCP** , **IP**, [**ETHERNET**]) /

(**TCP** , **IP** , **SNAP**) /

(**TCP** , **IPV6** , [**ETHERNET**]) /

(**TCP** , **IPV6** , **SNAP**) /

(**ISO4** , **INTF** , **xxx**) /

(**ISO4** , [**INT0**] , **xxx**)

(xxx , **IP** , xxx) , ...

| **IPADR =** *default / <composed-name 7..15> / <x-string 1 .. 8> / list-poss (4): <integer 0 .. 255>

| ,**OWN-IPADR =** *default / <composed-name 7..15> / <x-string 1 .. 8> / list-poss (4): <integer 0 .. 255>

| ,**LANADR =** *none / <x-string 1 .. 12>

| ,**SOKHOST** = *default / <c-string 1 .. 32> / <sokhost-name 1 .. 32>

| ,**USAGE** = list-poss (2): **ES** / **ROUTER**

| ,**CONFIGURATION** = **UPDATE** / **PRIMARY** / **NO**

| ,**RARP** = **NO** / **YES**

| ,**IP-NET =** *none / ****UNKNOWN** / <composed-name 7..15> / <x-string 1 .. 8> / list-poss (4):

| <integer 0 .. 255>

| ,**TRANSON-USAGE =** ***OFF** / ***ON**

(xxx , **IPV6** , xxx) , ...

| **I6-ADDRESS** = *default / <c-string 1.. 45>

| ,**OWN-I6-ADDRESS** = *default / <c-string 1 .. 49>

| ,**LANADR =** *none / <x-string 1 .. 12>

| ,**SOKHOST** = *default / <c-string 1 .. 32> / <sokhost-name 1 .. 32>

| ,**USAGE** = list-poss (2): **ES** / **ROUTER**

| ,**CONFIGURATION** = **UPDATE** / **PRIMARY** / **NO**

(xxx , **INTF** , xxx) , ...

| **INTADR =** *default / <x-string 1 .. 40>

| ,**OWN-INTADR =** *default / <x-string 1 .. 40>

| ,**LANADR =** *none / <x-string 1 .. 12>

| ,**USAGE** = list-poss (2): **ES** / **ROUTER**

| ,**CONFIGURATION** = **UPDATE** / **PRIMARY** / **NO**

| ,**ISO-NET =** *none / ****UNKNOWN** / <x-string 1 .. 40>

(xxx , **INT0** , xxx) , ...

| ,**LANADR =** <x-string 1 .. 12>

,**ROUTE** = <node-name 1 .. 8>

,**HOST** = *default / <host-name 1 .. 8>

,**LINE** = *default / <line-name 1 .. 8>

,**MAXTSDU** = **4096** / <integer 4096 .. 65530 byte>

,**ROUTE-SELECT =** ***SEQUENTIAL-WITH-RETRY** / ***SEQUENTIAL** / ***BALANCED-WITH-RETRY** /

***BALANCED**

,**ROUTE-SEQUENCE-NUM** = **0** / <integer 0 .. 99>

,**MAXNETL** = **CSMACD**

,**MAP** = **YES** / **NO**

,**ADM** = **BCAM** / **UNKNOWN**

,**ACT** = **YES** / **NO**

| ,**LINK-DOWN** = **KEEP-CONNECTION** / **DISCONNECT**

<processor-name 1..8>
Name of the processor

NAME-OF-ROUTE=
Using NAME-OF-ROUTE, you specify the name of the route that is defined as the new (additional) route to the processor.

NAME-OF-ROUTE= *default
The name of the processor is used as the route name.

NAME-OF-ROUTE=<rout-name 1..8>
Name of the route that is defined as the new (additional) route to the processor.
If there is already an existing route to the processor with the same route name as the name of the processor, the NAME-OF-ROUTE operand must be specified.

GEN=NODE
Using GEN=NODE, you specify that a processor directly accessible via a LAN node is included in the BCAM data structure and activated.

PROFIL= ...
Using PROFILE, you specify which protocol profile is used on the route to the processor.The specification is made by individually entering the Layer 4 protocol, Layer 3 protocol, and Layer 2 protocol to be used (in that order) in the form of a list, where protocols which are not relevant can be omitted.

Profile Layer 4

PROFIL=(TCP,xxx,xxx)
The Layer 4 protocol TCP is used on the route to the processor.

PROFIL=(ISO4,xxx,xxx)
The Layer 4 protocol ISO8073 Class 4 is used on the route to the processor.

Profile Layer 3

PROFIL=(xxx,IP,xxx),...
The Layer 3 protocol IP is used on the route to the processor.

IPADR= *default
The IP address of the processor is obtained from the processor file or the socket host file.

IPADR=<composed-name 7 ..15> / **<x-string 1..8>** / **list-poss (4): <integer 0..255>**
Using IPADR, you specify the IP address of the processor.

OWN-IPADR=...
Using OWN-IPADR, you specify the local IP address, with which the host for the processor can be addressed.

OWN-IPADR= *default
The IP address already known for the host is used as the local IP address.

OWN-IPADR=<composed-name 7 ..15> / <x-string 1..8> / list-poss (4): <integer 0..255>
Local IP address, with which the host for the processor can be addressed.

LANADR=...
Using LANADR, you specify the Ethernet address with which the processor is connected to this LAN.

LANADR= *none
The Ethernet address with which the processor is connected to this LAN is dynamically determined (by BCAM).

LANADR=<x-string 1..12>
The Ethernet address with which the processor is connected to this LAN.

SOKHOST=...
Using SOKHOST, you specify the socket host name of the processor.

SOKHOST= *default
The processor name is used as the socket host name.

SOKHOST=<c-string 1..32> / <sokhost-name 1..32>
Socket host name of the processor

USAGE=...
Using USAGE, you define the usage of the route to the processor.
Both values may also be specified as a list (list-poss).

USAGE=ES
The route is used for transport connections to and from the processor.

USAGE=ROUTER
The processor which is accessed via this route is to function as an IP router.

CONFIGURATION=...
The operand specifies whether or not the network configuration for the processor is to be modified using the routing protocol function. The specification is only possible for the processor to which routes with the L3 profile IP, IPv6 or INTF exist.

CONFIGURATION=UPDATE
Route modifications resulting from routing protocol functions lead to modifications to the BCAM routing tables and remain effective for this BCAM session.

CONFIGURATION=PRIMARY
Route modifications resulting from routing protocol functions are canceled, the original configuration information is used again.

CONFIGURATION=NO
Route modifications resulting from routing protocol functions are not permitted.

RARP=...
Using RARP, you specify whether RARP requests from outside may be answered.RARP requests are used to retrieve information about network addressing.

RARP=NO
RARP requests from outside may not be answered.

RARP=YES
RARP requests from outside may be answered.

IP-NET=...
Using IP-NET, you specify which additional IP addresses are accessible via the route to the processor.

IP-NET= *none
No additional IP addresses are accessible via the route to the processor.

IP-NET=*UNKNOWN
All previously unknown IP addresses are accessible via the route to the processor.

IP-NET=<composed-name 7 ..15> / <x-string 1..8> / list-poss (4): <integer 0..255>
Range of IP addresses that are accessible via the route to the processor.

TRANSON-USAGE =
You use TRANSON-USAGE to specify whether the route is used to access a TranSON server.

TRANSON-USAGE = *OFF
The route is not used to access a TranSON server.

TRANSON-USAGE = *ON
The route is used to access a TranSON server, i.e. parallel connections are permitted for NEA applications.

PROFIL=(xxx,IPV6,xxx),...
The Layer 3 protocol IPv6 is used on the route to the processor.

I6-ADDRESS= *default
The IPv6 address of the processor is taken from the processor file or the socket host file.

I6-ADDRESS=<c-string 1..45>
With I6-ADDRESS, you specify the IPv6 address of the processor.

OWN-I6-ADDRESS=...
IN OWN-I6-ADDRESS you enter the local IPv6 address at which the host can be addressed at this LAN together with the IPv6 prefix length.

OWN-I6-ADDRESS= *default
The known IPv6 address of the host is used as the local IP address

OWN-I6-ADDRESS=<c-string 1..49>
Local IPv6 address at which the host can be addressed at this LAN together with the IPv6 prefix length. (Syntax: IPv6 address/IPv6 prefix length)

LANADR=...
With LANADR you specify the Ethernet address at which the processor is connected to this LAN.

LANADR= *none
The Ethernet address at which the processor is connected to this LAN is dynamically determined (by BCAM).

LANADR=<x-string 1..12>
Ethernet address at which the processor is connected to this LAN.

SOKHOST=...
IN SOKHOST you enter the processor's socket host name.

SOKHOST= *default
The processor name is used as the socket host name.

SOKHOST=<c-string 1..32> / <sokhost-name 1..32>
Socket host name of the processor

USAGE=...
With USAGE you define the purpose of this route to the processor.
You can also specify both values as a list (list-poss).

USAGE=ES
The route is used for transport connections from and to the processor.

USAGE=ROUTER
The processor accessed via this route acts as an IPv6 router.

CONFIGURATION=...
The operand specifies whether or not the network configuration for the processor can be modified using the routing protocol function. The specification is only possible for processors accessed by routes with the L3 profile IP, IPv6 or INTF.

CONFIGURATION=UPDATE
Route modifications resulting from routing protocol functions lead to modifications to the BCAM routing tables and remain effective for this BCAM session.

CONFIGURATION=PRIMARY
Route modifications resulting from routing protocol functions are canceled. The original configuration information is used again.

CONFIGURATION=NO
Route modifications resulting from routing protocol functions are not permitted.

PROFIL=(xxx,INTF,xxx),...
The Layer 3 protocol ISO8473 Full Internet is to be used on the route to the processor.

INTADR= *default
The ISO Internet address of the processor is obtained from the processor file.

INTADR=<x-string 1..40>
Using INTADR, you specify the ISO Internet address of the processor.

OWN-INTADR=...
Using OWN-INTADR, you specify the local ISO Internet address, with which the host for the processor can be addressed.

OWN-INTADR= *default
The ISO Internet address already known for the host is used as the local ISO Internet address.

OWN-INTADR=<x-string 1..40>
Local ISO Internet address with which the host for the processor can be addressed.

LANADR=...
Using LANADR, you specify the Ethernet address with which the processor is connected to this LAN.

LANADR= *none
The Ethernet address at which the processor is connected to this LAN is dynamically determined (by BCAM).

LANADR=<x-string 1..12>
The Ethernet address at which the processor is connected to this LAN.

USAGE=...
Using USAGE, you define the usage of the route to the processor.
Both values may also be specified as a list (list-poss).

USAGE=ES
The route is used for transport connections to and from the processor.

USAGE=ROUTER
The processor which is accessed via the route functions as an ISO8473 router.

CONFIGURATION=...
The operand specifies whether or not the network configuration is to be modified for the processor using the routing protocol function. The specification is only possible for the processor to which routes with the L3 profile IP, IPv6 or INTF exist.

CONFIGURATION=UPDATE
Route modifications resulting from routing protocol functions lead to modifications to the BCAM routing tables and remain effective for this BCAM session.

CONFIGURATION=PRIMARY
Route modifications resulting from routing protocol functions are canceled. The original configuration information is used again.

CONFIGURATION=NO
Route modifications resulting from routing protocol functions are not permitted.

ISO-NET=...
Using ISO-NET, you specify which additional ISO Internet addresses are accessible via the route to the processor.

ISO-NET= *none
No additional ISO Internet address is accessible via the route to the processor.

ISO-NET=*UNKNOWN
All previously unknown ISO Internet addresses are accessible via the route to the processor.

ISO-NET=<x-string 1..40>
Additional ISO Internet address, which is accessible via the route to the processor.

PROFIL=(xxx,INT0,xxx),...
The Layer 3 protocol ISO8473 Zero Internet is used on the route to the processor.

LANADR=<x-string 1..12>
Using LANADR, you specify the Ethernet address with which the processor is connected to this LAN.

Profile Layer 2

PROFIL=(xxx,xxx,ETHERNET)
In Layer 2, the Ethernet protocol in accordance with RFC 894 is used on the route to the processor.

PROFIL=(xxx,xxx,SNAP)
In Layer 2, the LLC1 SNAP protocol in accordance with RFC 1042 and RFC 1188 is used on the route to the processor.

End of profile dependency

ROUTE=<node-name 1..8>
Using ROUTE, you specify the name of the LAN node via which the processor is accessible.

HOST=...
Using HOST, you specify the name of the host from which the route to the processor leads.

HOST= *default
The name of the default host (host name from the DCSTART or DCOPT command) is used as the host name.

HOST=<host-name 1..8>
Name of the host from which the route to the processor leads.

LINE=...
Using LINE, you specify the name of the line, which is used as the connection to the LAN node, specified by ROUTE, for the route to the processor.

LINE= *default
One of the existing lines to the LAN node is selected at random as the line which is used as the connection to the LAN node for the route to the processor. The LAN is specified via ROUTE.
If more than one line to the LAN node exists, the LINE operand must be specified.

LINE=<line-name 1..8>
Name of the line which is used as the connection to the LAN node, specified using ROUTE, for the route to the processor.

MAXTSDU=<integer 4096..65530>
Using MAXTSDU, you specify the maximum receive message length of the processor.
Default: 4096

ROUTE-SELECT=...
ROUTE-SELECT determines how transport connections are distributed over the routes to a processor when a connection is being established.

ROUTE-SELECT=*SEQUENTIAL-WITH-RETRY
Sequential distribution *with* repeat selection if the selection of a route fails:
The next route is not tried until the maximum number of transport connections for the previous route has been reached.

ROUTE-SELECT=*SEQUENTIAL
Sequential distribution *without* repeat selection if the selection of a route fails:
The next route is not tried until the maximum number of transport connections for the previous route has been reached.

ROUTE-SELECT=*BALANCED-WITH-RETRY
Balanced distribution of transport connections across the routes *with* repeat selection if the selection of a route fails.

ROUTE-SELECT=*BALANCED
Balanced distribution of transport connections across the routes *without* repeat selection if the selection of a route fails.

ROUTE-SEQUENCE-NUM=0/<integer 0..99>
Route number for route selection. Determines the sequence of routes during route selection.
Default value: 0

MAXNETL=...
Using MAXNETL, you specify which maximum data length may be used on the route to the processor.

MAXNETL=CSMACD
The maximum data length for a CSMA/CD LAN can be used via this route.

MAP=...8i
Using MAP, you specify whether the name of the processor may be used in a mapping definition (BCMAP command).

MAP=YES
The name of the processor can be used in a mapping definition (BCMAP command).

MAP=NO
The name of the processor may not be used in any mapping definition (BCMAP command).

ADM=...
Using ADM, you specify the administration type for the processor.

ADM=BCAM
The processor is administered using BCAM.

ADM=UNKNOWN
The administration type for the processor is unknown.

ACT=...
Using ACT, you specify whether the processor is to be activated.

ACT=YES
The processor is to be activated.

ACT=NO
The processor is not to be activated.

LINK-DOWN=...
The operand specifies whether or not the transport connections of a route are to be shut down in the event of a route failure.

LINK-DOWN=KEEP-CONNECTION
In the event of a route failure, the transport connections assigned to this route are not shut down.

LINK-DOWN=DISCONNECT
In the event of a route failure, all transport connections assigned to this route are shut down.

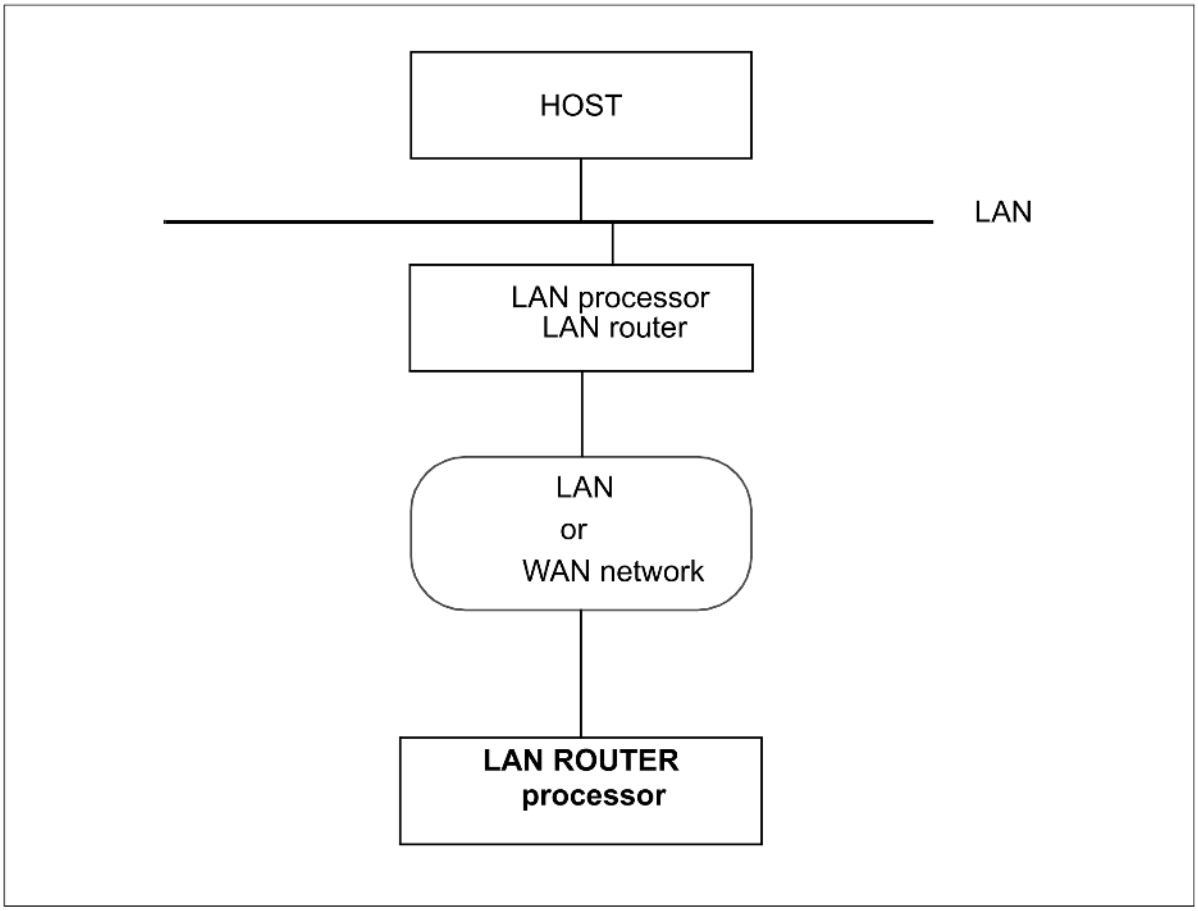
Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0763, and negative acknowledgments in news BCA0762, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA083E, BCA083F and BCA0620 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0621	Start-up aborted
0	1	BCA0768	Syntax error in command
0	1	BCA077A	Definition of the route to computer is invalid
0	64	BCA0833	Name already defined
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCIN: Dynamically generate LAN router processor



For examples of the generation of a LAN router processor, refer to the section "Examples of dynamic generation". Example ZE79#11 ("Local and remotely accessible end systems (LAN1#6)") is relevant for LAN router processors.

You can use the MODIFY-ADDRESS-ASSIGNMENT command to assign the IPv6 network domains that can be reached via a LAN router processor.

BCIN for a LAN router processor (format 2)

<processor-name 1 .. 8>

,**NAME-OF-ROUTE =** *default / <rout-name 1 .. 8>

,**GEN = REMOTE**

,**PROFIL =** (**TCP** , **IP**),... /

(**TCP** , **IPV6**),... /

(**ISO4** , **INTF**),...

(xxx , **IP** , xxx) , ...

| **IPADR =** *default / <composed-name 7..15> / <x-string 1 .. 8> / list-poss (4): <integer 0 .. 255>

| ,**OWN-IPADR =** *default / <composed-name 7..15> / <x-string 1 .. 8> / list-poss (4):

<integer 0 .. 255>

| ,**SOKHOST** = *default / <c-string 1 .. 32> / <sokhost-name 1 .. 32>

| ,**CONFIGURATION** = **UPDATE** / **PRIMARY** / **NO**

| ,**TRANSON-USAGE =** ***OFF** / ***ON**

(xxx, **IPV6** , xxx) , ...

| **I6-ADDRESS** = *default / <c-string 1..45>

| ,**OWN-I6-ADDRESS** = *default / <x-string 1..49>

| ,**SOKHOST** = *default / <c-string 1 .. 32> / <sokhost-name 1 .. 32>

| ,**CONFIGURATION** = **UPDATE** / **PRIMARY** / **NO**

(xxx , **INTF** , xxx) , ...

| **INTADR =** *default / <x-string 1 .. 40>

| ,**OWN-INTADR =** *default / <x-string 1 .. 40>

| ,**CONFIGURATION** = **UPDATE** / **PRIMARY** / **NO**

,**ROUTE** = <rout-name 1 .. 8>

,**HOST** = *default / <host-name 1 .. 8>

,**LINE** = *default / <line-name 1 .. 8>

,**MAXTSDU** = **4096** / <integer 4096 .. 65530 *byte*>

,**ROUTE-SELECT =** ***SEQUENTIAL-WITH-RETRY** / ***SEQUENTIAL** / ***BALANCED-WITH-RETRY** /

***BALANCED**

,**ROUTE-SEQUENCE-NUM** = **0** / <integer 0 .. 99>

,**MAXNETL** = **CSMACD**

,**MAP** = **YES** / **NO**

,**ADM** = **BCAM** / **UNKNOWN**

,**ACT** = **YES** / **NO**

,**LINK-DOWN** = **KEEP-CONNECTION** / **DISCONNECT**

<processor-name 1 ..8>
Name of the processor

NAME-OF-ROUTE=
Using NAME-OF-ROUTE, you specify the name of the route that is defined as the new (additional) route to the processor.

NAME-OF-ROUTE= *default
The name of the processor is used as the route name.

NAME-OF-ROUTE=<rout-name 1..8>
Name of the route defined as the new (additional) route to the processor.
If there is already an existing route to the processor with the same route name as the name of the processor, the NAME-OF-ROUTE operand must be specified.

GEN=REMOTE
A remote processor is to be generated and activated.

Profile Layer 4

PROFIL=(TCP,xxx,xxx)
The Layer 4 protocol TCP is used on the route to the processor.

PROFIL=(ISO4,xxx,xxx)
The Layer 4 protocol ISO8073 Class 4 is used on the route to the processor.

Profile Layer 3

PROFIL=(xxx,IP,xxx),...
The Layer 3 protocol IP is used on the route to the processor.

IPADR= *default
The IP address of the processor is obtained from the processor file or the socket host file.

IPADR=<composed-name 7..15> / **<x-string 1..8>** / **list-poss (4): <integer 0..255>**
Using IPADR, you specify the IP address of the processor.

OWN-IPADR=...
Using OWN-IPADR, you specify the local IP address with which the host for the processor can be addressed.

OWN-IPADR= *default
The IP address already known for the host is used as the local IP address.

OWN-IPADR=<composed-name 7..15> / <x-string 1..8> / list-poss (4): <integer 0..255>
Local IP address with which the host for the processor can be addressed.

SOKHOST=...
Using SOKHOST, you specify the socket host name of the processor.

SOKHOST= *default
The name of the processor is used as the socket host name.

SOKHOST=<c-string 1..32> / <sokhost-name 1..32>
Socket host name of the processor

CONFIGURATION=...
The operand specifies whether or not the network configuration for the processor can be modified using the routing protocol function. The specification is only possible for processors to which routes with the L3 profile IP, IPv6 or INTF exist.

CONFIGURATION=UPDATE
Route modifications resulting from routing protocol functions lead to modifications to the BCAM routing tables and remain effective for this BCAM session.

CONFIGURATION=PRIMARY
Route modifications resulting from routing protocol functions are to be canceled. The original configuration information is used again.

CONFIGURATION=NO
Route modifications resulting from routing protocol functions are not permitted.

TRANSON-USAGE =
You use TRANSON-USAGE to specify whether the route is used to access a TranSON server.

TRANSON-USAGE = *OFF
The route is not used to access a TranSON server.

TRANSON-USAGE = *ON
The route is used to access a TranSON server, i.e. parallel connections are permitted for NEA applications.

PROFIL=(xxx,IPV6,xxx),...
The Layer 3 protocol IPv6 is used on the route to the processor.

I6-ADDRESS= *default
The IPv6 address of the processor is taken from the processor file or the socket host file.

I6-ADDRESS=<c-string 1..45>
With I6-ADDRESS, you specify the IPv6 address of the processor.

OWN-I6-ADDRESS=...
IN OWN-I6-ADDRESS you enter the local IPv6 address at which the host can be addressed at this LAN together with the IPv6 prefix length.

OWN-I6-ADDRESS= *default
The known IPv6 address of the host is used as the local IP address.

OWN-I6-ADDRESS=<c-string 1..49>
Local IPv6 address at which the host can be addressed at this LAN together with the IPv6 prefix length. (Syntax: IPv6 address/IPv6 prefix length)

SOKHOST=...
In SOKHOST you enter the processor's socket host name.

SOKHOST= *default
The processor name is used as the socket host name.

SOKHOST=<c-string 1..32> / **<sokhost-name 1..32>**
Socket host name of the processor.

CONFIGURATION=...
The operand specifies whether or not the network configuration for the processor can be modified using the routing protocol function. The specification is only possible for processors accessed by routes with the L3 profile IP, IPv6 or INTF.

CONFIGURATION=UPDATE
Route modifications resulting from routing protocol functions lead to modifications to the BCAM routing tables and remain effective for this BCAM session.

CONFIGURATION=PRIMARY
Route modifications resulting from routing protocol functions are canceled. The original configuration information is used again.

CONFIGURATION=NO
Route modifications resulting from routing protocol functions are not permitted.

PROFIL=(xxx,INTF,xxx),...
The Layer 3 protocol ISO8473 Full Internet is to be used on the route to the processor.

INTADR= *default
The ISO Internet address of the processor is obtained from the the processor file.

INTADR=<x-string 1..40>
Using INTADR, you specify the ISO Internet address of the processor.

OWN-INTADR=...
Using OWN-INTADR, you specify the local ISO Internet address, with which the host for the processor can be addressed.

OWN-INTADR= *default
The ISO Internet address already known for the host is used as the local ISO Internet address.

OWN-INTADR=<x-string 1..40>
Local ISO Internet address, with which the host for the processor can be addressed.

CONFIGURATION=...
The operand specifies whether or not the network configuration for the processor can be modified using the routing protocol function. The specification is only possible for processors to which routes with the L3 profile IP, IPv6 or INTF exist.

CONFIGURATION=UPDATE
Route modifications resulting from routing protocol functions lead to modifications to the BCAM routing tables and remain effective for this BCAM session.

CONFIGURATION=PRIMARY
Route modifications resulting from routing protocol functions are canceled. The original configuration information is used again.

CONFIGURATION=NO
Route modifications resulting from routing protocol functions are not permitted.

End of profile dependency

ROUTE=<rout-name 1..8>
Using ROUTE, you specify the name of the router via which the route to the processor leads.
If multiple routes have been defined for the router, the name of the route to be used must be specified.

HOST=...
Using HOST, you specify the name of the host from which the route to the processor is to lead.

HOST= *default
The name of the default host (host name from the DCSTART or DCOPT command) is used as the host name.

HOST=<host-name 1..8>
Name of the host from which the route to the processor leads.

LINE=...
Using LINE, you specify the name of the line, which is used as the connection to the router (processor), specified using ROUTE, for the route to the processor.

LINE= *default
One of the existing lines to the router is selected at random as the line which is used as the connection to the router, specified using ROUTE, for the route to the processor.If more than one line to the router exists, the LINE operand must be specified.

LINE=<line-name 1..8>
Name of the line which is used as the connection to the LAN node, specified using ROUTE, for the route to the processor.

MAXTSDU=<integer 4096..65530>
Using MAXTSDU, you specify the maximum receive message length of the processor.
Default: 4096

ROUTE-SELECT=...
ROUTE-SELECT determines how transport connections are distributed over the routes to a processor when a connection is being established.

ROUTE-SELECT=*SEQUENTIAL-WITH-RETRY
Sequential distribution *with* repeat selection if the selection of a route fails:
The next route is not tried until the maximum number of transport connections for the previous route has been reached.

ROUTE-SELECT=*SEQUENTIAL
Sequential distribution *without* repeat selection if the selection of a route fails:
The next route is not tried until the maximum number of transport connections for the previous route has been reached.

ROUTE-SELECT=*BALANCED-WITH-RETRY
Balanced distribution of transport connections across the routes *with* repeat selection if the selection of a route fails.

ROUTE-SELECT=*BALANCED
Balanced distribution of transport connections across the routes *without* repeat selection if the selection of a route fails.

ROUTE-SEQUENCE-NUM=0/<integer 0..99>
Route number for route selection. Determines the sequence of routes during route selection.
Default value: 0

MAXNETL=...
Using MAXNETL, you specify which maximum data length may be used on the route to the processor.

MAXNETL=CSMACD
The maximum data length for a CSMACD LAN may be used via this route.

MAP=...
Using MAP, you specify whether the name of the processor may be used in a mapping definition (BCMAP command).

MAP=YES
The name of the processor may be used in a mapping definition (BCMAP command).

MAP=NO
The name of the processor may not be used in any mapping definition (BCMAP command).

ADM=...
Using ADM, you specify the administration type for the processor.

ADM=BCAM
The processor is administered using BCAM.

ADM=UNKNOWN
The administration type for the processor is unknown.

ACT=...
Using ACT, you specify whether the processor is activated.

ACT=YES
The processor is activated.

ACT=NO
The processor is not activated.

LINK-DOWN=...
The operand specifies whether or not the transport connections assigned to a route are to be shut down in the event of a route failure.

LINK-DOWN=KEEP-CONNECTION
In the event of a route failure, the transport connections assigned to this route are not shut down.

LINK-DOWN=DISCONNECT
In the event of a route failure, all transport connections assigned to this route are shut down.

Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0763, and negative acknowledgments in news BCA0762, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA083F, BCA083E and BCA0620 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0621	Start-up aborted
0	1	BCA0768	Syntax error in command
0	1	BCA077A	Definition of the route to computer is invalid
0	64	BCA0833	Name already defined
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCIN: Dynamically generate tunnel router processor

You can find an example of the generation of a tunnel router processor in section "Local and remote IPv6, and IPv6 systems accessible via an IPv4 tunnel (LAN6#1)".

BCIN for a tunnel router processor (format 2)

<processor-name 1 .. 8>

,**NAME-OF-ROUTE** = *default / <rout-name 1 .. 8>

,**GEN = REMOTE**

,**PROFIL** = (**TCP** , **IPV6**),...

,**I6-ADDRESS** = *default / <c-string 1 .. 45>

,**OWN-I6-ADDRESS** = *default / <c-string 1 .. 49>

,**SOKHOST** = *default / <c-string 1 .. 32> / <sokhost-name 1 .. 32>

,**CONFIGURATION** = **UPDATE** / **PRIMARY** / **NO**

,**TUNNEL-ROUTE** = <rout-name 1 .. 8>

,**HOST** = *default / <host-name 1 .. 8>

,**LINE** = *default / <line-name 1 .. 8>

,**MAXTSDU** = **4096** / <integer 4096 .. 65530 byte>

,**ROUTE-SELECT** = ***SEQUENTIAL-WITH-RETRY** / ***SEQUENTIAL** / ***BALANCED-WITH-RETRY** /
***BALANCED**

,**ROUTE-SEQUENCE-NUM** = **0** / <integer 0 .. 99>

,**MAP** = **YES** / **NO**

,**ADM = BCAM** / **UNKNOWN**

,**ACT** = **YES** / **NO**

,**LINK-DOWN = KEEP-CONNECTION** / **DISCONNECT**

<processor-name 1..8>
Name of the processor

NAME-OF-ROUTE=
Using NAME-OF-ROUTE, you specify the name of the route that is defined as the new (additional) route to the processor.

NAME-OF-ROUTE= *default
The name of the processor is used as the route name.

NAME-OF-ROUTE=<rout-name 1..8>
Name of the route defined as the new (additional) route to the processor.
If there is already an existing route to the processor with the same route name as the name of the processor, the NAME-OF-ROUTE operand must be specified.

GEN=REMOTE
A remote processor is generated and activated.

PROFIL=(TCP,IPV6)
The Layer 4 protocol TCP and the Layer 3 protocol IPv6 are used on the route to the processor.

I6-ADDRESS=...
With I6-ADDRESS, you specify the IPv6 address of the processor.

> **I6-ADDRESS=** *default
> The IPv6 address of the processor is taken from the processor file or the socket host file.
>
> **I6-ADDRESS=<c-string 1..45>**
> With I6-ADDRESS, you specify the IPv6 address of the processor.

OWN-I6-ADDRESS=...
In OWN-I6-ADDRESS you enter the local IPv6 address at which the host can be addressed at this LAN together with the IPv6 prefix length.

> **OWN-I6-ADDRESS=** *default
> The known IPv6 address of the host is used as the local IPv6 address.
>
> **OWN-I6-ADDRESS=<c-string 1..49>**
> Local IPv6 address at which the host can be addressed at this LAN together with the IPv6 prefix length. (Syntax: IPv6 address/IPv6 prefix length)

SOKHOST=...
In SOKHOST you enter the processor's socket host name.

> **SOKHOST=** *default
> The processor name is used as the socket host name.
>
> **SOKHOST=<c-string 1..32>** / **<sokhost-name 1..32>**
> Socket host name of the processor.

CONFIGURATION=...
The operand specifies whether or not the network configuration for the processor can be modified using the routing protocol function. The specification is only possible for processors accessed by routes with the L3 profile IP, IPv6 or INTF.

> **CONFIGURATION=UPDATE**
> Route modifications resulting from routing protocol functions lead to modifications to the BCAM routing tables and remain effective for this BCAM session.
>
> **CONFIGURATION=PRIMARY**
> Route modifications resulting from routing protocol functions are canceled. The original configuration information is used again.
>
> **CONFIGURATION=NO**
> Route modifications resulting from routing protocol functions are not permitted.

TUNNEL-ROUTE=<rout-name 1..8>
You use TUNNEL-ROUTE to specify the route name of the router (with L3 profile IP) via which the route leads to the processor.
On the way to the tunnel, IPv6 is transported piggyback via IPv4. Tunnel routes must be capable of an NSDU length of at least 1280 bytes.

HOST=...
Using HOST, you specify the name of the host from which the route to the processor leads

HOST= *default
The name of the default host (host name from the DCSTART or DCOPT command) is used as the host name.

HOST=<host-name 1..8>
Name of the host from which the route to the processor leads.

LINE=...
Using LINE, you specify the name of the line which is used as the connection to the router (processor), specified using ROUTE, for the route to the processor.

LINE= *default
One of the existing lines to the router is selected at random as the line which is used as the connection to the router, specified using ROUTE, for the route to the processor. If more than one line to the router exists, the LINE operand must be specified.

LINE=<line-name 1..8>
Name of the line, which is used as the connection to the LAN node, specified using ROUTE, for the route to the processor.

MAXTSDU=<integer 4096..65530>
Using MAXTSDU, you specify the maximum receive message length of the processor.
Default: 4096

ROUTE-SELECT=...
ROUTE-SELECT determines how transport connections are distributed over the routes to a processor when a connection is being established.

ROUTE-SELECT=*SEQUENTIAL-WITH-RETRY
Sequential distribution (i.e. the next route is not tried until the maximum number of transport connections for the previous route has been reached) *with* repeat selection if the selection of a route fails.

ROUTE-SELECT=*SEQUENTIAL
Sequential distribution (i.e. the next route is not tried until the maximum number of transport connections for the previous route has been reached) *without* repeat selection if the selection of a route fails.

ROUTE-SELECT=*BALANCED-WITH-RETRY
Balanced distribution of transport connections across the routes *with* repeat selection if the selection of a route fails.

ROUTE-SELECT=*BALANCED
Balanced distribution of transport connections across the routes *without* repeat selection if the selection of a route fails.

ROUTE-SEQUENCE-NUM=0/<integer 0..99>
Route number for route selection. Determines the sequence of routes during route selection.
Default value: 0

MAP=...
Using MAP, you specify whether the name of the processor may be used in a mapping definition (BCMAP command).

MAP=YES
The name of the processor may be used in a mapping definition (BCMAP command).

MAP=NO
The name of the processor may not be used in a mapping definition (BCMAP command).

ADM=...
Using ADM, you specify the administration type for the processor.

ADM=BCAM
The processor is administered using BCAM.

ADM=UNKNOWN
The administration type for the processor is unknown.

ACT=...
You use ACT to specify whether the processor is activated.

ACT=YES
The processor is activated.

ACT=NO
The processor is not activated.

LINK-DOWN=...
The operand specifies whether or not the transport connections assigned to the route are to be shut down in the event of a route failure.

LINK-DOWN=KEEP-CONNECTION
In the event of a route failure, the transport connections assigned to this route are not shut down.

LINK-DOWN=DISCONNECT
In the event of a route failure, all transport connections assigned to this route are shut down.

Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0763, and negative acknowledgments in news BCA0762, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA083E, BCA083F and BCA0620 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0621	Start-up aborted
0	1	BCA0768	Syntax error in command
0	1	BCA077A	Definition of the route to computer invalid
0	64	BCA0833	Name already defined
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCMAP: Control BCAM mapping function

The BCAM mapping function enables you to assign names and addresses from different protocol worlds. You use the BCMAP command to administer the BCAM mapping function.

> Some console types can only process entries containing up to 72 characters. If the BCMAP command with all its operands is longer than 72 characters, the command must be entered via the command file. Do not pad out the operands in sequences of BCMAP commands with blanks!

The description of the BCAM command is arranged according to function:

- Define mapping entries – "BCMAP: Define mapping entries"
- Delete mapping entries – "BCMAP: Delete mapping entries"
- Modify mapping entries – "BCMAP: Modify mapping entries"
- Display mapping entries – "BCMAP: Display mapping entries"
- Manage mapping function – "BCMAP: Manage mapping function"

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x		x	x	

List of valid command sources

BCMAP: Define mapping entries

BCMAP - Defining mapping entries

FUNCT=...

DEFINE, ...

| **SUBFUNCT = LOCAL**, ... / **GLOBAL**, ... / **SPECIAL**, ...

| **LOCAL**, ...

| | **APPL**= ([**NEA**] , <nea-name 1 .. 16> / <c-string 1 .. 16>) /

| | (**OSI** , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>) /

| | (**SOCKET** , <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>)

| | ,**HOST** = *default / <host-name 1 .. 8>

| | ,**TSEL-N =** *none / <name 1.. 8>

| | ,**TSEL-I =** *none / <c-string 1 .. 32> / <x-string 1 .. 64>

| | ,**OPORT# =** *none / <integer 1 .. 65535> / <x-string 1 .. 4>

| **GLOBAL**, ...

| | **HOST =** *default / <host-name 1 .. 8>

| | ,**NAME**= ([**NEA**] , <nea-name 1 .. 16> / <c-string 1 .. 16>) /

| | (**OSI** , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>) /

| | (**SOCKET** , <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>)

| | ,**ES** = <processor-name 1 .. 8>

| | ,**PTSEL-N =** *none / <name 1 .. 8>

| | ,**PTSEL-I =** *none / <c-string 1 .. 32> / <x-string 1 .. 64> / (0)

| | ,**PPORT# =** *none / <integer 1 .. 65535> / <x-string 1 .. 4>

| | ,**ROUTES =** *none / list-poss (8): <rout-name 1 .. 8>

| **SPECIAL**, ...

| | **APPL**= ([**NEA**] , <nea-name 1 .. 16> / <c-string 1 .. 16>) /

| | (**OSI** , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>) /

| | (**SOCKET** , <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>)

| | ,**HOST** = *default / <host-name 1 .. 8>

| | | ,**NAME** = ([**NEA**] , <nea-name 1 .. 16> / <c-string 1 .. 16>)

| | | ,**ES** = <processor-name 1 .. 8>

| | | ,**TSEL-N =** *none / <name 1 .. 8>

| | | ,**TSEL-I =** *none / <c-string 1 .. 32> / <x-string 1 .. 64> / (0)

| | | ,**OPORT# =** *none / <integer 1 .. 65535> / <x-string 1 .. 4>

| | | ,**PTSEL-N =** *none / <name 1 .. 8>

| | | ,**PTSEL-I =** *none / <c-string 1 .. 32 / <x-string 1 .. 64> / (0)

| | | ,**PPORT# =** *none / <integer 1 .. 65535> / <x-string 1 .. 4>

| | | ,**ROUTES =** *none / list-poss (8): <rout-name 1 .. 8>

FUNCT=DEFINE,...
Specifies the entry of new assignments as being the current function.

SUBFUNCT=LOCAL,...
A transport selector TSEL-N, TSEL-I and OPORT# can be assigned to the application with the local name APPL (mandatory operand in this context) in the host HOST for communication with any partner applications.

APPL=...
Name of the application in the host.

APPL=([NEA],<nea-name 1..16> / **<c-string 1..16>)**
NEA name for the application.
For NEA names, you use the first eight characters of the application name and the first eight characters of the HOST name (1 to 8 alphanumeric characters in each case, left-justified, and padded with blanks).
If the application name is shorter than 8 characters, the NEA name must be specified as a C string.
If only the name part containing the application name is specified, the part containing the HOST name is derived from the specification for the HOST when BCAM is started.

APPL=(OSI,<osi-name 1..78> / **<c-string 1..78>** / **<x-string 1..156>)**
OSI name for the application
1 to 78 alphanumeric characters

APPL=(SOCKET,<socket-name 1..78> / **<c-string 1..78>** / **<x-string 1..156>)**
SOCKET name for the application
1 to 78 alphanumeric characters

HOST=...
Name of the local host in which the application, defined using APPL, resides.

HOST= *default
Host name that is specified as the name of the BS2000 system in DCSTART/DCOPT.

HOST=<host-name 1..8>
NEA name of the host.

TSEL-N=...
Defines the transport selector in the case of NEA transport connections for the local application APPL.

TSEL-N= *none
No specification of an NEA transport selector.

TSEL-N=<name 1..8>
NEA transport selector for the application APPL.

TSEL-I=...
Transport selector in the case of OSI transport connections for the local application APPL.

TSEL-I= *none
No specification of an ISO transport selector.

TSEL-I=<c-string 1..32> / **<x-string 1..64>**
ISO transport selector for the application APPL.

OPORT#=...
Port number of the local application APPL in the case of TCP transport connections.

OPORT#= *none
No specification of a port number.

OPORT#=<integer 1..65535> / **<x-string 1..4>**
Port number for the transport address of the application.

SUBFUNCT=GLOBAL,...
For communication with any applications in the host HOST, the following can be assigned to the partner application with the name NAME in the end system ES:

- transport selectors PTSEL-N, PTSEL-I, PPORT#
- a list of route names ROUTES

NAME and ES are mandatory operands in this context.

HOST=...
Name of the local or virtual host to which the mapping entry is assigned.

HOST= *default
Host name that is specified as the name of the BS2000 system in DCSTART/DCOPT.

HOST=<host-name 1..8>
NEA name of the host.

NAME=...
Name of the application in the partner system

NAME=([NEA],<nea-name 1..16> / **<c-string 1..16>)**
NEA name for the partner application (16 alphanumeric characters, left-justified, and padded with blanks)
If nea-name is shorter than nine characters, positions 9 through 16 are defined using the specifications in the ES operand.

NAME=(OSI,<osi-name 1..78> / **<c-string 1..78>** / **<x-string 1..156>)**
OSI name for the partner application
1 to 78 alphanumeric characters

NAME=(SOCKET,<socket-name 1..78> / <c-string 1..78> / <x-string 1..156>)
SOCKET name for the partner application
1 to 78 alphanumeric characters

ES=<processor-name 1..8>
Name of the partner end system

PTSEL-N=...
Defines the transport selector in the case of NEA transport connections for the application in the partner system.

PTSEL-N= *none
No specification of an NEA transport selector.

PTSEL-N=<name 1..8>
NEA transport selector for the partner application NAME.

PTSEL-I=...
Transport selector in the case of ISO transport connections for the application in the partner system.

PTSEL-I= *none
No specification of an ISO transport selector.

PTSEL-I=<c-string 1..32> / <x-string 1..64>
ISO transport selector for the partner application NAME.

PTSEL-I=(0)
ISO transport selector with the length 0 for the partner application NAME.

PPORT#=...
Port number of the TCP/IP partner application.

PPORT#= *none
No specification of a port number.

PPORT#=<integer 1..65535> / <x-string 1..4>
Port number for the transport address of the partner application.

ROUTES=...
Name of the route(s), via which the partner end system is to be accessed when the connection is established (see XPRO macro, ROUTNAM operand).

ROUTES= *none
No specification of route names.

ROUTES=list-poss (8): <rout-name 1..8>
A list with a maximum of eight route names is valid.

SUBFUNCT=SPECIAL,...
For communication between two specified applications, transport selectors (TSEL-N, TSEL-I, OPORT#) can be assigned to the local application with the local name APPL in the host HOST, while transport selectors, an end system name, a list of routes and Layer 3 user data can be assigned to the partner application NAME in the end system. APPL, NAME, and ES are mandatory operands in this context.

APPL=...
Name of the application in the host.

APPL=([NEA],<nea-name 1..16> / <c-string 1..16>)
NEA name for the application.
For the NEA name, you use the first eight characters of the application name and the first eight characters of the HOST name (1 to 8 alphanumeric characters, left-justified, and padded with blanks).
If the application name is shorter than 8 characters, the NEA name must be specified as a C string.
If only the name part containing the application name is specified, the part containing the HOST name is derived from the HOST specification when BCAM is started.

APPL=(OSI,<osi-name 1..78> / <c-string 1..78> / <x-string 1..156>)
OSI name for the application
1 to 78 alphanumeric characters

APPL=(SOCKET,<socket-name 1..78> / <c-string 1..78> / <x-string 1..156>)
SOCKET name for the application
1 to 78 alphanumeric characters

HOST=...
Name of the local host in which the application, defined using APPL, resides.

HOST= *default
Name of the default host, which is specified as the host name in DCSTART/DCOPT.

HOST=<host-name 1..8>
Name of the host

NAME=...
Name of the application in the partner system

NAME=([NEA],<nea-name 1..16> / <c-string 1..16>)
NEA name for the partner application (16 alphanumeric characters, left-justified, and padded with blanks)
If nea-name is shorter than nine characters, positions 9 through 16 are defined using the specifications in the ES operand.

ES=<processor-name 1..8>
Name of the partner end system

TSEL-N=...
Defines the transport selector in the case of NEA transport connections for the local application APPL.

TSEL-N= *none
No specification of an NEA transport selector.

TSEL-N=<name 1..8>
NEA transport selector for the application APPL.

TSEL-I=...
Transport selector in the event of OSI transport connections for the local application APPL.

TSEL-I= *none
No specification of an ISO transport selector.

TSEL-I=<c-string 1..32> / <x-string 1..64>
ISO transport selector for the application APPL.

TSEL-I=(0)
ISO transport selector with length 0 for the application APPL.

OPORT#=...
Port number of the local application APPL in the case of TCP transport connections.

OPORT#= *none
No specification of a port number.

OPORT#=<integer 1..65535> / **<x-string 1..4>**
Port number for the transport address of the application.

PTSEL-N=...
Defines the transport selector in the case of NEA transport connections for the application in the partner system.

PTSEL-N= *none
No specification of an NEA transport selector.

PTSEL-N=<name 1..8>
NEA transport selector for the partner application NAME.

PTSEL-I=...
Transport selector in the case of ISO transport connections for the application in the partner system.

PTSEL-I= *none
No specification of an ISO transport selector.

PTSEL-I=<c-string 1..32> / **<x-string 1..64>**
ISO transport selector for the partner application NAME.

PTSEL-I=(0)
ISO transport selector with length 0 for the partner application NAME.

PPORT#=...
Port number of the TCP/IP partner application.

PPORT#= *none
No specification of a port number.

PPORT#=<integer 1..65535> / **<x-string 1..4>**
Port number for the transport address of the partner application.

ROUTES=...
Names of the route(s), via which the partner end system is accessed when the connection is established (see XPRO macro, ROUTNAM operand).

ROUTES= *none
No specification of route names.

ROUTES=list-poss (8) : <rout-name 1..8>
A list with a maximum of eight route names is valid.

Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0763, and negative acknowledgments in news BCA0762, followed by the message NBR0740. For positive acknowledgments the message BCA062E appears.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA062F	Command not processed successfully
0	1	BCA0768	Syntax error in command
0	64	BCA076A	Error in command / BCMAP
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCMAP: Delete mapping entries

BCMAP - Deleting mapping entries

FUNCT=...

DELETE, ...

| **SUBFUNCT = LOCAL**, ... / **GLOBAL**, ... / **SPECIAL**, ... / **HOST**, ... / **APPL**, ... / **ES**, ... /

| **PTSEL-N**, ... / **PTSEL-I**, ... / **PPORT#**, ...

| **LOCAL**, ...

| | **APPL**= ([**NEA**] , <nea-name 1 .. 16> / <c-string 1 .. 16>) /

| | (**OSI** , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>) /

| | (**SOCKET** , <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>)

| | ,**HOST** = *default / <host-name 1 .. 8>

| **GLOBAL**, ...

| | **HOST =** *default / <host-name 1 .. 8>

| | ,**NAME** = ([**NEA**] , <nea-name 1 .. 16> / <c-string 1 .. 16>) /

| | (**OSI** , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>) /

| | (**SOCKET** , <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>)

| | ,**ES** = <processor-name 1 .. 8>

| **SPECIAL**, ...

| | **APPL** = ([**NEA**] , <nea-name 1 .. 16> / <c-string 1 .. 16>) /

| | (**OSI** , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>) /

| | (**SOCKET** , <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>)

| | ,**HOST** = *default / <host-name 1 .. 8>

| | ,**NAME** = ([**NEA**] , <nea-name 1 .. 16> / <c-string 1 .. 16>)

| | ,**ES** = <processor-name 1 .. 8>

| **HOST**,...

| | **HOST** = *default / <host-name 1 .. 8>

| **APPL**,...

| | **APPL** = ([**NEA**] , <nea-name 1 .. 16> / <c-string 1 .. 16>) /

```
|          |                    ( OSI , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156> ) /
|          |                    ( SOCKET , <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 ..
                                156>
|          |    ,HOST = *default / <host-name 1 .. 8>
|       ES,...
|          |    ES = <processor-name 1 .. 8>
|       PTSEL-N,...
|          |    PTSEL-N = *none / <name 1 .. 8>
|          |    ,ES = <processor-name 1 .. 8>
|       PTSEL-I,...
|          |    PTSEL-I = *none / <c-string 1 .. 32> / <x-string 1 .. 64> / (0)
|          |    ,ES = <processor-name 1 .. 8>
|       PPORT# ,...
|          |    PPORT# = *none / <integer 1 .. 65535> / <x-string 1 .. 4>
|          |    , ES = <processor-name 1 .. 8>
```

FUNCT=DELETE,...
Specifies the deletion of assignments as being the current function.

SUBFUNCT=LOCAL,...
The assignments specified for the application with the local name APPL (mandatory operand) in the host HOST are deleted.

APPL=...
Name of the application in the host

APPL=([NEA],<nea-name 1..16> / <c-string 1..16>)
NEA name for the application.
For the NEA name, the first eight characters of the application name and the first eight characters of the HOST name are to be used (1 to 8 alphanumeric characters in each case, left-justified, and padded with blanks).
If the application name is shorter than 8 characters, the NEA name must be specified as a C string.
If only the name part containing the application name is specified, the part containing the HOST name is derived from the HOST specification when BCAM is started.

APPL=(OSI,<osi-name 1..78> / <c-string 1..78> / <x-string 1..156>)
OSI name for the application
1 to 78 alphanumeric characters

APPL=(SOCKET,<socket-name 1. .78> / <c-string 1..78> / <x-string 1..156>)
SOCKET name of the application
1 to 78 alphanumeric characters

HOST=...
Name of the local host in which the application, defined by APPL, resides.

HOST= *default
Name of the default host, which is specified as the host name in DCSTART/DCOPT.

HOST=<host-name 1..8>
Name of the host

SUBFUNCT=GLOBAL,...
The assignments for partner applications with the name NAME are deleted in the end system ES.
NAME and ES are mandatory operands in this context.

HOST=...
Name of the local or virtual host to which the mapping entry is assigned.

HOST= *default
Host name that is specified as the name of the BS2000 system in DCSTART/DCOPT.

HOST=<host-name 1..8>
NEA name of the host.

NAME=...
Name of the application in the partner system

NAME=([NEA],<nea-name 1..16>) / <c-string 1..16>)
NEA name for the partner application (16 alphanumeric characters, left-justified, and padded with blanks)
If nea-name is shorter than nine characters, positions 9 through 16 are defined using the specifications in the ES operand.

NAME=(OSI,<osi-name 1..78> / <c-string 1..78>) / <x-string 1..156>)
OSI name for the partner application
1 to 78 alphanumeric characters

NAME=(SOCKET,<socket-name 1..78> / <c-string 1..78> / <x-string 1..156>)
SOCKET name for the partner application
1 to 78 alphanumeric characters

ES=<processor-name 1..8>
Name of the partner end system

SUBFUNCT=SPECIAL,...
The assignments between a partner application (NAME, ES) and the application APPL in the host HOST are deleted.
APPL, NAME, and ES are mandatory operands in this context.

APPL=...
Name of the application in the host

APPL=([NEA],<nea-name 1..16> / <c-string 1..16>)
NEA name for the application.
For the NEA name, you use the first eight characters of the application name and the first eight characters of the HOST name (1 to 8 alphanumeric characters in each case, left-justified, and padded with blanks).

If the application name is shorter than 8 characters, the NEA name must be specified as a C string. If only the name part containing the application name is specified, the part containing the HOST name is derived from the HOST specification when BCAM is started.

APPL=(OSI,<osi-name 1..78> / <c-string 1..78> / <x-string 1..156>)
OSI name for the application
1 to 78 alphanumeric characters

APPL=(SOCKET,<socket-name 1. .78> / <c-string 1..78> / <x-string 1..156>)
SOCKET name for the application
1 to 78 alphanumeric characters

HOST=...
Name of the local host in which the application, defined using APPL, resides.

HOST= *default
Name of the default host which is specified as the host name in DCSTART/DCOPT.

HOST=<host-name 1..8>
Name of the host

NAME=...
Name of the application in the partner system

NAME=([NEA],<nea-name 1..16> / <c-string 1..16>)
NEA name for the partner application (16 alphanumeric characters, left-justified, and padded with blanks)
If nea-name is shorter than nine characters, positions 9 through 16 are defined using the specifications in the ES operand.

ES=<processor-name 1..8>
Name of the partner end system

SUBFUNCT=HOST,...
The assignments for all applications residing in the host are deleted.

HOST=...
Name of the local host in which the application, defined using APPL, resides.

HOST= *default
Name of the default host, which is specified as the host name in DCSTART/DCOPT.

HOST=<host-name 1..8>
Name of the host

SUBFUNCT=APPL,...
The assignment for the application APPL residing in the host is deleted.

APPL=...
Name of the application in the host

APPL=([NEA],<nea-name 1..16> / <c-string 1..16>)
NEA name for the application.
For the NEA name, you use the first eight characters of the application name and the first eight characters of the HOST name (1 to 8 alphanumeric characters in each case, left-justified, and padded with blanks)

If the application name is shorter than 8 characters, the NEA name must be specified as a C string. If only the name part containing the application name is specified, the part containing the HOST name is derived from the HOST specification when BCAM is started.

APPL=(OSI,<osi-name 1..78> / <c-string 1..78> / <x-string 1..156>)
OSI name for the application
1 to 78 alphanumeric characters

APPL=(SOCKET,<socket-name 1..78> / <c-string 1..78> / <x-string 1..156>)
SOCKET name for the application
1 to 78 alphanumeric characters

HOST=...
Name of the local host in which the application, defined using APPL, resides.

HOST= *default
Name of the default host, which is specified as the host name in DCSTART/DCOPT.

HOST=<host-name 1..8>
Name of the host

SUBFUNCT=ES,...
The assignments for all applications residing in the partner system ES are deleted.

ES=<processor-name 1..8>
Name of the partner end system

SUBFUNCT=PTSEL-N,...
The assignment for the application with the NEA transport selector PTSEL-N, which resides in the ES partner system, is deleted.

PTSEL-N=...
Defines the transport selector in the case of NEA transport connections for the application in the partner system.

PTSEL-N= *none
No specification of an NEA transport selector.

PTSEL-N=<name 1..8>
NEA transport selector for the partner application NAME.

ES=<processor-name 1..8>
Name of the partner end system

SUBFUNCT=PTSEL-I,...
The assignment for the application with the ISO transport selector PTSEL-I, which resides in the partner system ES, is deleted.

PTSEL-I=...
Transport selector in the case of ISO transport connections for the application in the partner system.

PTSEL-I= *none
No specification of an ISO transport selector.

PTSEL-I=<c-string 1..32> / <x-string 1..64>
ISO transport selector for the partner application NAME.

PTSEL-l=(0)
ISO transport selector with length 0 for the partner application NAME.

ES=<processor-name 1..8>
Name of the partner end system

SUBFUNCT=PPORT#,...
The assignment for the application with the TCP/IP transport selector PPORT#, which resides in the ES partner system, is deleted.

PPORT#=...
Port number of the TCP/IP partner application.

PPORT#= *none
No specification of a port number.

PPORT#=<integer 1..65535> / **<x-string 1..4>**
Port number for the transport address of the partner application.

ES=<processor-name 1..8>
Name of the partner end system

Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0763, and negative acknowledgments in news BCA0762, followed by the message NBR0740. For positive acknowledgments the message BCA062E appears.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA062F	Command not processed successfully
0	1	BCA0768	Syntax error in command
0	64	BCA076A	Error in command /BCMAP
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCMAP: Modify mapping entries

BCMAP - Modifying mapping entries

```
FUNCT=...
    CHANGE, ...
        |     SUBFUNCT = GLOBAL, ... / SPECIAL, ...
        |         GLOBAL, ...
        |             |     HOST = *default / <host-name 1 .. 8>
        |             |     ,NAME = ( [ NEA ] , <nea-name 1 .. 16> / <c-string 1 .. 16> ) /
        |             |                 ( OSI , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156> ) /
        |             |                 ( SOCKET , <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 ..
                                        156>)
        |             |     ,ES = <processor-name 1 .. 8>
        |             |     ,ROUTES = *none / list-poss (8): <rout-name 1 .. 8>
        |         SPECIAL, ...
        |             |     APPL = ( [ NEA ] , <nea-name 1 .. 16> / <c-string 1 .. 16> ) /
        |             |                 ( OSI , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156> ) /
        |             |                 ( SOCKET , <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 ..
                                        156>)
        |             |     ,HOST = *default / <host-name 1 .. 8>
        |             |     ,NAME = ( [ NEA ] , <nea-name 1 .. 16> / <c-string 1 .. 16> )
        |             |     ,ES = <processor-name 1 .. 8>
        |             |     ,ROUTES = *none / list-poss (8): <rout-name 1 .. 8>
```

FUNCT=CHANGE,...
Specifies modification of assignments as being the current function.

SUBFUNCT=GLOBAL,...
The routes for connection establishment from an application to a specific partner application (NAME, ES) are modified.
NAME and ES are mandatory operands in this context.

HOST=...
Name of the local or virtual host to which the mapping entry is assigned.

HOST= *default
Host name that is specified as the name of the BS2000 system in DCSTART/DCOPT.

HOST=<host-name 1..8>
NEA name of the host.

NAME=...
Name of the application in the partner system

NAME=([NEA],<nea-name 1..16> / <c-string 1..16>)
NEA name for the partner application (16 alphanumeric characters, left-justified, and padded with blanks)
If nea-name is shorter than nine characters, positions 9 through 16 are determined using the specifications in the ES operand.

NAME=(OSI,<osi-name 1..78> / <c-string 1..78> / <x-string 1..156>)
OSI name for the partner application
1 to 78 alphanumeric characters

NAME=(SOCKET,<socket-name 1..78> / <c-string 1..78> / <x-string 1..156>)
SOCKET name for the partner application
1 to 78 alphanumeric characters

ES=<processor-name 1..8>
Name of the partner end system

ROUTES=...
Names of the route(s), via which the partner end system is accessed when the connection is established (see XPRO macro, ROUTNAM operand).

ROUTES= *none
No specification of route names.

ROUTES=list-poss (8) : <rout-name 1..8>
A list with a maximum of eight route names is valid.

SUBFUNCT=SPECIAL,...
The routes for connection establishment from the application APPL to a specific partner application (NAME, ES) are modified.
APPL, NAME, and ES are mandatory operands in this context.

APPL=...
Name of the application in the host

APPL=([NEA],<nea-name 1..16> / <c-string 1..16>)
NEA name for the application.
For the NEA name, you use the first eight characters of the application name and the first eight characters or the HOST name (1 to 8 alphanumeric characters in each case, left-justified, and padded with blanks).
If the application name is shorter than 8 characters, the NEA name must be specified as a C string.
If only the name part containing the application name is specified, the part containing the HOST name is derived from the HOST specification.

APPL=(OSI, <osi-name 1..78> / <c-string 1..78> / <x-string 1..156>)
OSI name for the application
1 to 78 alphanumeric characters

APPL=(SOCKET,<socket-name 1..78> / <c-string 1..78>) / <x-string 1..156>)
SOCKET name for the application
1 to 78 alphanumeric characters

HOST=...
Name of the local host in which the application, defined using APPL, resides.

HOST= *default
Name of the default host, which is specified as the host name in DCSTART/DCOPT.

HOST=<host-name 1 ... 8>
Name of the host

NAME=...
Name of the application in the partner system

NAME=([NEA],<nea-name 1..16> / <c-string 1..16>)
NEA name for the partner application (16 alphanumeric characters, left-justified, and padded with blanks)
If nea-name is shorter than nine characters, positions 9 through 16 are determined using the specifications in the ES operand.

ES=<processor-name 1..8>
Name of the partner end system

ROUTES=...
Names of the route(s), via which the partner system is to be accessed when the connection is established (see XPRO macro, ROUTNAM operand).

ROUTES= *none
No specification of route names.

ROUTES=list-poss (8) : <rout-name 1..8>
A list with a maximum of eight route names is valid.

Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0763, and negative acknowledgments in news BCA0762, followed by the message NBR0740. For positive acknowledgments the message BCA062E appears.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA062F	Command not processed successfully
0	1	BCA0768	Syntax error in command
0	64	BCA076A	Error in command /BCMAP
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCMAP: Display mapping entries

With the SHOW function, the BCMAP command does not automatically provide a complete overview of the assignments that were made. You can obtain information on assignments which were made for specific applications, partners, or partner systems, by specifying the APPL, NAME, or ES operands respectively.

BCMAP - Displaying mapping entries

```
FUNCT=
   SHOW , ...
      |     SUBFUNCT = LOCAL, ... / GLOBAL, ... / SPECIAL, ... / HOST, ... / APPL, ... / ES, ...
      |                              PTSEL-N, ... / PTSEL-I, ... / PPORT#, ... / STATE / MAXMSG#
      |        LOCAL, ...
      |           |     APPL= ( [ NEA ] , <nea-name 1 .. 16> / <c-string 1 .. 16> ) /
      |           |                ( OSI , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156> ) /
      |           |                ( SOCKET , <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>)
      |           |     ,HOST = *default / <host-name 1 .. 8>
      |        GLOBAL, ...
      |           |     HOST = *default / <host-name 1 .. 8>
      |           |     ,NAME = ( [ NEA ] , <nea-name 1 .. 16> / <c-string 1 .. 16> ) /
      |           |                ( OSI , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156> ) /
      |           |                ( SOCKET , <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 ..
                                   156>)
      |           |     ,ES = <processor-name 1 .. 8>
      |        SPECIAL, ...
      |           |     APPL = ( [ NEA ] , <nea-name 1 .. 16> / <c-string 1 .. 16> )
      |           |                / ( OSI , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156> )
      |           |                / ( SOCKET , <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>)
      |           |     ,HOST = *default / <host-name 1 .. 8>
      |           |     ,NAME = ( [ NEA ] , <nea-name 1 .. 16> / <c-string 1 .. 16> )
      |           |     ,ES = <processor-name 1 .. 8>
      |        HOST,...
      |           |     HOST = *default / <host-name 1 .. 8>
      |        APPL,...
      |           |     APPL = ( [ NEA ] , <nea-name 1 .. 16> / <c-string 1 .. 16> ) /
      |           |                ( OSI , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156> ) /
```

```
|          |                    ( SOCKET , <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>)
|          |      ,HOST = *default / <host-name 1 .. 8>
|       ES,...
|          |       ES = <processor-name 1 .. 8>
|       PTSEL-N ,...
|          |       PTSEL-N = *none / <name 1 .. 8>
|          |       , ES = <processor-name 1 .. 8>
|       PTSEL-I ,...
|          |       PTSEL-I = *none / <c-string 1 .. 32> / <x-string 1 .. 64> ) / (0)
|          |       , ES = <processor-name 1 .. 8>
|       PPORT# ,...
|          |       PPORT# = *none / <integer 1 .. 65535> / <x-string 1 .. 4>
|          |       , ES = <processor-name 1 .. 8>
|       STATE
|          |
|       MAXMSG# = 10 / <integer 1 .. 2147483647>
```

FUNCT=SHOW,...
Specifies the display of assignments as being the current function.

SUBFUNCT=LOCAL,...
Assignments which were specified for the application with the local name APPL (mandatory operand) in the host HOST, are displayed.

APPL=...
Name of the application in the host

APPL=([NEA],<nea-name 1..16> / <c-string 1..16>)
NEA name for the application.
For the NEA name, you use the first eight characters of the application name and the first eight characters of the HOST name (1 to 8 alphanumeric characters in each case, left-justified, and padded with blanks).
If the application name is shorter than 8 characters, the NEA name must be specified as a C string.
If only the name part containing the application name is specified, the part containing the HOST name is derived from the HOST specification when BCAM is started.

APPL=(OSI,<osi-name 1..78> / <c-string 1..78> / <x-string 1..156>)
OSI name for the application
1 to 78 alphanumeric characters

APPL=(SOCKET,<socket-name 1..78> / <c-string 1..78> / <x-string 1..156>)
SOCKET name for the application
1 to 78 alphanumeric characters

HOST=...
Name of the local host in which the application, defined using APPL, resides.

HOST= *default
Name of the default host, which is specified as the host name in DCSTART/DCOPT.

HOST=<host-name 1..8>
Name of the host

SUBFUNCT=GLOBAL,...
The assignments for partner applications with the name NAME are displayed in the end system ES.
NAME and ES are mandatory operands in this context.

HOST=...
Name of the local or virtual host to which the mapping entry is assigned.

HOST= *default
Host name that is specified as the name of the BS2000 system in DCSTART/DCOPT.

HOST=<host-name 1..8>
NEA name of the host.

NAME=...
Name of the application in the partner system

NAME=([NEA],<nea-name 1..16> / <c-string 1..16>)
NEA name for the partner application (16 alphanumeric characters, left-justified, and padded with blanks)
If nea-name is shorter than nine characters, positions 9 through 16 are determined using the specifications in the ES operand.

NAME=(OSI,<osi-name 1..78> / <c-string 1..78> / <x-string 1..156>)
OSI name for the partner application
1 to 78 alphanumeric characters

NAME=(SOCKET,<socket-name 1..78> / <c-string 1..78> / <x-string 1..156>)
SOCKET name for the partner application
1 to 78 alphanumeric characters

ES=<processor-name 1..8>
Name of the partner end system

SUBFUNCT=SPECIAL,...
The assignments between a partner application (NAME, ES) and the application APPL in the host HOST are displayed.
APPL, NAME, and ES are mandatory operands in this context.

APPL=...
Name of the application in the host

APPL=([NEA],<nea-name 1..16> / <c-string 1..16>)
NEA name for the application.
For the NEA name, you use the first eight characters of the application name and the first eight characters of the HOST name (1 to 8 alphanumeric characters, left-justified, and padded with blanks).
If the application name is shorter than 8 characters, the NEA name must be specified as a C string.

If only the name part containing the application name is specified, the part containing the HOST name is derived from the HOST specification when BCAM is started.

APPL=(OSI,<osi-name 1..78> / <c-string 1..78> / <x-string 1..156>)
OSI name for the application
1 to 78 alphanumeric characters

APPL=(SOCKET,<socket-name 1..78> / <c-string 1..78> / <x-string 1..156>)
SOCKET name for the application
1 to 78 alphanumeric characters

HOST=...
Name of the local host in which the application, defined using APPL, resides.

HOST= *default
Name of the default host, which is specified as the host name in DCSTART/DCOPT.

HOST=<host-name 1..8>
Name of the host

NAME=...
Name of the application in the partner system

NAME=([NEA],<nea-name 1..16> / <c-string 1..16>)
NEA name for the partner application (16 alphanumeric characters, left-justified, and padded with blanks)
If nea-name is shorter than nine characters, positions 9 through 16 are determined using the specifications in the ES operand.

ES=<processor-name 1..8>
Name of the partner end system

SUBFUNCT=HOST,...
The assignments for all applications residing in the host are displayed.

HOST=...
Name of the local host in which the application, defined using APPL, resides.

HOST= *default
Name of the default host, which is specified as the host name in DCSTART/DCOPT.

HOST=<host-name 1..8>
Name of the host

SUBFUNCT=APPL,...
The assignment for the APPL application, which resides in the host HOST, is displayed.

APPL=...
Name of the application in the host

APPL=([NEA],<nea-name 1..16> / <c-string 1..16>)
NEA name for the application.
For the NEA name, you use the first eight characters of the application name and the first eight characters of the HOST name (1 to 8 alphanumeric characters, left-justified, and padded with blanks).
If the application name is shorter than 8 characters, the NEA name must be specified as a C string.

If only the name part containing the application name is specified, the part containing the HOST name is derived from the HOST specification when BCAM is started.

APPL=(OSI,<osi-name 1..78> / <c-string 1..78> / <x-string 1..156>)
OSI name for the application
1 to 78 alphanumeric characters

APPL=(SOCKET,<socket-name 1..78> / <c-string 1..78> / <x-string 1..156>)
SOCKET name for the application
1 to 78 alphanumeric characters

HOST=...
Name of the local host in which the application, defined using APPL, resides.

HOST= *default
Name of the default host, which is specified as the host name in DCSTART/DCOPT.

HOST=<host-name 1..8>
Name of the host

SUBFUNCT=ES,...
The assignments for all applications residing in the partner system ES are displayed.

ES=<processor-name 1..8>
Name of the partner end system

SUBFUNCT=PTSEL-N,...
The assignment for the application with the transport selector PTSEL-N, which resides in the partner system ES, is displayed.

PTSEL-N=...
Defines the transport selector in the case of NEA transport connections for the application in the partner system.

PTSEL-N= *none
No specification of an NEA transport selector.

PTSEL-N=<name 1..8>
NEA transport selector for the partner application NAME.

ES=<processor-name 1..8>
Name of the partner end system

SUBFUNCT=PTSEL-I,...
The assignment for the application with the transport selector PTSEL-I, which resides in the partner system ES, is displayed.

PTSEL-I=...
Transport selector in the event of ISO transport connections for the application in the partner system.

PTSEL-I= *none
No specification of an ISO transport selector.

PTSEL-I=<c-string 1..32> / <x-string 1..64>
ISO transport selector for the partner application NAME.

PTSEL-I=(0)
ISO transport selector with length 0 for the partner application NAME.

ES=<processor-name 1..8>
Name of the partner end system

SUBFUNCT=PPORT#,...
The assignment for the application with the transport selector PPORT#, which resides in the partner system ES, is displayed.

PPORT#=...
Port number of the TCP/IP partner application.

PPORT#= *none
No specification of a port number.

PPORT#=<integer 1..65535> / **<x-string 1..4>**
Port number for the transport address of the partner application.

ES=<processor-name 1..8>
Name of the partner end system

SUBFUNCT=STATE
The state of the BCAM mapping function is displayed with message BCA0870.

MAXMSG#=...
The number of messages output for mapping entries are restricted.

MAXMSG#=10
The number of messages output for mapping entries is restricted to the default value 10.

MAXMSG#=<integer 1..2147483647>
The number of messages output for mapping entries is restricted to the specified value.

Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0763, and negative acknowledgments in news BCA0762.
If processing is successful, the messages BCA0870 (BCAM mapping status), BCA087A (BCAM mapping entry), BCA087C (existence of BCAM mapping host entries) and BCA062E are issued.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA062F	Command not processed successfully
0	0	BCA0870	Output of the BCAM mapping status
0	0	BCA087A	Output of a BCAM mapping definition
0	1	BCA0768	Syntax error in command
0	64	BCA076A	Error in command /BCMAP
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCMAP: Manage mapping function

In order to have the previously made assignments and definitions available again for the next session, the following must be noted:
Before BCEND, save relevant assignments and definitions with:

```
/BCMAP FUNCT=SAVE,FILE=MY.BEST.MAPPINGS
```

After /DCSTART, retrieve the saved assignments and definitions with the following entries:

```
/BCMAP FUNCT=INIT
/BCMAP FUNCT=ADD,FILE=MY.BEST.MAPPINGS
```

In addition, you can use the command GENERATE-BCMAP-FILE (see "GENERATE-BCMAP-FILE") to store the saved entries in a readable and editable command file. This approach is suitable for diagnostics, for example, or for editing purposes. The mapping definitions can then be retrieved with the command CALL-BCAM-COMMANDS.

BCMAP - Managing the mapping function

FUNCT=...

ADD,...

| **FILE** = <filename>

INIT ,...

| **MAXMAP** = **500** / <integer 1 .. 100000>

REORG,...

| **MAXMAP** = **500** / <integer 1 .. 100000>

SAVE,...

| **FILE** = <filename>

TERM

FUNCT=...
Current function of the command

ADD,...
The assignments saved in the file FILE using the SAVE function are used. Existing assignments remain valid.

FILE=<filename>
Fully qualified file name, which contains the saved assignments.
The file must always be cataloged in the home pubset, otherwise errors may occur in connection with files cataloged on data pubsets or shared pubsets. In addition, no temporary file name may be used.

INIT,...
The BCAM mapping function is initialized for the maximum number of assignments specified with MAXMAP.

MAXMAP=<integer 1..100000>
Using MAXMAP, the maximum number of assignments permitted is defined.
Default: 500

REORG,...
The maximum number of assignments defined using INIT is modified according to the specification in MAXMAP.

MAXMAP=<integer 1..100000>
Using MAXMAP, the maximum number of assignments permitted is defined.
Default: 500

> MAP initialization for the BCAM command BCMAP FUNCT=INIT before the start of openFT always takes place with default values. If you use the MAXMAP parameter for the BCAM command BCMAP FUNCT=INIT then the command must therefore be initiated before the start of openFT. This should be one of the first commands in the SOF file.

SAVE,...
All assignments existing at the time are saved in the file defined using FILE.

FILE=<filename>
Fully qualified file name, which contains the saved assignments. The file must always be cataloged in the home pubset, otherwise errors may occur in connection with files cataloged on data pubsets or shared pubsets. In addition, no temporary file name may be used.

TERM
Termination of the BCAM mapping function.

Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0763, and negative acknowledgments in news BCA0762, followed by the message NBR0740. For positive acknowledgments the message BCA062E appears.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA062F	Command not processed successfully
0	1	BCA0768	Syntax error in command
0	64	BCA076A	Error in command /BCMAP
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCMOD: Modify limit values specified with DCSTART

You use the BCMOD command during operation to modify operand values which were specified with the DCSTART or DCOPT command when the communication system was started, and match them to new requirements.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x		x	x	

List of valid command sources

BCMOD

MAXNPA = *unchanged / **20000** / <integer 1 .. 2147483647>

,**MAXNPT =** *unchanged / **20000** / <integer 1 .. 2147483647>

,**MAXCNN =** *unchanged / **20000** / <integer 1 .. 2147483647>

,**PAGMEM =** *unchanged / <integer 1024 .. 1048576>

,**RESMEM =** *unchanged,... / <integer 1024 .. 1048576>

,**MSG =** *unchanged / **ALL** / **NAK** / **ERROR-ONLY**

,**PRIVPORT# =** *unchanged / **2050** / <integer 1 .. 65535>

,**FREEPORT#=** *unchanged / **4096** / <integer 1 .. 65535>

,**REMOTE-IP-NSDU** = ***UNCHANGED** / ***STD** / <integer 512 .. 65530>

,**PROCESSOR-TABLE** = *unchanged / (...)

(...)

| **FILE** = *unchanged / <filename 1..50>

| ,**ACCESS** = *unchanged / **UPDATE** / **READ** / **ALLOW**

,**APPLICATION-TABLE =** *unchanged / (...)

(...)

| **FILE** = *unchanged / <filename 1..50>

,**SOCKETHOST-TABLE =** *unchanged / (...)

(...)

| **FILE** = *unchanged / <filename 1..50>

,**FQDN-TABLE =** *unchanged / (...)

(...)

| **FILE** = *unchanged / <filename 1..50>

, **SERVICES-TABLE =** *unchanged / (...)

```
    (...)

        |       FILE = *unchanged / <filename 1..50>

, MAX-ISAM-POOL-SIZE = *none / *STD / <integer 128 .. 32766>
```

MAXNPA=...
Restricts the number of connections not predefined which may be opened simultaneously in the BS2000 system. MAXNPA does not normally apply to predefined applications and system applications.

MAXNPA= *unchanged
The value set so far in BCAM is not changed.
Default: 20000

MAXNPA=<integer 1..2147483647>
Specifies the number of applications not predefined, which may be opened simultaneously in the BS2000 system.

MAXNPT=...
Restricts the number of applications not predefined which may be opened simultaneously by a single task in the BS2000 system.
MAXNPT does not normally apply to predefined applications and system applications.

MAXNPT= *unchanged
The value set so far in BCAM is not changed.
Default: 20000

MAXNPT=<integer 1...2147483647>
Specifies the number of applications not predefined, which may be opened simultaneously by a single task in the BS2000 system.

MAXCNN=...
The number of connections that may simultaneously maintain an application which is not predefined is restricted. MAXCNN does not normally apply to predefined applications and system applications.

MAXCNN= *unchanged
The value set so far in BCAM is not changed.
Default: 20000

MAXCNN=<integer 1..2147483647>
Specifies the number of connections that may simultaneously maintain an application which is not predefined.

PAGMEM=...
Specifies the size of virtual memory (backup storage, paging memory, paging area) in Kbytes, which BCAM can use for data transfer.

PAGMEM= *unchanged
The system-dependent value set as the default by BCAM is unchanged.

PAGMEM=<integer 1024..1048576>
The value for PAGMEM is changed.

RESMEM=...
Specifies the size (in Kbytes) of the resident memory (MEM-RES) that may be used by BCAM for data transfers.

Memory size in MB	RESMEM in Kbytes	PAGMEM in Kbytes
up to 50	5000	3000
50 to 100	10000	6000
100 to 200	20000	12000
200 to 500	40000	30000
500 to 1000	60000	60000
over 1000	100000	100000

RESMEM= *unchanged
The default system-dependent value set by BCAM is unchanged.

RESMEM=<integer 1024..1048576>
The value for RESMEM is changed.

MSG=...
Controls the scope of message output.

MSG= *unchanged
The value ALL set as the default by BCAM remains unchanged.

MSG=ALL
All messages are output.

MSG=NAK
Certain positive messages for processors are not output.
The message for directly addressed systems is always output (otherwise sequences may run incorrectly).
Positive messages are only suppressed for subsequent systems.
The following positive messages are suppressed:
BCA0740
BCA0763 for the BCIN (format 1), BCACT, BCDAC, BCOUT commands
BCA082A
BCA083F
BCA0851 with reason 00/01/02
BCA0852
BCA0853
BCA0854 with reason 00/01/02
BCA0856
BCA085B with reason 00/01/02
BCA085F
BCA08D7
BCA08DB
BCA08DC
BCA08DD
BCA08DE
BCA08DF and BCA08E5

MSG=ERROR-ONLY
Only negative messages are output.
All messages that have the Weight-Code 50, 70 or 99 in the message file are output. This is equivalent to filter levels 3.4 and "not suppressible" at the operator terminal.

PRIVPORT#=...
With PRIVPORT#, the first socket port number which can be occupied by non-privileged and privileged applications is specified.
Lower socket port numbers (with the exception of port number 20) may only be occupied by privileged applications. Privileged applications are those which run under the BS2000 system privilege TSOS or NETADM.

PRIVPORT#= *unchanged
The value 2050 set as the default by BCAM is unchanged.

PRIVPORT#=<integer 1..65535>
Defines the first free port number which may be occupied by non-privileged applications.
PRIVPORT# must always be less than or equal to FREEPORT#. If the PRIVPORT# value selected is larger than FREEPORT#, the value is limited to the specification for FREEPORT#.

FREEPORT#=...
Specifies the first free port number which BCAM can occupy dynamically for an application. If SNMP-AGENTS is used on this computer, the port number 3161 is assigned for internal BCAM communication between master and sub-agents.

FREEPORT#= *unchanged
The value 4096 set as the default by BCAM remains unchanged.

FREEPORT#=<integer 1..65535>
Defines the first free port number.
FREEPORT# must always be greater than or equal to PRIVPORT#. If FREEPORT# is smaller than PRIVPORT#, the value is set to the specification for PRIVPORT#.

REMOTE-IP-NSDU=...
Defines the NSDU length for IP routes, which operate via at least one router.
The NSDU route setting is only effective for remote IP routes, which are regenerated after this command is issued by means of the BCIN command or by automatic end system creation.

REMOTE-IP-NSDU=*UNCHANGED
The NSDU length for remote IP routes remains unchanged.

REMOTE-IP-NSDU=*STD
The NSDU length for remote IP routes is set to the default value (556 bytes) according to RFC1122.

REMOTE-IP-NSDU=<integer 512..65530>
The NSDU length for remote IP routes is set to the specified value.

PROCESSOR-TABLE=...
Defines a new SAM file (processor file) containing the assignment of processor names to network addresses.
ACCESS=READ/UPDATE/ALLOW is used for controlling the automatic end system creation.

PROCESSOR-TABLE= *unchanged
No SAM file containing the assignment of processor names to network addresses is specified.

PROCESSOR-TABLE=(...)
SAM file containing the assignment of processor names to network addresses.

FILE=...
Specifies the name of the SAM file containing the assignment of processor names to network addresses. This function can be used to specify a new SAM file and transfer its contents into the Processor Table cache. The old contents of the cache are discarded.
The file name must always be cataloged in the home pubset, otherwise errors may occur in connection with files cataloged on data pubsets or shared pubsets.
Default: $TSOS.SYSDAT.BCAM.PROCESSORS
The file name is compared with the file names of other BCAM tables which have already been entered or are already available to prevent this file being assigned to more than one BCAM table.

FILE= *unchanged
No specifications for the name of the SAM file containing the assignment of processor names to network addresses.

FILE=<filename 1..50>
Name of the SAM file containing the assignment of processor names to network addresses.

> The filename of BCAM is supplemented by a four-character suffix.

ACCESS=...
Controls automatic end system creation. A detailed description of this operand is provided in the section "Processor file".

ACCESS= *unchanged
No specification is entered for controlling automatic end system creation.
Default: UPDATE

ACCESS=UPDATE
Any partner end system may be created.

ACCESS=ALLOW
Any partner end system may be created, but without being added to the files which are assigned to the processor file.

ACCESS=READ
The partner end systems which have the specified processor names and are described in the processor file may be created.

APPLICATION-TABLE=...
Relevant for applications which do not run on the standard host.
APPLICATION-TABLE defines the SAM file which contains the assignment of applications to virtual hosts (application file). The information from this file is transferred periodically to the BCAM tables, but only takes effect for the individual application when the application is terminated and restarted.

APPLICATION-TABLE= *unchanged
The SAM file containing the assignment of applications to virtual hosts is not specified.

APPLICATION-TABLE=(...)
SAM file containing the assignment of applications to virtual hosts.

FILE=...
Specifies the name of the SAM file containing the assignment of applications to virtual hosts.
The file name must always be cataloged in the home pubset, otherwise errors may occur in connection with files cataloged on data pubsets or shared pubsets.
Default: $TSOS.SYSDAT.BCAM.APPLICATIONS
The file name is compared with the file names of other BCAM tables which have already been entered or are already available to prevent this file being assigned to more than one BCAM table.

FILE= *unchanged
No SAM file containing the assignment of applications to virtual hosts is specified.

FILE=<filename 1..50>
Name of the SAM file containing the assignment of applications to virtual hosts.

> The filename of BCAM is supplemented by a four-character suffix.

SOCKETHOST-TABLE=...
Only relevant for automatic end system creation.
SOCKETHOST-TABLE defines the SAM file which contains the assignment of socket host names to IP addresses. The information from this file is transferred periodically to the BCAM tables. ISOCKET calls, which request the conversion of socket host names to IP addresses, and vice versa, access the BCAM tables.

SOCKETHOST-TABLE= *unchanged
No SAM file containing the assignment of socket host names to IP addresses is specified.

SOCKETHOST-TABLE=(...)
SAM file containing the assignment of socket host names to IP addresses.

FILE=...
Specifies the name of the SAM file containing the assignment of socket host names to IP addresses.
The file must always be cataloged in the home pubset, otherwise errors may occur in connection with files cataloged on data pubsets or shared pubsets.
Default: $TSOS.SYSDAT.BCAM.ETC.HOSTS
The file name is compared with the file names of other BCAM tables which have already been entered or are already available to prevent this file being assigned to more than one BCAM table.

FILE= *unchanged
No SAM file containing the assignment of socket host names to IP addresses is specified.

FILE=<filename 1..50>
Name of the SAM file containing the assignment of socket host names to IP addresses.

> The filename of BCAM is supplemented by a four-character suffix.

FQDN-TABLE=...
Defines a new SAM file containing the assignment of FQDNs to BCAM names and/or IP addresses. The information from this file (FQDN file) is transferred periodically to the BCAM tables.

FQDN-TABLE= *unchanged
The SAM file containing the assignment of FQDNs to BCAM names and/or IP addresses is not specified.

FQDN-TABLE=(...)
SAM file containing the assignment of FQDNs to BCAM names and/or IP addresses.

FILE=...
Specifies the name of the SAM file containing the assignment of FQDNs to BCAM names and/or IP addresses.
The file name must be cataloged on the home pubset. Errors may occur in connection with files which are cataloged on data pubsets or shared pubsets.
Default name: $TSOS.SYSDAT.BCAM.FQDN
The file name is compared with the file names of other BCAM tables which have already been entered or are already available to prevent this file being assigned to more than one BCAM table.

FILE= *unchanged
No SAM file containing the assignment of FQDNs to BCAM names and/or IP addresses is specified.

FILE=<filename 1..50>
Name of the SAM file containing the assignment of FQDNs to BCAM names and/or IP addresses.

> The file name of BCAM is supplemented by a four-character suffix.

SERVICES-TABLE=...
Defines a new SAM file containing the assignment of services to port numbers. The information from this file (services file) is transferred periodically to the BCAM tables.

SERVICES-TABLE= *unchanged
The SAM file containing the assignment of services to port numbers is not specified.

SERVICES-TABLE=(...)
SAM file containing the assignment of services to port numbers.

FILE=...
Specifies the name of the SAM file containing the assignment of services to port numbers.
The file name must be cataloged on the home pubset. Errors may occur in connection with files which are cataloged on data pubsets or shared pubsets.
Default name: $TSOS.SYSDAT.BCAM.ETC.SERVICES
The file name is compared with the file names of other BCAM tables which have already been entered or are already available to prevent this file being assigned to more than one BCAM table.

FILE= *unchanged
No SAM file containing the assignment of services to port names is specified.

FILE=<filename 1..50>
Name of the SAM file containing the assignment of services to port names.

> The file name of BCAM is supplemented by a four-character suffix.

MAX-ISAM-POOL-SIZE=...
MAX-ISAM-POOL-SIZE defines the maximum size of the ISAM pool (specified in PAM pages) for the auxiliary ISAM files of the control files (application file, socket host file, processor file, FDQN file, and services file).

MAX-ISAM-POOL-SIZE= *none
The size of the ISAM pool remains unchanged.

MAX-ISAM-POOL-SIZE=*STD
The size of the ISAM pool is set to the default value of 1536 PAM pages.

MAX-ISAM-POOL-SIZE=<integer 128..32766>
Maximum size of the ISAM pool (specified in PAM pages).

Command logging

For reasons of compatibility, the processing acknowledgment is supplied in news BCA0763 if it is positive and in news BCA0762 if it is negative, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA0612, BCA0849, BCA084B and BCA08F8 may also appear.
A description of the error messages that can be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0613	No start parameters were changed
0	1	BCA0768	Syntax error in command
0	1	BCA0801	Illegal filename
0	1	BCA0802	Error in filename, already used
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	128	BCA0766	BCAM is not active

BCMON: Control BCAM monitoring

Using the BCMON command, you control cyclic BCAM monitoring and output the desired values at regular intervals. At the same time, you can modify the default cycle time. Each monitor function can be individually controlled via the RECORD operand; the SEC specifications used here apply for the individual monitor function. The values are displayed on the console and also written to the log file ($SYSAUDIT.SYS.CONSLOG.<date>.<counter>), so that the values can be evaluated later.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x		x	x	

List of valid command sources

BCMON

MODE = **ON** , ... / **OFF**, ...

ON, ...

| **RECORD =** **STD** / ***ALL** / list-poss (9): **TRANSFER** / **RES-MEMORY** / **PAG-MEMORY** / **TR-DATA**

| **CONNECTIONS** / **DATAGRAM** / **LAYER2**, ... / **L2**, ... / **LAYER4** / **L4** / **ROUTING** /

| **LOOPBACK** / **MODIFY-CONNECTION** / **SIH-TIME** / **VLAN-DEVICE**, ... / **VLAN-LINE**, ...

| **L2**, ... / **LAYER2**, ...

| | **LINE =** *all / <line-name 1 .. 8>

| | **INFO =** ***ALL** / list-poss (4): ***ALL** / **BYTES** / **UNICASTS** / **ERRORS** / **IO-TIME**

| **VLAN-DEVICE**, ...

| | **DEVICE =** *all / <device-name 1 .. 8> / ***BY-AGGREGATION**(...)

| | ***BY-AGGREGATION**(...)

| | | **AGGREGATION** = *all / <aggregation-name 1 .. 8>

| | **INFO =** ***ALL** / list-poss (4): ***ALL** / **BYTES** / **UNICASTS** / **ERRORS** / **IO-TIME**

| **VLAN-LINE**, ...

| | **LINE =** *all / <line-name 1 .. 8> / ***BY-DEVICE(...)** / ***BY-AGGREGATION**(...)

| | ***BY-DEVICE**(...)

| | | **DEVICE**=*all / <device-name 1 .. 8>

| | ***BY-AGGREGATION**(...)

| | | **AGGREGATION** = *all / <aggregation-name 1 .. 8>

| | **INFO =** ***ALL** / list-poss (4): ***ALL** / **BYTES** / **UNICASTS** / **ERRORS**

| , **SEC =** **600** / <integer 5 .. 65535 seconds>

OFF, ...

| **RECORD =** ***ALL** / **STD** / list-poss (9): **TRANSFER** / **RES-MEMORY** / **PAG-MEMORY** / **TR-DATA**

| **CONNECTIONS** / **DATAGRAM** / **LAYER2**, ... / **L2**, ... / **LAYER4** / **L4** / **ROUTING** /

| **LOOPBACK** / **MODIFY-CONNECTION** / **SIH-TIME** / **VLAN-DEVICE,** .../ **VLAN-LINE,** ...

| **L2**, ... / **LAYER2**, ...

| | **LINE =** *all / <line-name 1 .. 8>

| | **INFO =** ***ALL** / list-poss (4): ***ALL** / **BYTES** / **UNICASTS** / **ERRORS** / **IO-TIME**

```
|        VLAN-DEVICE, ...
|           |        DEVICE = *all / <device-name 1 .. 8> / *BY-AGGREGATION(...)
|           |        INFO = *ALL / list-poss (4): *ALL / BYTES / UNICASTS / ERRORS / IO-TIME
|        VLAN-LINE, ...
|           |        LINE = *all / <line-name 1 .. 8> / *BY-DEVICE(...) / *BY-AGGREGATION(...)
|           |           *BY-DEVICE(...)
|           |              |        DEVICE=*all / <device-name 1 .. 8>
|           |           *BY-AGGREGATION(...)
|           |              |        AGGREGATION = *all / <aggregation-name 1 .. 8>
|           |         INFO = *ALL / list-poss (4): *ALL / BYTES / UNICASTS / ERRORS
```

MODE=ON ,...
Specifies that monitoring is switched on.

RECORD=...
Specifies monitor function for which data is output.
Apart from the values STD and *ALL, the remaining values can also be specified as a list (list-poss).

RECORD=STD
The specification of STD is a summary of the individual specifications:

- TRANSFER
- RES-MEMORY
- PAG-MEMORY
- CONNECTIONS

RECORD=*ALL
Output occurs for all monitor functions.

RECORD=TRANSFER
The values relevant for connection-oriented data transfer are output with the console message BCA0B20.

RECORD=RES-MEMORY
The values relevant for the resident data memory are output with the console message BCA0B21.

RECORD=PAG-MEMORY
The values relevant for the pageable memory are output with console message BCA0B23.

RECORD=TR-DATA
The values relevant for connection-oriented data transfer are output with the console message BCA0B32 (itemized according to local, remote and LOOPBACK).

RECORD=CONNECTIONS
The values relevant for transport connections are output with console message BCA0B22:

APM	Number of opened applications, where multiple openings are often counted accordingly.
APP	Number of opened applications

CON	Number of connections

CON, APP, and APM are the maximum values during the monitoring period.

RECORD=DATAGRAM
The values relevant for connectionless data transfer are output with console message BCA0B40:

Input (total)	Number of all UDP fragments in the input direction
Unknown Port#	Number of UDP fragments in the input direction to the unknown port#
Error	Number of incorrect UDP fragments in the input direction
Output	Number of all UDP fragments in the output direction

RECORD=LOOPBACK
The values relevant for Layer 4 (itemized according to LOOPBACK) are output with the console message BCA0B41.

RECORD=LAYER4 / **L4**
The values relevant for Layer 4 are output with console message BCA0B30.

RECORD=ROUTING
The values relevant for routing are output with console message BCA0B24.

RECORD=MODIFY-CONNECTION
The values relevant for the establishment of a connection are output with console message BCA0B31:

ACTIVE	OK	Number of successful active connection attempts
ACTIVE	FAILURE	Number of failed active connection attempts
PASSIVE	OK	Number of successful passive connection attempts
PASSIVE	FAILURE	Number of failed passive connection attempts

RECORD=SIH-TIME
The values relevant for SIH-TIME are output with the console messages BCA0B60, BCA0B61 and BCA0B62.

> ¡ Depending on the configuration, not all messages need be output.

RECORD=LAYER2 / **L2**
The relevant values of all lines (normal and VLAN lines) for Layer 2 are output with console messages BCA0B10, BCA0B11, BCA0B15, BCA0B16, BCA0B17, BCA0B18 and BCA0B19. Specifying LINE restricts output to one line. Specifying INFO restricts output to one subset.

LINE=...
Name of the line (normal lines, not VLAN lines) for which values relevant for Layer 2 are evaluated.

LINE= *all
The output of the values relevant for Layer 2 takes place for all lines (normal lines, not VLAN lines) .

LINE=<line-name 1..8>
The output of the values relevant for Layer 2 takes place for the (normal) line defined with line-name.

INFO=...
A subset of values relevant for Layer 2 is evaluated. This specification only applies to LAN lines.

INFO=*ALL
All values relevant for Layer 2 are output (the IO-TIME values are excepted).

INFO=BYTES
Only values relevant for BYTEs are output (message BCA0B15 or alternately BCA0B10).

INFO=UNICASTS
Only values relevant for UNICASTs are output (message BCA0B16 or BCA0B56).

INFO=ERRORS
Only values relevant for ERRORs are output (message BCA0B18 or alternately BCA0B11).

INFO=IO-TIME
Only the values relevant for IO-TIME are output (message BCA0B19).

RECORD=VLAN-DEVICE
The values of all VLAN devices which are relevant for VLAN-DEVICE are output with console messages BCA0B5C, BCA0B5D, BCA0B5E and BCA0B5F . Specifying DEVICE restricts output to one VLAN device. Specifying INFO restricts output to one subset of the values.

DEVICE=...
Name of the VLAN device for which values relevant for the VLAN devices are evaluated.

DEVICE= *all
The output of the values relevant for the VLAN devices takes place for all VLAN devices.

DEVICE=<device-name 1..8>
The output of the values relevant for the VLAN devices takes place for the VLAN device defined with device-name.

DEVICE=*BY-AGGREGATION(...)
The output of the values relevant for the VLAN devices takes place via the aggregation names assigned to them.

AGGREGATION= *all / <aggregation-name 1..8>
The output of the values relevant for the VLAN devices takes place for the devices addressed with aggregation-name.

INFO=...
A subset of the values relevant for the VLAN devices is evaluated. This specification only applies for VLAN devices.

INFO=*ALL
All values relevant for Layer 2 are output (the IO-TIME values are excepted).

INFO=BYTES
Only values relevant for BYTEs are output (message BCA0B5A).

INFO=UNICASTS
Only the values relevant for UNICAST are output (message BCA0B5D).

INFO=ERRORS
Only values relevant for ERRORs are output (message BCA0B5E).

INFO=IO-TIME
Only the values relevant for IO-TIME are output (message BCA0B5F).

RECORD=VLAN-LINE
The values of all VLAN lines which are relevant for Layer 2 are output with console messages BCA0B50 and BCA0B51. Specifying LINE restricts output to one VLAN line. Specifying INFO restricts output to a subset of the values.

LINE=...
Name of the VLAN line for which values relevant for Layer 2 are evaluated.

LINE= *all
The output of the values relevant for Layer 2 takes place for all VLAN lines.

LINE=<line-name 1..8>
The output of the values relevant for Layer 2 takes place for the VLAN line defined with line-name.

LINE=*BY-DEVICE(...)
The output of the values for VLAN lines which are relevant for Layer 2 takes place via the device-names assigned to them.

DEVICE= *all / <device-name 1..8>
The output of the values relevant for Layer 2 takes place for the VLAN line addressed with device-name.

LINE=*BY-AGGREGATION(...)
The output of the values for VLAN lines which are relevant for Layer 2 takes place via the aggregation names assigned to them.

AGGREGATION= *all / <aggregation-name 1..8>
The output of the values relevant for Layer 2 takes place for the VLAN lines addressed with aggregation-name.

INFO=...
A subset of the values relevant for Layer 2 is evaluated. This specification only applies for LAN lines.

INFO=*ALL
All values relevant for Layer 2 are output.

INFO=BYTES
Only values relevant for BYTEs are output (message BCA0B50).

INFO=ERRORS
Only values relevant for ERRORs are output (message BCA0B51).

SEC=<integer 5..32765>
Specifies the monitoring period in seconds, after which the values are to be output. The specified value is rounded up to a multiple of 5.
Default: 600 sec

MODE=OFF,...
This operand specifies that monitoring for the specified RECORD function is switched off.

RECORD=...
Specifies which monitor functions are switched off.
Apart from the values *ALL and STD, the remaining values can also be specified as a list (list-poss).

RECORD=*ALL
All monitor functions are to be switched off.

RECORD=STD
The output of values relevant for data transfer (TRANSFER), data memory (RES-MEMORY and PAG-MEMORY), and connections (CONNECTIONS) is switched off.

RECORD=TRANSFER
The output of values relevant for connection-oriented data transfer is switched off.

RECORD=RES-MEMORY
The output of values relevant for resident data memory is switched off.

RECORD=PAG-MEMORY
The output of values relevant for pageable memory is switched off.

RECORD=CONNECTIONS
The output of values relevant for transport connections is switched off.

RECORD=DATAGRAM
The output of values relevant for connectionless data transfer is switched off.

RECORD=LAYER4 / **L4**
The output of values relevant for Layer 4 is switched off.

RECORD=ROUTING
The output of values relevant for routing is switched off.

RECORD=MODIFY-CONNECTION
The output of values relevant for connection activities is switched off.

RECORD=SIH-TIME
The output of values relevant for SIH-TIME is switched off.

RECORD=LAYER2 / **L2**
The output of values relevant for Layer 2 is switched off.

LINE=...
Name of the line for which the values relevant for Layer 2 are switched off.

LINE= *all
The output of values relevant for Layer 2 is switched off for all lines.

LINE=<line-name 1..8>
The output of values relevant for Layer 2 is switched off for the line defined with <line-name>.

INFO=...
A subset of values relevant for Layer 2 is switched off. This specification only applies to LAN lines.

INFO=*ALL
All values relevant for Layer 2 (including IO-TIME) are switched off.

INFO=BYTES
Only values relevant for BYTEs are switched off.

INFO=UNICASTS
Only values relevant for UNICASTs are switched off.

INFO=ERRORS
Only values relevant for ERRORs are switched off.

INFO=IO-TIME
Only values relevant for IO-TIME are switched off.

RECORD=VLAN-DEVICE
The output of the values relevant for the VLAN devices is switched off.

DEVICE=...
Name of the VLAN device for which output of the values relevant for the VLAN devices is switched off.

DEVICE= *all
The output of values relevant for VLAN is switched off for all VLAN devices.

DEVICE=<device-name 1..8>
The output of values relevant for VLAN is switched off for the VLAN devices defined with <device-name>.

DEVICE=*BY-AGGREGATION(...)
The output of the values relevant for the VLAN devices is switched off via the aggregation names assigned to them.

AGGREGATION= *all / <aggregation-name 1..8>
The output of the values relevant for the VLAN devices is switched off for the devices addressed with aggregation-name.

INFO=...
The output of a subset of the values relevant for the VLAN devices is switched off. This specification only applies for VLAN devices.

INFO=*ALL
The output of all values relevant for Layer 2 (including IO-TIME) is switched off.

INFO=BYTES
Only the output of values relevant for BYTEs is switched off.

INFO=UNICASTS
Only the output of values relevant for UNICASTS is switched off.

INFO=ERRORS
Only the output of values relevant for ERRORs is switched off.

INFO=IO-TIME
Only the output of values relevant for IO-TIME is switched off.

RECORD=VLAN-LINE
The output of the values of VLAN lines relevant for the Layer 2 is switched off.

LINE=...
Name of the VLAN line(s) for which the output of values relevant for Layer 2 is switched off.

LINE= *all
The output of values relevant for Layer 2 is switched off for all VLAN lines.

LINE=<line-name 1..8>
The output of values relevant for Layer 2 is switched off for the VLAN line defined with line-name.

LINE=*BY-DEVICE(...)
The output of values for VLAN lines that are relevant for Layer 2 is switched off via the device-names assigned to them.

DEVICE= *all / <device-name 1..8>
The output of values relevant for Layer 2 is switched off for the VLAN lines addressed with device-name.

LINE=*BY-AGGREGATION(...)
The output of the values for VLAN lines which are relevant for Layer 2 is switched off via the aggregation names assigned to them.

AGGREGATION= *all / <aggregation-name 1..8>
The output of the values relevant for Layer 2 is switched off for the VLAN lines addressed with aggregation-name.

INFO=...
The output of a subset of the values for VLAN lines that is relevant for Layer 2 is switched off.

INFO=*ALL
The output of all values for VLAN lines that are relevant for Layer 2 is switched off.

INFO=BYTES
Only the output of values for VLAN lines that are relevant for BYTEs is switched off.

INFO=ERRORS
Only the output of values for VLAN lines that are relevant for ERRORs is switched off.

Command logging

For reasons of compatibility, the processing acknowledgment is supplied in news BCA0763 if it is positive and in news BCA0762 if it is negative, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA0B10, BCA0B11, BCA0B15, BCA0B16, BCA0B18, BCA0B20, BCA0B21, BCA0B22, BCA0B23, BCA0B24, BCA0B30, BCA0B40, BCA0B5C, BCA0B5D, BCA0B5E, BCA0B5F, BCA0B50, BCA0B51, BCA0B60, BCA0B61 and BCA0B62 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA062B	Enable monitoring
2	0	BCA0635	Disabling of monitoring aborted
0	1	BCA0768	Syntax error in command
0	64	BCA07A2	Line unknown
0	64	BCA083A	VLAN device unknown
0	64	BCA07A6	No VLAN device found for the link aggregation
0	64	BCA083D	VLAN line unknown
0	64	BCA07AB	No VLAN line found for the link aggregation
0	64	BCA07AC	No VLAN line found for the VLAN device
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCOPTION: Change mode options

You use the BCOPTION command to activate or deactivate the TCP/IP and/or ISO functionality and control other BCAM mode options.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x		x	x	

List of valid command sources

BCOPTION

ADD-IP-RANGE = *unchanged / ****RANGE**(...)

***RANGE**(...)

| **FROM =** <composed-name 7..15 / <x-string 1..8> / list-poss(4):<integer 0..255>

| ,**TO =** <composed-name 7..15 / <x-string 1..8> / list-poss(4):<integer 0..255>

,**ADD-REMOTE-SERVER-PORTS** = *unchanged / list-poss (6): <integer 1 .. 65530> / <x-string 1 .. 4>

,**ADD-SERVER-PORTS** = *unchanged / list-poss (6): <integer 1 .. 65530> / <x-string 1 .. 4>

,**ARP =** *unchanged / **ON** / **OFF** / **QUIET**

,**ARP-AT-ROUTE-ACTIVATION** = *unchanged / ****ALWAYS** / ****CONNECTION**

,**ARP-REQUESTS-MAXIMUM** = *unchanged / <integer 1 .. 65535>

,**ARP-SWITCH** = *unchanged / **ON** / **OFF**

,**AUTOMATIC-ES-CREATE** = *unchanged / **ON(**...**)** / **OFF(**...**)**

ON(...)

| **PROFILE** = ***ALL** / list-poss(2): **ISO8473** / **IP** / **IPV6**

| ,**REASON** = ***ALL** / list-poss(6): **INCOMING-DATA** / **OUTGOING-DATA** / **ROUTING-DATA** /

| **ROUTING-PROTOCOL** / **INCOMING-BROADCAST** / **INCOMING-MULTICAST** / **SNMP**

OFF(...)

| **PROFILE** = ***ALL** / list-poss(2): **ISO8473** / **IP** / **IPV6**

| ,**REASON =** ***ALL** / list-poss(6): **INCOMING-DATA** / **OUTGOING-DATA** / **ROUTING-DATA** /

| **ROUTING-PROTOCOL** / **INCOMING-BROADCAST** / **INCOMING-MULTICAST** / **SNMP**

,**AUTO-ROUTE-SWITCHING** = *unchanged / ****ON** / ****OFF**

,**BROADCAST =** *unchanged / **ON**, ... / **OFF**, ...

ON, ... / **OFF**, ...

| **LINE** = *all / <line-name 1 .. 8>

,**CHECKSUM =** *unchanged / **ON** / **OFF**

,**CMDFILE-CONTINUATION** = *unchanged / **ALL-RESULTS** / **POSITIVE-RESULT** / **NEGATIVE-RESULT**

,**DEVICE-LPDU-SIZE-USAGE=** *unchanged / **ON** / **OFF**

,**ERROR-REPORT =** *unchanged / **ON** / **OFF**

,**IP-ROUTING =** *unchanged / **ON** / **OFF**

,I**PV6 =** *unchanged / **ON** / **OFF**

,**IPV6-AUTO-CONFIG =** *unchanged / **ON** / **OFF**

,**IPV6-VLAN-AUTO-CONFIG =** *unchanged / **ON** / **OFF**

,**IPV6-PREFIX-LEN-CTRL =** *unchanged / **ON** / **OFF**

,**ISO8473-ROUTING =** *unchanged / **ON** / **OFF**

,**ISO9542 =** *unchanged / **ON** / **OFF**

,**JOIN-MULTICAST-GROUP** = *unchanged / **ON** / **OFF**

,**LINE-CONTINUATION** = *unchanged / **ON** / **OFF**

,**LINE-SUPERVISION** = *unchanged / **ON** / **OFF**

,**MAXTSDU-FOR-CREATE** = *unchanged / <integer 1 .. 65530>

,**MSG-REPLY** = *unchanged / **OFF**(...) / **ON**(...)

| **MSG-ID** = *ALL / list-poss(2): **BCA07B2** / **BCA0999**

,**MULTICAST =** *unchanged / **ON**, ... / **OFF**, ...

ON, ... / **OFF**, ...

| **LINE** = *all / <line-name 1 .. 8>

,**NET-ROUTER-USAGE** = *unchanged / **ON** / **OFF**

,**NSDU-MODIFICATION** = *unchanged / **ON** / **OFF**

,**PERIODIC-FILE-ACCESS** = *unchanged / **ON** / **OFF**

,**OSPF-USAGE** = *unchanged / **ON** / **OFF**

,**RARP =** *unchanged / **ON** / **OFF**

,**REDIRECT-ON-QUERY** = *unchanged / **OFF** / **ON**

,**REMOVE-IP-RANGE** = *unchanged / ***ALL** / ***RANGE**(...)

***RANGE**(...)

| **FROM =** <composed-name 7..15 / <x-string 1..8> / list-poss(4): <integer 0..255>

```
        |       ,TO = <composed-name 7..15 / <x-string 1..8> / list-poss(4): <integer 0..255>

,REMOVE-REMOTE-SERVER-PORTS = *unchanged / *ALL / list-poss (6): <integer 1 .. 65530> /
                                                                  <x-string 1 .. 4>

,REMOVE-SERVER-PORTS = *unchanged / *ALL / list-poss (6): <integer 1 .. 65530> / <x-string 1 .. 4>

,ROUTER-REDUNDANCE = *unchanged / ON / OFF

,SHORT-HOLDING-TIME = *unchanged / ON / OFF

,SLOW-POLL = *unchanged / ON, ... / OFF, ...

    ON, ... / OFF, ...

        |       LINE = *all / <line-name 1 .. 8>

,SNMP-WRITE = *unchanged / ON / OFF

,STOP-ROUTER-SEARCH = *unchanged / ON / OFF

,SWITCH-LOCAL-ROUTER = *unchanged / ON / OFF

,TCP-KEEP-ALIVE = *unchanged / *ON(...) / * OFF

    *ON(...)

        |       TIME = *STD / *MINIMUM / *MAXIMUM / <integer 120..32767>
```

ADD-IP-RANGE=...
Specifies an IP address range. End systems within the specified range are added.

ADD-IP-RANGE= *unchanged
The range is not modified.

ADD-IP-RANGE=*RANGE(...)
Range of IP addresses that are added.

FROM=<composed-name 7..15> / <x-string 1..8> / list-poss (4):<integer 0..255>
Lowest IP address in the range to be added.

TO=<composed-name 7..15> / <x-string 1..8> / list-poss (4):<integer 0..255>
Highest IP address in the range to be added.

ADD-REMOTE-SERVER-PORTS=...
Defines whether open access to specific server ports on a partner system is to be granted by automatic end system creation, i.e., without being restricted by the PROCESSOR TABLE.

ADD-REMOTE-SERVER-PORTS= *unchanged
The previous setting remains unchanged.

ADD-REMOTE-SERVER-PORTS=list-poss(6):<integer 1..65535> / <x-string 1..4>
Grants open access to the specified server port numbers on a partner system even to processors which are still unknown, i.e., access is not restricted by the entries in the processor file.
The numbers (max. 6) may also be specified as a list (list-poss).

ADD-SERVER-PORTS=...
Defines whether open access to specific server ports is to be granted by automatic end system creation, i.e., without being restricted by the PROCESSOR TABLE.

ADD-SERVER-PORTS= *unchanged
The previous setting remains unchanged.

ADD-SERVER-PORTS=list-poss(6):<integer 1..65535> / <x-string 1..4>
Grants unrestricted access to the specified server port numbers.
The numbers (max. 6 per command) may also be specified as a list (list-poss).
The numbers (maximum 6) can also be specified as a list (list-poss).

ARP=...
Specifies if and how the Address Resolution Protocol (ARP) is to be used.

> The BCOPTION ARP setting is specified implicitly via the BCOPTION AUTOMATIC-ES-CREATE setting for IP. This setting is a prerequisite for automatic end system creation. ARP=NO is thus converted to ARP=QUIET and, if BROADCAST=OFF was set, BROADCAST=ON is set.

ARP= *unchanged
The previous setting remains unchanged.
Default: OFF

ARP=ON
ARP is used every 2 seconds when a route is used for the first time; APR requests are sent periodically every 300 seconds – set by BCTIMES.

ARP=OFF
ARP is not used.

ARP=QUIET
ARP is used every 2 seconds when a route is used for the first time. Every 300 seconds there is a check – set by BCTIMES – to determine whether data transmission has taken place within the time interval that has elapsed. If this is not the case, and communication associations exist via the route, an ARP request is sent.

ARP-AT-ROUTE-ACTIVATION=...
Specifies the circumstances under which ARP requests are sent on the activation of an IP route of type NODE.

ARP-AT-ROUTE-ACTIVATION= *unchanged
The previous setting is unchanged.
Default: *ALWAYS

ARP-AT-ROUTE-ACTIVATION=*ALWAYS
ARP requests are sent whenever an IP route of type NODE is activated.

ARP-AT-ROUTE-ACTIVATION=*CONNECTION
When an IP route of type NODE is activated, ARP requests are only sent if connections exist for the route that is to be activated.

ARP-REQUESTS-MAXIMUM=...
Defines how many ARP requests may be sent per second during the periodic ARP monitoring (ARP=ON or ARP=QUIET).

ARP-REQUESTS-MAXIMUM= *unchanged
The previous setting remains unchanged.
Default: 10

ARP-REQUESTS-MAXIMUM=<integer 1..65535>
Number of ARP requests that may be sent per second during the periodic ARP monitoring (ARP=ON or ARP=QUIET).

ARP-SWITCH=...
Specifies whether or not a router from which no more ARP replies are being received is to be regarded as having failed and thus also whether all end systems which were reached via that router are assigned to an alternative router.

ARP-SWITCH= *unchanged
The previous setting remains unchanged.
Default: OFF

ARP-SWITCH=ON
If no more ARP replies are received, all end systems which were accessed via the router involved are assigned to an alternative router.

ARP-SWITCH=OFF
If no more ARP replies are received, the end systems which were accessed via the router involved are not rerouted.

AUTOMATIC-ES-CREATE=...
Specifies whether or not end systems are automatically started and activated as a result of specific events.
A restriction of the end systems to be included automatically is possible by means of appropriate entries in the processor file (see the DCSTART or DCOPT command).

> The BCOPTION AUTOMATIC-ES-CREATE for IP implicitly influences the ARP and BROADCAST settings. These settings are prerequisites for automatic end system creation. ARP=NO is thus converted to ARP=QUIET and, if BROADCAST=OFF was set, BROADCAST=ON is set.

AUTOMATIC-ES-CREATE=*UNCHANGED
The previous setting remains unchanged.
Default: OFF

AUTOMATIC-ES-CREATE=ON(...)
An automatic startup takes place.

AUTOMATIC-ES-CREATE=OFF(...)
No automatic startup takes place.

PROFILE=...
Specifies for which profiles this function is provided.
Apart from the value *ALL, the remaining values can also be specified as a list (list-poss).

PROFILE=*ALL
Startup takes place for IP and ISO8473/ISO9542 protocols.

PROFILE=ISO8473
Startup only takes place for ISO8473/ISO9542 protocols.

PROFILE=IP
Startup only takes place for IP protocols.

PROFILE=IPV6
Startup only takes place for IPv6 protocols.

REASON=...
Specifies for which events an automatic startup is to be turned on (ON) or turned off (OFF).
Apart from the value *ALL, the remaining values can also be specified as a list (list-poss).

REASON=*ALL
Automatic startup is turned on/off for incoming and outgoing messages, as well as routing protocol elements.

REASON=INCOMING-DATA
Automatic startup is turned on/off for incoming messages.

REASON=OUTGOING-DATA
Automatic startup is turned on/off for outgoing messages.

REASON=ROUTING-DATA
Automatic startup is turned on/off for routing data elements that are not sent by an IP broadcast.
This entry is only evaluated for PROFILE=IP/ISO8473, for IP-ROUTING=ON and for PROFILE=ISO8473 .

REASON=ROUTING-PROTOCOL
Automatic startup is turned on/off for routing protocol elements that are not sent by an IP broadcast.

REASON=INCOMING-BROADCAST
Automatic startup is turned on/off for incoming IP broadcast data.
This entry is only evaluated for PROFILE=IP.

REASON=INCOMING-MULTICAST
Automatic startup is turned on/off for incoming multicast data.
This entry is only evaluated for PROFILE=IP, IPV6 ausgewertet.

REASON=SNMP
Automatic startup on receiving SNMP write accesses is turned on/off (requiredsetting: BCOPTION SNMP-WRITE=ON).
This entry is only evaluated for PROFILE=IP.

AUTO-ROUTE-SWITCHING=...
This operand specifies whether local routing information should be modified as a result of received IP, IPv6 or ISO9542 routing protocols.

AUTO-ROUTE-SWITCHING=*UNCHANGED
The previous setting is unchanged.
Default: *ON

AUTO-ROUTE-SWITCHING=*ON
Local routing information may be modified as a result of received IP, IPv6 or ISO9542 routing protocols.

AUTO-ROUTE-SWITCHING=*OFF
Local routing information may not be modified as a result of received IP, IPv6 or ISO9542 routing protocols.

BROADCAST=...
Handling of the “broadcast” mode option; determines whether Ethernet broadcast messages are received on the defined lines.

> The BCOPTION BROADCAST setting is specified implicitly via the BCOPTION AUTOMATIC-ES-CREATE setting for IP. This setting is a prerequisite for automatic end system creation. ARP=NO is thus converted to ARP=QUIET and, if BROADCAST=OFF was set, BROADCAST=ON is set.

BROADCAST= *unchanged
The previous setting remains unchanged.
Default: OFF

BROADCAST=ON(...)
Ethernet broadcast messages are received and answered, if necessary, on the defined lines.

BROADCAST=OFF(...)
Ethernet broadcast messages are not received on the defined lines.

LINE=...
Name of the line set for the reception of Ethernet broadcast messages.

LINE= *all
Ethernet broadcast messages may be received on all lines.

LINE=<line-name 1..8>
Ethernet broadcast messages may be received on the defined line.

CHECKSUM=...
Specifies whether the “CHECKSUM” mode option is to be supported in the ISO8473 data protocol elements (DT-PDU) to be sent.

CHECKSUM= *unchanged
The previous setting remains unchanged.
Default: OFF

CHECKSUM=ON
CHECKSUM is supported.

CHECKSUM=OFF
CHECKSUM is not supported.

CMDFILE-CONTINUATION=...
Controls the processing of command files (see CALL-BCAM-COMMANDS and the SOF file in the DCOPT and DCSTART commands) using the processing results.

CMDFILE-CONTINUATION= *unchanged
The previous setting remains unchanged.
Default: POSITIVE-RESULT

CMDFILE-CONTINUATION=ALL-RESULTS
Processing of the command file takes place irrespective of the processing result.

CMDFILE-CONTINUATION=POSITIVE-RESULT
Processing of the command file is only continued in the event of a positive processing result.

CMDFILE-CONTINUATION=NEGATIVE-RESULT
Processing of the command file is only continued in the event of a negative processing result.

DEVICE-LPDU-SIZE-USAGE=...
Specifies whether the LPDU-SIZE, returned by the device, may be used.

DEVICE-LPDU-SIZE-USAGE = *unchanged
The previous setting remains unchanged.
Default: *OFF

DEVICE-LPDU-SIZE-USAGE = *ON
The LPDU-SIZE, returned by the device, may be used.

DEVICE-LPDU-SIZE-USAGE = *OFF
The LPDU-SIZE, returned by the device, must not be used.

ERROR-REPORT=...
Determines whether the error flag (ER-FLAG) is set in the ISO8473 data protocol elements to be sent.

ERROR-REPORT= *unchanged
The previous setting remains unchanged.
Default: ON

ERROR-REPORT=ON
The error flag is set.

ERROR-REPORT=OFF
The error flag is not set.

IP-ROUTING=...
Specifies whether or not further routing of IP elements is permitted.

IP-ROUTING= *unchanged
The previous setting remains unchanged.
Default: OFF

IP-ROUTING=ON
Further routing of IP elements is permitted.

IP-ROUTING=OFF
Further routing of IP elements is not permitted.

IPV6=...
Specifies whether or not the IPv6 family of protocols is supported (IPv6, ICMPv6).

IPV6= *unchanged
The previous setting remains unchanged.
Default: ON

IPV6=ON
The IPv6 family of protocols is supported.

IPV6=OFF
The IPv6 family of protocols is not supported.

IPV6-AUTO-CONFIG=...
Specifies whether or not local IPv6 addresses are assigned on the activation of LAN connections to which no IPv6 addresses have so far been allocated.

> This option is not supported for VLAN connections.

IPV6-AUTO-CONFIG= *unchanged
The previous setting remains unchanged.
Default: OFF

IPV6-AUTO-CONFIG=ON
The generation of local IPv6 addresses is permitted.

IPV6-AUTO-CONFIG=OFF
The generation of local IPv6 addresses is not permitted.

IPV6-VLAN-AUTO-CONFIG=...
Specifies whether or not local IPv6 addresses are assigned when VLAN line ports are activated to which no IPv6 addresses had previously been assigned.

IPV6-VLAN-AUTO-CONFIG= *unchanged
The existing setting remains unchanged.
Default: OFF

IPV6-VLAN-AUTO-CONFIG=ON
Generation of local IPv6 addresses is permitted.

IPV6-VLAN-AUTO-CONFIG=OFF
Generation of local IPv6 addresses is not permitted.

IPV6-PREFIX-LEN-CTRL=...
Specifies whether the IPv6 prefix length is to be handled in accordance with the specifications of RFC 4291, starting on page 7, for all unicast addresses.

IPV6-PREFIX-LEN-CTRL= *unchanged
The existing setting remains unchanged.
Default: ON

IPV6-PREFIX-LEN-CTRL=ON
The IPv6 prefix length is to be handled in accordance with the specifications of RFC 4291.

IPV6-PREFIX-LEN-CTRL=OFF
The IPv6 prefix length is to be handled differently from the specifications of RFC 4291.

ISO8473-ROUTING=...
Specifies whether or not further routing of ISO8473 elements is permitted.

ISO8473-ROUTING= *unchanged
The previous setting remains unchanged.
Default: OFF

ISO8473-ROUTING=ON
Further routing of ISO8473 elements is permitted.

ISO8473-ROUTING=OFF
Further routing of ISO8473 elements is not permitted.

ISO9542=...
Specifies whether the ISO9542 protocol is used to exchange routing information.

ISO9542= *unchanged
The previous setting remains unchanged.
Default: OFF

ISO9542=ON
The ISO9542 protocol is used.

ISO9542=OFF
The ISO9542 protocol is not used.

JOIN-MULTICAST-GROUP=...
Determines whether applications may join IGMP multicast groups.

JOIN-MULTICAST-GROUP= *unchanged
The previous setting remains unchanged.
Default: ON

JOIN-MULTICAST-GROUP=ON
Applications may join IGMP multicast groups.

JOIN-MULTICAST-GROUP=OFF
Applications may not join IGMP multicast groups.

LINE-CONTINUATION=...
Defines how the continuation character "-" in column 72 of SOF and command files is to be interpreted.

> ¡ "-" as the last character in a row in a column other than 72 is always interpreted as a continuation character.

LINE-CONTINUATION= *unchanged
The previous setting remains unchanged.
Default: ON

LINE-CONTINUATION=ON
The "-" character in column 72 is interpreted as a continuation character if it is the last character in the row, otherwise it is recognized as a data character.

LINE-CONTINUATION=OFF
The "-" character in column 72 is interpreted as a continuation character. The rest of the row in ignored.

LINE-SUPERVISION=
Specifies whether the functionality of redundant line connections is checked by sending test messages

LINE-SUPERVISION=*UNCHANGED
The setting of the option is unchanged.
Default: *ON

LINE-SUPERVISION=*ON
The functionality of redundant line connections is checked.

LINE-SUPERVISION=*OFF
The functionality of redundant line connections is not checked.

MAXTSDU-FOR-CREATE=...
Defines which TSDU length is used for end systems that were created with AUTOMATIC-ES-CREATE.

MAXTSDU-FOR-CREATE= *unchanged
The previous setting remains unchanged.
Default: 16384

MAXTSDU-FOR-CREATE=<integer 1..65535>
The TSDU length for end systems that were created with AUTOMATIC-ES-CREATE is set to the specified value.

MSG-REPLY=...
Defines whether or not BCA07B2 and BCA0999 messages will be displayed by /STA MSG and /SHOW-PENDING-MSG until they are explicitly acknowledged by the input of BCAM <number>.

MSG-REPLY= *unchanged
The previous setting remains unchanged.
Default: OFF

MSG-REPLY=OFF(MSG-ID=*ALL / list-poss(2): BCA07B2 / BCA0999)
BCA07B2 and BCA0999 messages are not displayed by /STA MSG and /SHOW-PENDING-MSG.

MSG-ID=*ALL
BCA07B2 and BCA0999 messages are not displayed by /STA MSG and /SHOW-PENDING-MSG.

MSG-ID=list-poss(2): BCA07B2 / BCA0999
Only BCA07B2/BCA0999 messages are not displayed by /STA MSG and /SHOW-PENDING-MSG.

MSG-REPLY=ON(MSG-ID=*ALL / list-poss(2): BCA07B2 / BCA0999)
BCA07B2 and BCA0999 messages are displayed by /STA MSG and /SHOW-PENDING-MSG until they are explicitly acknowledged by the input of BCAM <number>.

MSG-ID=*ALL
BCA07B2 and BCA0999 messages are displayed /STA MSG and /SHOW-PENDING-MSG.

MSG-ID=list-poss(2): BCA07B2 / BCA0999
Only BCA07B2/BCA0999 messages are displayed by /STA MSG andSHOW-PENDING-MSG.

MULTICAST=...
Specifies whether or not Ethernet multicast messages may be received on the specified lines.

MULTICAST= *unchanged
The previous setting remains unchanged.
Default: ON

MULTICAST=ON(...)
Ethernet multicast messages may be received on the specified lines.

MULTICAST=OFF(...)
Ethernet multicast messages may not be received on the specified lines.

LINE=...
Name of the line for which the reception of Ethernet multicast messages is defined.

LINE= *all
The setting for receiving Ethernet multicast messages applies to all lines.

LINE=<line-name 1..8>
The setting for receiving Ethernet multicast messages applies to the defined line.

NET-ROUTER-USAGE=...
NET-ROUTER-USAGE can be used to set whether or not existing IP network definitions are evaluated when IP subnet masks are used.

NET-ROUTER-USAGE= *unchanged
The previous setting remains unchanged.
Default: ON

NET-ROUTER-USAGE=ON
Existing IP network definitions are evaluated when IP subnet masks are used.

NET-ROUTER-USAGE=OFF
Existing IP network definitions are not evaluated when IP subnet masks are used.

NSDU-MODIFICATION=...
Specifies whether or not the NSDU lengths are automatically adapted for internal switching operations.

NSDU-MODIFICATION= *unchanged
The previous setting remains unchanged.
Default: ON

NSDU-MODIFICATION=ON
NSDU lengths are automatically adapted for internal switching operations.

NSDU-MODIFICATION=OFF
NSDU lengths are not automatically adapted.
Modifications can be made with BCMOD or MODIFY-ROUTE-ATTRIBUTES.

PERIODIC-FILE-ACCESS=...
Specifies whether the BCAM control files (application file, socket host file, processor file, FDQN file, and services file) are read periodically by the BCAF task. The time interval cannot be set explicitly.

PERIODIC-FILE-ACCESS= *unchanged
The previous setting remains unchanged.
Default: ON

PERIODIC-FILE-ACCESS=ON
Periodic processing of the files by the BCAF task is enabled.

PERIODIC-FILE-ACCESS=OFF
Periodic processing of the files by the BCAF task is disabled.

OSPF-USAGE=...
Specifies whether the time monitoring of OSPF Hello messages can be used for router failure detection.

OSPF-USAGE= *unchanged
The previous setting remains unchanged.
Default: ON

OSPF-USAGE=ON
The time monitoring of OSPF Hello messages can be used for router failure detection.

OSPF-USAGE=OFF
The time monitoring of OSPF Hello messages *cannot* be used for router failure detection.

RARP=...
Specifies whether the Reverse Address Resolution Protocol (RARP) is supported.
If the execution of the function is required to be route-specific, the MODIFY-ROUTE-ATTRIBUTES command must be used.

RARP= *unchanged
The previous setting remains unchanged.
Default: OFF

RARP=ON
RARP is supported.

RARP=OFF
RARP is not supported.

REDIRECT-ON-QUERY=
REDIRECT-ON-QUERY can be used to set whether or not incoming ISO9542 redirect messages for ISO8473 query configuration requests are to be evaluated.

REDIRECT-ON-QUERY= *unchanged
The previous setting remains unchanged.
Default: OFF

REDIRECT-ON-QUERY=ON
Incoming ISO9542 redirect messages for ISO8473 query configuration requests are evaluated.

REDIRECT-ON-QUERY=OFF
Incoming ISO9542 redirect messages for ISO8473 query configuration requests are not evaluated.

REMOVE-IP-RANGE=...
Specifies an IP address range. End systems within the specified range are removed from the list of added end systems that was created using ADD-IP-RANGE.

REMOVE-IP-RANGE= *unchanged
There is no change to the list created with ADD-IP-RANGE.

REMOVE-IP-RANGE=*ALL
The entire list is deleted.

REMOVE-IP-RANGE=*RANGE(...)
Range of IP addresses to be removed from the list created using ADD-IP-RANGE.

FROM=<composed-name 7..15> / <x-string 1..8> / list-poss (4):<integer 0..255>
Lowest IP address in the range to be removed.

TO=<composed-name 7..15> / <x-string 1..8> / list-poss (4):<integer 0..255>
Highest IP address in the range to be removed.

REMOVE-REMOTE-SERVER-PORTS=...
Specifies whether or not unrestricted access to specific (server) port numbers on partner systems is allowed.

REMOVE-REMOTE-SERVER-PORTS= *unchanged
The previous setting remains unchanged.

REMOVE-REMOTE-SERVER-PORTS=*ALL
Unrestricted access to all the (server) port numbers on partner systems is not allowed.

REMOVE-REMOTE-SERVER-PORTS=list-poss(6):<integer 1..65535> / <x-string 1..4>
Unrestricted access to the specified (server) port numbers on partner systems is not allowed. The numbers (max. 6) may also be specified as a list (list-poss).

REMOVE-SERVER-PORTS=...
Specifies whether or not unrestricted access to specific (server) port numbers is allowed.

REMOVE-SERVER-PORTS= *unchanged
The previous setting remains unchanged.

REMOVE-SERVER-PORTS=*ALL
Unrestricted access to all the server port numbers is not allowed.

REMOVE-SERVER-PORTS=list-poss(6):<integer 1..65535> / <x-string 1..4>
Unrestricted access to the specified (server) port numbers is not allowed.
The numbers (max. 6 per command) may also be specified as a list (list-poss).

ROUTER-REDUNDANCE=...
Specifies whether alternative routers are searched for and whether rerouting should be performed if transmission problems with TCP connections occur.

ROUTER-REDUNDANCE= *unchanged
The previous setting remains unchanged.
Default: ON

ROUTER-REDUNDANCE=ON
Alternative routers are searched and, if possible, rerouting is performed.

ROUTER-REDUNDANCE=OFF
No search for alternative routers is performed.

SHORT-HOLDING-TIME=...
Permits shorter time intervals for the ISO9542 configuration and holding time than those stipulated in EN41102. The time interval itself cannot be specified explicitly.

SHORT-HOLDING-TIME= *unchanged
The previous setting remains unchanged.
Default: OFF

SHORT-HOLDING-TIME=ON
A shorter time interval that does not comply with EN41102 is set.
ISO9542 confirmation timer: 14 sec
ISO9542 holding timer: 30 sec

SHORT-HOLDING-TIME=OFF
The EN41102-compliant time interval specified with BCTIMES CONFIGURATION= applies (see "BCTIMES: Define BCAM time intervals").

SLOW-POLL=...
Defines whether automatic reactivation is attempted after a line failure of the specified lines.

SLOW-POLL= *unchanged
The previous setting remains unchanged.
Default: OFF

SLOW-POLL=ON(...)
Automatic reactivation is attempted following a line failure of the specified lines.

SLOW-POLL=OFF(...)
No automatic reactivation is attempted for the specified lines.

LINE=...
Name of the line for which the "automatic reactivation" setting is to be defined.

LINE= *all
Automatic reactivation is set for all lines.
At the same time, the default value for the SLOW-POLL operand is set in the BCACT, BCIN, CREATE-LINE and MODIFY-LINE commands.

LINE=<line-name 1..8>
Automatic reactivation is set for the defined line.
This setting is line-specific and is valid until the next BCACT or BCIN command containing a corresponding, modified SLOW-POLL setting.

SNMP-WRITE=...
Determines whether SNMP writes on objects and object attributes (as defined in RFC 1213) are allowed in BCAM.

SNMP-WRITE= *unchanged
The previous setting remains unchanged.
Default: ON

SNMP-WRITE=ON
SNMP writes on objects and object attributes (as defined in RFC 1213) are allowed in BCAM.

SNMP-WRITE=OFF
SNMP writes on objects and object attributes (as defined in RFC 1213) are not allowed in BCAM.

STOP-ROUTER-SEARCH=...
Specifies whether or not the search for an alternative router is terminated when the TCP connection involved is shut down.

STOP-ROUTER-SEARCH= *unchanged
The previous setting remains unchanged.
Default: ON

STOP-ROUTER-SEARCH=ON
The search for an alternative router is terminated when the TCP connection is shut down.

STOP-ROUTER-SEARCH=OFF
The search for an alternative router is terminated when an appropriate router has been found or all available routers have been tested unsuccessfully.

SWITCH-LOCAL-ROUTER=...
Defines whether, in the event of TCP transmission problems, the functionality of the local router is checked using ICMP-ECHO. End systems assigned to the local router are not affected by this function.

SWITCH-LOCAL-ROUTER= *unchanged
The previous setting remains unchanged.
Default: OFF

SWITCH-LOCAL-ROUTER=ON
In the event of TCP transmission problems, the functionality of the local router is checked.

SWITCH-LOCAL-ROUTER=OFF
The router is not checked.

TCP-KEEP-ALIVE=...
Specifies whether TCP alive monitoring is to be performed. When alive monitoring is enabled, an attempt is made to force a response by the partner by sending appropriate TCP segments on the TCP connections on which no segments have been received or transmitted for a specified time. If the partner does not respond, the connection is aborted. The functionality set is provided for all connections, including existing connections.

TCP-KEEP-ALIVE= *unchanged
The current setting is not changed.
Default: No alive monitoring.

TCP-KEEP-ALIVE=*ON(...)
TCP alive monitoring is performed.

TIME=<integer 120..32767>
The interval for alive monitoring is set to the value specified. Values outside the permissible range are mapped to the default value of two hours. The value is specified in seconds.

TIME=*STD
The interval for alive monitoring is set to the default value of two hours (which corresponds to 120 minutes or 7200 seconds).

TIME=*MINIMUM
The interval for alive monitoring is set to the minimum value of 120 seconds.

TIME=*MAXIMUM
The interval for alive monitoring is set to the maximum value of 32767 seconds.

TCP-KEEP-ALIVE=*OFF
TCP alive monitoring is not performed.

Command logging

For reasons of compatibility, the processing acknowledgment is supplied in news BCA0763 if it is positive and in news BCA0762 if it is negative, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA0610, BCA0849 and BCA084B may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0611	No options were changed
0	1	BCA0768	Syntax error in command
0	64	BCA07A2	Line is unknown
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCOUT: Close down communication components

You use this command to close down the following components:

- hosts (in this case, virtual hosts),
- lines
- LAN nodes
- processors
- routes

In addition to closing down the specified objects, you can also deactivate other objects. Connections to partners which are closed down are cleared.
Optionally, a warning can be sent to applications which maintain a connection to a terminal belonging to the system. You receive a connection shutdown request for each connection. The warning consists of a notice specifying that the applications (apart from system applications) and the connections are being closed down. This enables controlled termination of the affected applications or connections. If connections still exist after the warning time has expired, these are then automatically shut down. The warning time is 10 seconds, as long as no other time is specified for the WARN operand using the BCTIMES command.
No warning is given to the applications for connections to remote processors. This can only be done for the relevant processor by means of an explicit BCOUT.

If you want to reactivate the processor, you must issue the BCIN command and possibly the BCACT command for it. This is also a requirement for opening connections to applications of this system. If the processor-name is not reloaded by the BS2000 system, you can activate the function of the BCACT command in the BCIN command using the ACT=Y operand.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x		x	x	

List of valid command sources

BCOUT: Close down virtual host

You use the BCOUT command for a virtual host to close down the host's lines and routes. Existing applications are terminated.

BCOUT for virtual hosts

HOST = <host-name 1 .. 8>

,OUT = **ONLY,** ... / **LOCAL,** ... / **NODE**, ... / **ALL**

ONLY, ...

| **DAC** = **ONLY** / **LOCAL** / **NODE** / **ALL**

LOCAL, ...

| **DAC** = **LOCAL** / **NODE** / **ALL**

NODE, ...

| **DAC** = **NODE** / **ALL**

,TYPE = **QUICK** / **NORMAL** , ...

NORMAL, ...

| **W** = **YES** / **NO**

HOST=<host-name 1..8>
Name of the virtual host.

OUT=...
Defines the group of objects to be closed down in addition to the host.

OUT=ONLY, ...
The operation is only performed for the specified host.

DAC=...
Specifies which objects are also deactivated.

DAC=ONLY
No additional objects are deactivated.

DAC=LOCAL
All LAN nodes are also deactivated.

DAC=NODE
Deactivation takes place for all LAN nodes , as well as all processors directly connected to the LAN which can be accessed via this LAN node.

DAC=ALL
Deactivation takes place for all accessible objects.

OUT=LOCAL, ...
The specified host is closed down, as are the processors and LAN nodes directly connected to it, including the relevant lines and routes.

DAC=...
Specifies which objects are also deactivated.

DAC=LOCAL
No additional objects are deactivated.

DAC=NODE
Deactivation takes place for the host and all LAN nodes, as well as all processors directly connected to the LAN which can be accessed via this LAN node.

DAC=ALL
Deactivation takes place for the host and all objects which can be directly accessed via the host.

OUT=NODE, ...
The host is closed down as well as all LAN nodes, plus the processors directly connected to the LAN which can be accessed via this LAN node.

DAC=...
Specifies which objects are also deactivated.

DAC=NODE
No additional objects are deactivated.

DAC=ALL
Deactivation takes place for the host and all objects which can be accessed via the host.

OUT=ALL
All accessible objects are closed down.

TYPE=...
Specifies the type of connection shutdown.
have no opportunity to terminate in a controlled manner.

TYPE=QUICK
Connection shutdown does not occur in the network.

TYPE=NORMAL
A connection shutdown occurs in the network.

W=...
This operand shows whether or not a warning about the termination of the application is displayed.

W=YES
A warning is displayed.

W=NO
No warning is displayed.
This option must only be used in “emergencies”, since the relevant applications Command logging

Command logging

For reasons of compatibility, the processing acknowledgment is supplied in news BCA0763 if it is positive and in news BCA0762 if it is negative, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA08D5, BCA085D and BCA0626 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0627	Shutdown aborted
0	1	BCA0768	Syntax error in command
0	1	BCA0857	Command not permitted for local computer
0	64	BCA07A4	Host does not exist
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCOUT: Close down line

BCOUT for lines
LINE = <line-name 1 .. 8> ,**ROUTE-SWITCH** = **NO** / **YES**

LINE=<line-name 1..8>
Name of the line to be deactivated

ROUTE-SWITCH=...
controls the handling of routes with Layer 3 profile IP, IPv6 and INTF which run via the line to be deactivated.

ROUTE-SWITCH=NO
Routes with Layer 3 profile IP, IPv6 and INTF which run via the line to be deactivated are not switched.

ROUTE-SWITCH=YES
Routes with Layer 3 profile IP, IPv6 and INTF which run via the line to be deactivated are switched to the next active line assigned to the same LAN node. If a corresponding line cannot be found, the route is not switched.

Command logging

For reasons of compatibility, the processing acknowledgment is supplied in news BCA0763 if it is positive and in news BCA0762 if it is negative, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA0851, BCA0854, BCA085B and BCA0626 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0627	Shutdown aborted
2	0	BCA085C	BCOUT has already been entered; command is ignored
0	1	BCA0768	Syntax error in command
0	64	BCA07A2	Line is unknown
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	128	BCA0766	BCAM is not active

BCOUT: Close down LAN node

BCOUT for LAN nodes

NODE = <node-name 1 .. 8>

,OUT = **ONLY**, ... / **NODE,** ... / **ALL**

ONLY, ...

| **DAC** = **ONLY** / **NODE** / **ALL**

NODE, ...

| **DAC** = **NODE** / **ALL**

,TYPE = **QUICK** / **NORMAL,** ...

NORMAL, ...

| **W** = **YES** / **NO**

NODE=<node-name 1..8>
Name of the LAN node

OUT=...
Defines the group of objects that are closed down in addition to the LAN node.

OUT=ONLY, ...
The operation is only performed for the specified LAN node.

DAC=...
Specifies which objects are also deactivated.

DAC=ONLY
No additional objects are deactivated.

DAC=NODE
Deactivation takes place for the LAN node and all processors directly connected to the LAN, which can be accessed via the LAN node.

DAC=ALL
Deactivation takes place for all processors which can be accessed via the LAN.

OUT=NODE, ...
The operation is performed for the LAN node and all processors directly connected to the LAN, which can be accessed via the LAN node.

DAC=...
Specifies which objects are also deactivated.

DAC=NODE
No additional objects are deactivated.

DAC=ALL
Deactivation takes place for all processors which can be accessed via the LAN.

OUT=ALL
The operation is performed for all processors which can be accessed via the LAN.

TYPE=...
Specifies the type of connection shutdown.

TYPE=QUICK
Connection shutdown does not occur in the network.

TYPE=NORMAL, ...
A connection shutdown occurs in the network.

W=...
This operand shows whether or not a warning about the termination of the application is displayed.

W=YES
A warning is displayed.

W=NO
No warning is displayed.
This option must only be used in “emergencies”, since the relevant applications have no opportunity to terminate in a controlled manner.

Command logging

For reasons of compatibility, the processing acknowledgment is supplied in news BCA0763 if it is positive and in news BCA0762 if it is negative, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA085E, BCA08D6 and BCA0626 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0627	Shutdown aborted
2	0	BCA085C	BCOUT has already been entered, command is ignored
0	1	BCA0768	Syntax error in command
0	64	BCA07A3	LAN node is unknown
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCOUT: Close down processor

If the processor to be closed down is a router, then, if required, the ARP function must be deactivated separately with the MODIFY-ROUTE-ATTRIBUTES command.

BCOUT for processors

PROCESSOR = <processor-name 1 .. 8>

,OUT = **ONLY**, **...** / **ALL**

ONLY, ...

| **DAC** = **ONLY** / **NODE** / **ALL**

,TYPE = **QUICK** / **NORMAL,** ...

NORMAL, ...

| **W** = **YES** / **NO**

PROCESSOR=<processor-name 1..8>
Name of the processor

OUT=...
Defines the group of objects to be closed down in addition to the processor.

OUT=ONLY, ...
The operation is performed for the specified processor.

DAC=...
Specifies which objects are also deactivated.

DAC=ONLY / NODE
No additional objects are deactivated.

DAC=ALL
Deactivation takes place for the specified processor as well as for all processors which can be accessed via this processor.

OUT=ALL
The operation is performed for the specified processor, as well as for all processors which can be accessed via this processor.

TYPE=...
Specifies the type of connection shutdown.

TYPE=QUICK
Connection shutdown occurs in the network.

TYPE=NORMAL, ...
Connection shutdown occurs in the network.

W=...
This operand shows whether or not a warning about the termination of the application is displayed.

W=NO
No warning is displayed.
This option must only be used in “emergencies”, since the relevant applications have no opportunity to terminate under control.

W=YES
A warning is displayed.

Command logging

For reasons of compatibility, the processing acknowledgment is supplied in news BCA0763 if it is positive and in news BCA0762 if it is negative, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA085F and BCA0626 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0627	Shutdown aborted
2	0	BCA085C	BCOUT has already been entered, command is ignored
0	1	BCA0768	Syntax error in command
0	64	BCA07A0	Computer is unknown
0	64	BCA0856	Computer is not included
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCOUT: Close down route

If the route to be closed down leads to a router then, if required, the ARP function must be deactivated separately with the MODIFY-ROUTE-ATTRIBUTES command.

BCOUT for routes
ROUTE = <rout-name 1 .. 8> **,TYPE** = **QUICK** / **NORMAL,** ... **NORMAL,** ... | **W** = **YES** / **NO**

ROUTE=<rout-name 1..8>
Name of the route

TYPE=...
Specifies the type of connection shutdown.

TYPE=QUICK
Connection shutdown occurs in the network.

TYPE=NORMAL, ...
A connection shutdown occurs in the network.

W=...
This operand displays whether or not a warning about the termination of the application is displayed.

W=NO
No warning is displayed.
This option must only be used in “emergencies”, since the relevant applications have no opportunity to terminate under control.

W=YES
A warning is displayed.

Command logging

For reasons of compatibility, the processing acknowledgment is supplied in news BCA0763 if it is positive and in news BCA0762 if it is negative, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA0853 and BCA0626 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0627	Shutdown aborted
2	0	BCA085C	BCOUT has already been entered, command is ignored
0	1	BCA0768	Syntax error in command
0	64	BCA07A0	Route is unknown
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCSET: Set diagnostics and maintenance parameters

Using the BCSET command, you set or modify diagnostics and maintenance parameters.This command is reserved for the systems engineer, system developer or diagnostics engineer; it is used for software maintenance purposes.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x	x	x		

List of valid command sources

BCSET: Change trace lengths

BCSET Change trace length

TRACE = (**LENGTH =** (...))

LENGTH = (**PORT** , ...) / (**TRANS** , ...) / (**VLAN-DEVICE** , ...) / (**VLAN-LINE** , ...)

| **PORT** , ...

| | **I** = **132** / <integer 1 .. 3840>

| | ,**O** = **132** / <integer 1 .. 3840>

| | ,**LINE** = *all / <line-name 1 .. 8>

| **TRANS** , ...

| | **I** = **64** / <integer 1 .. 3840>

| | ,**O** = **64** / <integer 1 .. 3840>

| **VLAN-DEVICE** , ...

| | **I** = **132** / <integer 1 .. 3840>

| | ,**O** = **132** / <integer 1 .. 3840>

| | ,**DEVICE** = *all / <device-name 1 .. 8>

| **VLAN-LINE** , ...

| | **I** = **132** / <integer 1 .. 3840>

| | ,**O** = **132** / <integer 1 .. 3840>

| | ,**LINE** = *all / <device-name 1 .. 8>

TRACE=(LENGTH=(...))
The trace lengths are changed.

LENGTH=(...)
The maximum lengths for data to be traced are changed.

LENGTH=(PORT,...)
The action is executed for the port trace identified with LINE. If LINE is not specified, the action is executed for all ports.

I=<integer 1..3840>
Trace lengths to be set for input.
Default: 132

O=<integer 1..3840>
Trace lengths to be set for output.
Default: 132

LINE=...
LINE specifies the port traces (DCM.BCAM.PORT.<line-name> or DCM.PORT.V-PORT.<line-name>) for which the maximum length is changed.

LINE= *all
The maximum length is changed for all port traces.

LINE=<line-name 1..8>
Identifies the selected port trace.

LENGTH=(TRANS,...)
The action is executed for the traces DCM.BCAM.TRANS, DCM.BCAM.LOC, and DCM.BCAM.LOOPBACK.

I=<integer 1..3840>
Trace length to be set for input.
Default: 64

O=<integer 1..3840>
Trace length to be set for output.
Default: 64

LENGTH=(VLAN-DEVICE,...)
The action is executed for the port trace defined with DEVICE. If DEVICE is not specified, the action is executed for all ports.

I=<integer 1..3840>
Trace length to be set for input.
Default: 132

O=<integer 1..3840>
Trace length to be set for output.
Default: 132

DEVICE=...
DEVICE specifies the port traces (DCM.BCAM.G-PORT.<device-name>) for which the maximum length is changed.

DEVICE= *all
The maximum length is changed for all port traces.

DEVICE=<device-name 1..8>
Identifies the selected port trace.

LENGTH=(VLAN-LINE,...)
The action is executed for the port trace defined with LINE. If LINE is not specified, the action is executed for all ports.

I=<integer 1..3840>
Trace length to be set for input.
Default: 132

O=<integer 1..3840>
Trace length to be set for output.
Default: 132

LINE=...
LINE specifies the port traces (DCM.BCAM.V-PORT.<line-name>) for which the maximum length is changed.

LINE= *all
The maximum length is changed for all port traces.

LINE=<line-name 1..8>
Identifies the selected port trace.

BCSET: Switch on trace selection

BCSET Activate trace selection or output additional information

TRACE = (**SELECT =** (**ON** , ...))

SELECT = (**ON** , **PORT =** (...)) / (**ON** , **NET =** (...)) / (**ON** , **CON =** (...)) / (**ON** , **TRANS =** (...)) /

(**ON** , **L4 =** (...)) / (**ON** , **IPSEC =** (...)) / (**ON** , **BASIC =** (...)) / (**ON** , **BUF =** (...))

| **PORT =** (...)

| | ,**EVENT =** list-poss(8): **IPORT** / **START-I/O** / **END-I/O** / **OUT-DATA** / **IN-DATA** / **IN** /

| | **IN-BROADCAST/ IBUF** / **I/O-DATA**

| | ,**I/O-TYPE =** list-poss(2): **WRITE** / **READ**

| **NET =** (...)

| | **LINE =** <line-name 1 .. 8>

| | ,**A-LAN** = *all / <x-string 1 .. 12>

| | ,**A-IP** = *all / <composed-name 7 .. 15> / <x-string 1 .. 8> / list-poss(4): <integer 0 .. 255>

| | ,**A-IPV6** = *all / <text 9 .. 45> / <c-string 9 .. 45>

| | ,**A-INT** = *all / <x-string 1 .. 40>

| | ,**ES** = <processor-name 1 .. 8>

| | ,**ROUTE** = <rout-name 1 .. 8>

| | ,**EVENT** = list-poss(7): **ADM** / **SUBPORT** / **INDICATION** / **OUT-DATA** / **IN-DATA** / **FLOW** /

| | **TRANSSHIPMENT**

| **TRANS =** (...) / **CON =** (...) / **L4 =** (...)

| | **APPL** = ([**NEA**] ,<nea-name 1 .. 16> / <c-string 1 .. 16>) /

| | (**OSI** , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>) /

| | (**SOCKET**, <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>)

| | ,**PART** = ([**NEA**] ,<nea-name 1 .. 16> / <c-string 1 .. 16>) /

| | (**OSI** , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>) /

| | (**SOCKET**, <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>)

| | ,**A-LAN** = *all / <x-string 1 .. 12>

| | ,**A-IP** = *all / <composed-name 7 .. 15> / <x-string 1 .. 8> / list-poss(4): <integer 0 .. 255>

| | ,**A-IPV6** = *all / <text 9 .. 45> / <c-string 9 .. 45>

```
        |           |       ,A-INT = *all / <x-string 1 .. 40>
        |           |       ,ES = <processor-name 1 .. 8>
        |           |       ,ROUTE = <rout-name 1 .. 8>
        |       IPSEC = (...)
        |           |       ,A-IP = *all / <composed-name 7 .. 15> / <x-string 1 .. 8> / list-poss(4): <integer 0 .. 255>
        |           |       ,A-IPV6 = *all / <text 9 .. 45> / <c-string 9 .. 45>
        |           |       ,ES = <processor-name 1 .. 8>
        |           |       ,ROUTE = <rout-name 1 .. 8>
        |       BASIC = (...)
        |           |       EVENT = list-poss(3): KA / POST / BOURSE
        |           |       ,PROCESS = list-poss(10): 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / *COMMON
        |           |       ,SLOT-LIMIT = (...)
        |           |               KA-LOW = <x-string 1 .. 2>
        |           |               ,KA-UP = <x-string 1 .. 2>
        |           |               ,POST-LOW = <x-string 1 .. 2>
        |           |               ,POST-UP = <x-string 1 .. 2>
        |       BUF = (...)
        |           |       EVENT = IBUF
TRACE = ( INFO = ( ON , ... ) )
    INFO = ( ON ,TRANS = (...) )
        |       TRANS = (...)
        |           |       INFO = CONGEST-DATA
```

SELECT=(ON,PORT=(...))
The trace selection is switched on for the trace to be defined.

TRACE=(SELECT=(ON,...))
The selection for the port traces (DCM.BCAM.PORT.<line-name> or DCM.PORT.V-PORT.<line-name>) is switched on.

EVENT=...
The values can also be specified as a list (list-poss).
Selection criteria are the following trace event classes (Layer 2 event type):

EVENT=IPORT
Selection criterion is the trace event “IPORT interface”.

EVENT=START-I/O
Selection criterion is the trace event “starting I/O operations”.

EVENT=END-I/O
Selection criterion is the trace event “terminating I/O operations”.

EVENT=OUT-DATA
Selection criterion is the trace event “data output”.

EVENT=IN-DATA
Selection criterion is the trace event “(normal) data input”.

EVENT=IN
Selection criterion is the trace event “data input”.

EVENT=IN-BROADCAST
Selection criterion is the trace event “broadcast input”.

EVENT=IBUF
Selection criterion is the trace event “buffer management call”.

EVENT=I/O-DATA
Selection criterion is the trace event "Data of I/O Operations".

I/O-TYPE=...
The values can also be specified as a list (list-poss).
Selection criteria are the following I/O types:

I/O-TYPE=WRITE
Selection criteria are the "WRITE operations".

I/O-TYPE=READ
Selection criteria are the "READ operations".

SELECT=(ON,NET=(...))
The trace selection for the network trace (DCM.BCAM.NET) is switched on.

LINE=<line-name 1..8>
The selection criterion is the line identified with line-name.
The last line name specified is valid.

A-LAN=...
Selection criterion is the partner Ethernet address. The specification has an additive effect.

A-LAN= *all
Selection criteria are all partner Ethernet addresses.

A-LAN=<x-string 1..12>
Selection criterion is the specified partner Ethernet address.

A-IP=...
Selection criterion is the IP address. The specification has an additive effect.

A-IP= *all
Selection criteria are all IP addresses.

A-IP= <composed-name 7..15> / <x-string 1..8> / list-poss (4): <integer 0..255>
Selection criterion is the specified IP address.

A-IPV6=...
Selection criterion is the IPv6 address. The specification has an additive effect.

A-IPV6= *all
Selection criteria are all IPv6 addresses.

A-IPV6=<text 9..45>/<c-string 9..45>
Selection criterion is the specified IPv6 address.

A-INT=...
Selection criterion is the ISO Internet address. The specification has an additive effect.

A-INT= *all
Selection criteria are all ISO Internet addresses.

A-INT=<x-string 1..40>
Selection criterion is the specified ISO Internet address.

ES=<processor-name 1..8>
Selection criterion is the specified end system. The specification has an additive effect.

ROUTE=<rout-name 1..8>
Selection criterion is the specified route name. The specification has an additive effect.

EVENT=...
The values can also be specified as a list (list-poss).
Selection criteria are one or more of the following event classes
(Layer 3 event type):

EVENT=ADM
Selection criterion is the trace event “INET-ADM interface”.

EVENT=SUBPORT
Selection criterion is the trace event “SUBPORT flow control”.

EVENT=INDICATION
Selection criterion is the trace event “events”.

EVENT=OUT-DATA
Selection criterion is the trace event “data output”.

EVENT=IN-DATA
Selection criterion is the trace event “data input”.

EVENT=FLOW
Selection criterion is the trace event “IPORT flow control”.

EVENT=TRANSSHIPMENT
Selection criterion is the trace event “transshipment” (routing).

SELECT=(ON,TRANS=(...))
The trace selection for the transport traces DCM.BCAM.TRANS and DCM.BCAM.LOC is switched on.

SELECT=(ON,CON=(...))
The trace selection for the connection trace DCM.BCAM.CON is switched on.

SELECT=(ON,L4=(...))
The trace selection for the transport traces and the connection trace is switched on.

APPL=...
Selection criterion is the name of an application in the local processor.
Only the last APPL specification made is valid. A PART specification made simultaneously has a limiting effect.

APPL=([NEA],<nea-name 1..16> / <c-string 1..16>)
Selection criterion is the NEA name of the application in the local processor.
For the NEA name, you use the first eight characters of the application name and the first eight characters of the processor name (one to eight alphanumeric characters in each case, left-justified, and padded with blanks). If the application name is smaller than eight characters, the NEA name must be specified as a C string.
If only the name part containing the NEA name is specified, the part containing the HOST name is derived from the HOST specification when BCAM is started.

APPL=(OSI,<osi-name 1..78> / <c-string 1..78> / <x-string 1..156>)
Selection criterion is the OSI name of the application in the local processor.
(1 to 78 alphanumeric characters)

APPL=(SOCKET,<socket-name 1..78> / <c-string 1..78> / <x-string 1..156>)
Selection criterion is the SOCKET name of the application in the local processor.
(1 to 78 alphanumeric characters)

PART=...
Selection criterion is the partner name.
Only the last partner specification made is valid. A valid APPL specification made simultaneously has a limiting effect. With the PART operand, if no specification is made for nea-name, osi-name, or socket-name, the operand is not evaluated.

PART=([NEA],<nea-name 1..16> / <c-string 1..16>)
Selection criterion is the NEA name of the application in the partner system.
For the NEA name, you use the first eight characters of the application name and the first eight characters of the processor name (one to eight alphanumeric characters in each case, left-justified, and padded with blanks). If the application name is shorter than eight characters, the NEA name must be specified as a C string.

PART=(OSI,<osi-name 1..78> / <c-string 1..78> / <x-string 1..156>)
Selection criterion is the OSI name of the application in the partner system.
(1 to 78 alphanumeric characters)

PART=(SOCKET,<socket-name 1..78> / <c-string 1..78> / <x-string 1..156>)
Selection criterion is the SOCKET name of the application in the partner system.
(1 to 78 alphanumeric characters)

A-LAN=...
Selection criterion is the partner Ethernet address. The specification has an additive effect.

A-LAN= *all
Selection criteria are all partner Ethernet addresses.

A-LAN=<x-string 1..12>
Selection criterion is the specified partner Ethernet address.

A-IP=...
Selection criterion is the IP address. The specification has an additive effect.

A-IP= *all
Selection criteria are all IP addresses.

A-IP=<composed-name 7..15>/<x-string 1..8>/list-poss (4): <integer 0..255>
Selection criterion is the specified IP address.

A-IPV6=...
Selection criterion is the IPv6 address. The specification has an additive effect.

A-IPV6= *all
Selection criteria are all IPv6 addresses.

A-IPV6=<text 9..45>/<c-string 9..45>
Selection criterion is the specified IPv6 address.

A-INT=...
Selection criterion is the ISO Internet address. The specification has an additive effect.

A-INT= *all
Selection criteria are all ISO Internet addresses.

A-INT=<x-string 1..40>
Selection criterion is the specified ISO Internet address.

ES=<processor-name 1..8>
Selection criterion is the specified end system. The specification has an additive effect.

ROUTE=<rout-name 1..8>
Selection criterion is the specified route name. The specification has an additive effect.

SELECT=(ON,IPSEC=(...))
The trace selection for the IPSec trace (DCM.BCAM.IPSEC) is switched on.

A-IP=...
Selection criterion is the IP address. The specification has an additive effect.

A-IP= *all
Selection criteria are all IP addresses.

A-IP=<composed-name 7..15> / <x-string 1..8> / list-poss (4): <integer 0..255>
Selection criterion is the specified IP address.

A-IPV6=...
Selection criterion is the IPv6 address. The specification has an additive effect.

A-IPV6= *all
Selection criteria are all IPv6 addresses.

A-IPV6=<text 9..45>/<c-string 9..45>
Selection criterion is the specified IPv6 address.

ES=<processor-name 1..8>
Selection criterion is the specified end system. The specification has an additive effect.

ROUTE=<rout-name 1..8>
Selection criterion is the specified route name. The specification has an additive effect.

SELECT=(ON,BASIC=(...))
The selection for the basic trace (DCM.BCAM.BASIC) is switched on.

EVENT=...
EVENT is used to specify the trace event as a selection criterion.

EVENT=KA
The selection criterion is the trace event "KA request accepted".

EVENT=POST
The selection criterion is the trace event "Issue KA request".

EVENT=BOURSE
The selection criterion is the trace event "Bourse request accepted.

PROCESS=...
You use PROCESS to specify the KA process as the selection criterion when EVENT=KA is specified.

PROCESS=<n>
The selection criterion is the KA process <n>.
The specification has an additive effect.

PROCESS=*COMMON
The selection criterion is the default KA process.
The specification has an additive effect.

SLOT-LIMITS=(...)
Specifies the limits for the KA process request numbers as the selection criterion when EVENT=KA and EVENT=POST are specified.

KA-LOW=<x-string 1..2>
Lower limit for KA process request numbers when EVENT=KA is specified.

KA-UP=<x-string 1..2>
Upper limit for KA process request numbers when EVENT=KA is specified.

POST-LOW=<x-string 1..2>
Lower limit for KA process request numbers when EVENT=POST is specified.

POST-UP=<x-string 1..2>
Upper limit for KA process request numbers when EVENT=POST is specified.

SELECT=(ON,BUF=(...))
Selection for the buffer management trace (DCM.BCAM.BUF) is activated.

EVENT=...
EVENT is used to specify the trace event as a selection criterion.

EVENT=IBUF
Selection criterion is the trace event “IBUF interface”.
The specification has an additive effect.

INFO=(ON,TRANS=(...))
The output of additional information is activated for the transport trace

TRANS=(INFO=...)
Information is output for the transport trace.

INFO=...
The information that is to be output is controlled via INFO.

INFO=CONGEST-DATA
Additional connection-specific operting parameters and measured values are traced. For example, the round trip time, the useful congestion window and the interface threshold values are output.
Default: CONGEST-DATA is not output.

BCSET: Switch off trace selection

BCSET Switching off trace selection or deactivate output of additional information

TRACE = (**SELECT =** (**OFF** , ...))

SELECT = (**OFF** , *all) / (**OFF** , **PORT =** (...)) / (**OFF** , **NET =** (...)) / (**OFF** , **CON =** (...)) /
(**OFF** , **TRANS =** (...)) / (**OFF** , **L4 =** (...)) / (**OFF** , **IPSEC =** (...)) /
(**OFF** , **BASIC =** (...)) / (**OFF** , **BUF =** (...))

| *all

| **PORT =** (...)

| | *all

| | ,**EVENT =** list-poss(8): **IPORT** / **START-I/O** / **END-I/O** / **OUT-DATA** / **IN-DATA** / **IN** /
IN-BROADCAST / **IBUF** / **I/O-DATA**

| | ,**I/O-TYPE =** list-poss(2): **WRITE** / **READ**

| **NET =** (...)

| | *all

| | **LINE =** <line-name 1 .. 8>

| | ,**A-LAN** = *all / <x-string 1 .. 12>

| | **A-IP** = *all / <composed-name 7 .. 15> / <x-string 1 .. 8> / list-poss(4): <integer 0 .. 255>

| | ,**A-IPV6** = *all / <text 9 .. 45> / <c-string 9 .. 45>

| | ,**A-INT** = *all / <x-string 1 .. 40>

| | ,**ES** = <processor-name 1 .. 8>

| | ,**ROUTE** = <rout-name 1 .. 8>

| | ,**EVENT** = list-poss(7): **ADM** / **SUBPORT** / **INDICATION** / **OUT-DATA** / **IN-DATA** / **FLOW** /
TRANSSHIPMENT

| **TRANS =** (...) / **CON =** (...) / **L4 =** (...)

| | *all

| | ,**APPL** = ([**NEA**] , <nea-name 1 .. 16> / <c-string 1 .. 16>) /
(**OSI** , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>) /
(**SOCKET**, <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>)

| | ,**PART** = ([**NEA**] , <nea-name 1 .. 16> / <c-string 1 .. 16>) /
(**OSI** , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>) /

```
        |           |                    ( SOCKET, <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156> )
        |           |        ,A-LAN = *all / <x-string 1 .. 12>
        |           |        ,A-IP = *all / <composed-name 7 .. 15> / <x-string 1 .. 8> / list-poss(4): <integer 0 .. 255>
        |           |        ,A-IPV6 = *all / <text 9 .. 45> / <c-string 9 .. 45>
        |           |        ,A-INT = *all / <x-string 1 .. 40>
        |           |        ,ES = <processor-name 1 .. 8>
        |           |        ,ROUTE = <rout-name 1 .. 8>
        |       IPSEC = (...)
        |           |        *all
        |           |        ,A-IP = *all / <composed-name 7 .. 15> / <x-string 1 .. 8> / list-poss(4): <integer 0 .. 255>
        |           |        ,A-IPV6 = *all / <text 9 .. 45> / <c-string 9 .. 45>
        |           |        ,ES = <processor-name 1 .. 8>
        |           |        ,ROUTE = <rout-name 1 .. 8>
        |       BASIC = (...)
        |           |        *all
        |           |        EVENT = list-poss(3): KA / POST / BOURSE
        |           |        ,PROCESS = list-poss(10): 1 / 2 / 3 / 4 / 5 / 6 / 7 / 8 / 9 / *COMMON
        |           |        ,SLOT-LIMIT = (...)
        |           |                KA-LOW = <x-string 1 .. 2>
        |           |                , KA-UP = <x-string 1 .. 2>
        |           |                , POST-LOW = <x-string 1 .. 2>
        |           |                , POST-UP = <x-string 1 .. 2>
        |       BUF = (...)
        |           |        *all
        |           |        ,EVENT = IBUF
TRACE = ( INFO = ( OFF , ... ) )
    INFO = ( OFF, TRANS = (...) )
        |       TRANS = (...)
        |           |        INFO = CONGEST-DATA
```

TRACE=(SELECT=(OFF,...))
The trace selection is switched off.

TRACE=(SELECT=(OFF))
All trace selections for all traces are switched off.

SELECT=(OFF,PORT=(...))
The selection for the port traces (DCM.BCAM.PORT.<name> or DCM.PORT.V-PORT.<line-name>) is switched off.

SELECT=(OFF,PORT=())
All trace selections for the port traces are switched off.

EVENT=...
The values can also be specified as a list (list-poss).
Selection criterion are the following trace event classes (Layer 2 event type):

EVENT=IPORT
Selection criterion is the trace event “IPORT interface”.

EVENT=START-I/O
Selection criterion is the trace event “starting I/O operations”.

EVENT=END-I/O
Selection criterion is the trace event “terminating I/O operations”.

EVENT=OUT-DATA
Selection criterion is the trace event “data output”.

EVENT=IN-DATA
Selection criterion is the trace event “(normal) data input”.

EVENT=IN
Selection criterion is the trace event “data input”.

EVENT=IN-BROADCAST
Selection criterion is the trace event “broadcast input”.

EVENT=IBUF
Selection criterion is the trace event “buffer management call”.

EVENT=I/O-DATA
Selection criterion is the trace event "Data of I/O Operations".

I/O-TYPE=...
The values can also be specified as a list (list-poss).
Selection criteria are the following I/O types:

I/O-TYPE=WRITE
Selection criteria are the "WRITE operations".

I/O-TYPE=READ
Selection criteria are the "READ operations".

SELECT=(OFF,NET=(...))
The trace selection for the network trace (DCM.BCAM.NET) is switched off.

SELECT=(OFF,NET=())
All trace selections for the network traces are switched off.

LINE=<line-name 1..8>
Selection criterion is the line identified with line-name.
The last line name specified is valid.

A-LAN=...
Selection criterion is the partner Ethernet address. The specification has an additive effect.

A-LAN= *all
Selection criteria are all partner Ethernet addresses.

A-LAN=<x-string 1..12>
Selection criterion is the specified partner Ethernet address.

A-IP=...
Selection criterion is the IP address. The specification has an additive effect.

A-IP= *all
Selection criteria are all IP addresses.

A-IP=<composed-name 7..15> / **<x-string 1..8> list-poss (4): <integer 0..255>**
Selection criterion is the specified IP address.

A-IPV6=...
Selection criterion is the IPv6 address. The specification has an additive effect.

A-IPV6= *all
Selection criteria are all IPv6 addresses.

A-IPV6=<text 9..45>/<c-string 9..45>
Selection criterion is the specified IPv6 address.

A-INT=...
Selection criterion is the ISO Internet address. The specification has an additive effect.

A-INT= *all
Selection criteria are all ISO Internet addresses.

A-INT=<x-string 1..40>
Selection criterion is the specified ISO Internet address.

ES=<processor-name 1..8>
Selection criterion is the specified end system. The specification has an additive effect.

ROUTE=<rout-name 1..8>
Selection criterion is the specified route name. The specification has an additive effect.

EVENT=...
The values can also be specified as a list (list-poss).
Selection criteria are one or more of the following event classes
(Layer 3 event type):

EVENT=ADM
Selection criterion is the trace event “INET-ADM interface”.

EVENT=SUBPORT
Selection criterion is the trace event “SUBPORT flow control”.

EVENT=INDICATION
Selection criterion is the trace event “events”.

EVENT=OUT-DATA
Selection criterion is the trace event “data output”.

EVENT=IN-DATA
Selection criterion is the trace event “data input”.

EVENT=FLOW
Selection criterion is the trace event “IPORT flow control”.

EVENT=TRANSSHIPMENT
Selection criterion is the trace event “transshipment” (routing).

SELECT=(OFF,TRANS=(...))
The trace selection for the transport traces DCM.BCAM.TRANS and DCM.BCAM.LOC is switched off.

SELECT=(OFF,TRANS=())
All trace selections for the transport traces DCM.BCAM.TRANS and DCM.BCAM.LOC are switched off.

SELECT=(OFF,CON=(...))
The trace selection for the connection trace DCM.BCAM.CON is switched off.

SELECT=(OFF,CON=())
All trace selections for the connection trace DCM.BCAM.CON are switched off.

SELECT=(OFF,L4=(...))
The trace selection for the transport traces and the connection trace is switched off.

SELECT=(OFF,L4=())
All trace selections for the transport traces and the connection trace are switched off.

APPL=
The trace selection is switched off via the application name.

APPL=([NEA],<nea-name 1..16> / <c-string 1..16>)
Selection criterion is the NEA name of the application in the local processor.
For the NEA name, you use the first eight characters of the application name and the first eight characters of the processor name (one to eight alphanumeric characters in each case, left-justified, and padded with blanks). If the application name is shorter than eight characters, the NEA name must be specified as a C string.
If only the name part containing the NEA name is specified, the part containing the HOST name is derived from the HOST specification when BCAM is started.

APPL=(OSI,<osi-name 1..78> / <c-string 1..78> / <x-string 1..156>)
Selection criterion is the OSI name of the application in the local processor.
(1 to 78 alphanumeric characters)

APPL=(SOCKET,<socket-name 1..78> / <c-string 1..78> / <x-string 1..156>)
Selection criterion is the SOCKET name of the application in the local processor.
(1 to 78 alphanumeric characters)

PART=
The trace selection is switched off via the partner name. A valid APPL specification made simultaneously has a limiting effect. With the PART operand, if no specification is made for nea-name, osi-name or socket-name, the operand is not evaluated.

PART=([NEA],<nea-name 1..16> / <c-string 1..16>)
Selection criterion is the NEA name of the application in the partner processor.
For the NEA name, you use the first eight characters of the application name and the first eight characters of the processor name (one to eight alphanumeric characters in each case, left-justified, and padded with blanks). If the application name is shorter than eight characters, the NEA name must be specified as a C string.

PART=(OSI,<osi-name 1..78> / <c-string 1..78> / <x-string 1..156>)
Selection criterion is the OSI name of the application in the partner processor.
(1 to 78 alphanumeric characters)

PART=(SOCKET,<socket-name 1..78> / <c-string 1..78> / <x-string 1..156>)
Selection criterion is the SOCKET name of the application in the partner processor.
(1 to 78 alphanumeric characters)

A-LAN=...
The trace selection using the partner Ethernet address as the selection criterion is switched off.

A-LAN= *all
Selection criteria are all partner Ethernet addresses.

A-LAN=<x-string 1..12>
Selection criterion is the specified partner Ethernet address.

A-IP=...
The trace selection using the IP address as the selection criterion is switched off.

A-IP= *all
Selection criteria are all IP addresses.

A-IP=<composed-name 7..15>/<x-string 1..8>/list-poss (4): <integer 0..255>
Selection criterion is the specified IP address.

A-IPV6=...
Selection criterion is the IPv6 address. The specification has an additive effect.

A-IPV6= *all
Selection criteria are all IPv6 addresses.

A-IPV6=<text 9..45>/<c-string 9..45>
Selection criterion is the specified IPv6 address.

A-INT=...
The trace selection using the ISO Internet address as the selection criterion is switched off.

A-INT= *all
Selection criteria are all ISO Internet addresses.

A-INT=<x-string 1..40>
Selection criterion is the specified ISO Internet address.

ES=<processor-name 1..8>
The trace selection using the partner processor name as the selection criterion is switched off.

ROUTE=<rout-name 1..8>
The trace selection using the route name as the selection criterion is switched off.

SELECT=(OFF,IPSEC=(...))
The trace selection for the IPSec trace (DCM.BCAM.IPSEC) is switched off.

SELECT=(OFF,IPSEC=())
All trace selections for the IPSec trace are switched off.

A-IP=...
Selection criterion is the IP address. The specification has an additive effect.

A-IP= *all
Selection criteria are all IP addresses.

A-IP=<composed-name 7..15>/<x-string 1..8>/ list-poss (4): <integer 0..255>
Selection criterion is the specified IP address.

A-IPV6=...
Selection criterion is the IPv6 address. The specification has an additive effect.

A-IPV6= *all
Selection criteria are all IPv6 addresses.

A-IPV6=<text 9..45>/<c-string 9..45>
Selection criterion is the specified IPv6 address.

ES=<processor-name 1..8>
Selection criterion is the specified end system. The specification has an additive effect.

ROUTE=<rout-name 1..8>
Selection criterion is the specified route name. The specification has an additive effect.

SELECT=(OFF,BASIC=(...))
The selection for the basic trace (DCM.BCAM.BASIC) is switched off.

SELECT=(OFF,BASIC=())
All trace selections for the basic trace are switched off.

EVENT=...
EVENT is used to specify the trace event as a selection criterion.

EVENT=KA
The selection criterion is the trace event "KA request accepted".

EVENT=POST
The selection criterion is the trace event "Issue KA request".

EVENT=BOURSE
The selection criterion is the trace event "Bourse request accepted.

PROCESS=...
You use PROCESS to specify the KA process as the selection criterion when EVENT=KA is specified.

PROCESS=<n>
The selection criterion is the KA process <n>.
The specification has an additive effect.

PROCESS=*COMMON
The selection criterion is the default KA process.
The specification has an additive effect.

SLOT-LIMIT=(...)
Specifies the limits for the KA process request numbers as the selection criterion when EVENT=KA and EVENT=POST are specified.

KA-LOW=<x-string 1..2>
Lower limit for KA process request numbers when EVENT=KA is specified..

KA-UP=<x-string 1..2>
Upper limit for KA process request numbers when EVENT=KA is specified.

POST-LOW=<x-string 1..2>
Lower limit for KA process request numbers when EVENT=POST is specified.

POST-UP=<x-string 1..2>
Upper limit for KA process request numbers when EVENT=POST is specified.

SELECT=(OFF,BUF=(...))
Selection for the buffer management trace is deactivated.

SELECT=(OFF,BUF=())
All trace selections for the buffer management trace are deactivated.

EVENT=...
EVENT is used to specify the trace event as a selection criterion.

EVENT=IBUF
Selection criterion is the trace event “IBUF interface”.
The specification has an additive effect.

TRACE=(INFO=(OFF,...))
The trace information will be switched off .

TRACE=(INFO=(OFF))
All trace information for all traces will be switched off.

INFO=(OFF,TRANS=(...))
The output of additional information for the transport trace is deactivated.

TRANS=(INFO=...)
No information is output for the transport traces.

INFO=...
The additional information that is no longer output is controlled via INFO.

INFO=CONGEST-DATA
Information on overloads is no longer output.

BCSET: Set diagnostic operands

BCSET Setting diagnostic operands

ERROR = *unchanged / (**ON** , ...) / (**OFF** , ...)

(**ON** , ...)

| **REASON** = *none / list-poss(10): **BS2-SS** / **BOURSE-SS** / **TIMER-SS** / **SIGNAL-SS** /

| **CONTINGENCY-SS** / **SLOTPOOL-SS** / **TASK-SS** / **USER-TIMEOUT** / **MEMORY-SS** /

| **DEVICE-SS**

| ,**ACTION** = *none / list-poss(2): **MSG** / **DUMP**

(**OFF** , ...)

| **REASON** = (**BS2-SS** , **USER-TIMEOUT**) /

| list-poss(10): **BS2-SS** / **BOURSE-SS** / **TIMER-SS** / **SIGNAL-SS** /

| **CONTINGENCY-SS** / **SLOTPOOL-SS** / **TASK-SS** / **USER-TIMEOUT** / **MEMORY-SS** /

| **DEVICE-SS**

| ,**ACTION** = (**MSG** , **DUMP**) / list-poss(2): **MSG** / **DUMP**

,**CELL-DOUBLING** = *unchanged / **ON** / **OFF**

,**DISCON-RETARDING** = *unchanged / **ON** / **OFF**

,**APPL-CLOSE-MSG** = *unchanged / **ON** / **OFF**

,**NET-ENTRY-CHECK =** *unchanged / **ON** / **OFF**

,**ACCEPT-MSG =** *unchanged / **ON** / **OFF**

ERROR=...
ERROR controls the “error response” function.

ERROR= *unchanged
The previous setting remains unchanged.

ERROR=(ON,...)
An error response is switched on.

REASON=...
Specifies the reason why the error response – defined in the ACTION operand – is to be made.
The values can also be specified as a list (list-poss).

REASON= *none
No (additional) specification of the reason for the error response.

REASON=BS2-SS
The reason for the error response lies in the use of a BS2000 interface.

REASON=BOURSE-SS
The reason for the error response lies in the use of the BS2000 bourse interface.

REASON=TIMER-SS
The reason for the error response lies in the use of the BS2000 timer interface.

REASON=SIGNAL-SS
The reason for the error response lies in the use of the BS2000 signal interface.

REASON=CONTINGENCY-SS
The reason for the error response lies in the use of the BS2000 CONTINGENCY interface.

REASON=SLOTPOOL-SS
The reason for the error response lies in the use of the BS2000 slotpool interface.

REASON=TASK-SS
The reason for the error response lies in the use of the BS2000 task interface.

REASON=USER-TIMEOUT
The reason for the error response is a time-out while waiting for the user call to be processed under the BCAM task.

REASON=MEMORY-SS
The reason for the error response lies in the use of the BS2000 memory interface.

REASON=DEVICE-SS
The reason for the error response lies in the use of the BS2000 device interface.

ACTION=...
Defines the action to be taken in response to the errors specified with REASON.The values can also be specified as a list (list-poss).

ACTION= *none
No error response is triggered.
The values can also be specified as a list (list-poss).

ACTION=DUMP
A dump is created (in the event of an error return code).

ACTION=MSG
Message BCA0777 is generated (even if the return code is ok).

ERROR=(OFF,...)
An error response is switched off.

REASON=...
Specifies the reason for the error response defined in the ACTION operand. Apart from BS2-SS,USER-TIMEOUT, the remaining values can also be specified as a list (list-poss).

REASON=(BS2-SS,USER-TIMEOUT)
The reason for the error response lies in the use of a BS2000 interface or a time-out while waiting for the user call to be processed under the BCAM task.

REASON=BS2-SS
The reason for the error response lies in the use of a BS2000 interface.

REASON=BOURSE-SS
The reason for the error response lies in the use of the BS2000 bourse interface.

REASON=TIMER-SS
The reason for the error response lies in the use of the BS2000 timer interface.

REASON=SIGNAL-SS
The reason for the error response lies in the use of the BS2000 signal interface.

REASON=CONTINGENCY-SS
The reason for the error response lies in the use of the BS2000 CONTINGENCY interface.

REASON=SLOTPOOL-SS
The reason for the error response lies in the use of the BS2000 slotpool interface.

REASON=TASK-SS
The reason for the error response lies in the use of the BS2000 task interface.

REASON=USER-TIMEOUT
The reason for the error response is a time-out while waiting for the user call to be processed under the BCAM task.

REASON=MEMORY-SS
The reason for the error response lies in the use of the BS2000 memory interface .

REASON=DEVICE-SS
The reason for the error response lies in the use of the BS2000 device interface.

ACTION=...
Defines the action to be taken in response to the errors specified with REASON. Apart from MSG,DUMP, both values can also be specified as a list (list-poss).

ACTION=(MSG,DUMP)
All error responses are switched off.

ACTION=DUMP
No dump is created (in the event of an error return code).

ACTION=MSG
Message BCA0777 is not generated (even if the return code is ok).

CELL-DOUBLING=...
Controls the “check for cell-doubling” function.

CELL-DOUBLING= *unchanged
The setting for the function remains unchanged.

CELL-DOUBLING=ON
The “checking the use of cell-doubling” function is switched on, i.e. if cell-doubling is detected, a system crash is generated.

CELL-DOUBLING=OFF
The “checking the use of cell-doubling” function is switched off.

DISCON-RETARDING=...
Controls the “retarded transport connection shutdown” function.

DISCON-RETARDING= *unchanged
The setting for the function remains unchanged.

DISCON-RETARDING=ON
The “retarded transport connection shutdown” function is switched on, i.e. a transport connection shutdown initiated by the partner is delayed until the data input queue is processed.

DISCON-RETARDING=OFF
The “retarded transport connection shutdown” function is switched off.

APPL-CLOSE-MSG=...
Controls the “APPLICATION CLOSED message” function.

APPL-CLOSE-MSG= *unchanged
The setting for the function remains unchanged.

APPL-CLOSE-MSG=ON
The “APPLICATION CLOSED message” function is switched on, i.e. console message BCA088F is generated.

APPL-CLOSE-MSG=OFF
The “APPLICATION CLOSED message” function is switched off.

NET-ENTRY-CHECK=...
Controls the “network interface check” function.

NET-ENTRY-CHECK= *unchanged
The setting for the function remains unchanged.

NET-ENTRY-CHECK=ON
The “network interface check” function is switched on, i.e. the Network Layer discards the data of a route which arrive on an incorrect network interface.

NET-ENTRY-CHECK=OFF
The “network interface check” function is switched off.

ACCEPT-MSG=...
Controls the “ACCEPT message” function.

ACCEPT-MSG= *unchanged
The setting for the function remains unchanged.

ACCEPT-MSG=ON
The “ACCEPT message” function is switched on, i.e. console message BCA0765 is generated for commands from the SOF or command files.

ACCEPT-MSG=OFF
The “ACCEPT message” function is switched off.

Command logging

For reasons of compatibility, the processing acknowledgment is supplied in news BCA0763 if it is positive and in news BCA0762 if it is negative, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA062C, BCA084B and BCA0849 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA062D	No parameters were changed
0	1	BCA0768	Syntax error in command
0	64	BCA07A0	Processor is unknown
0	64	BCA07A1	Route is unknown
0	64	BCA07A2	Line is unknown
0	64	BCA07A5	VLAN device is unknown
0	64	BCA07AA	VLAN line is unknown
0	64	BCA083A	BCAM-LTS is not active
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	/BCAM is not active

BCSHOW: Display BCAM information

This command can be used to request the output of BCAM information on the console.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x		x	x	

List of valid command sources

BCSHOW Operand overview

MAXMSG# = <integer 1 .. 2147483647>

,**HOST** = <host-name 1 .. 8> / **LINE** = <line-name 1 .. 8> / **NODE** = <node-name 1 .. 8> /

,**PROCESSOR** = <processor-name 1 .. 8> / **ROUTE** = <rout-name 1 .. 8> / **GROUP** = <group-name 1 .. 8> /

,**APPLICATION** = <application-name> / ([**NEA**] , <nea-name>) / (**OSI** , <osi-name>) /

(**SOCKET**, <socket-name>)

,**SHOW** = *none / list-poss (11): **HOST** / **LINE** / **NODE** / **ROUTE** / **APPLICATION** / **TSAP-OPEN** /

CONNECTION / **BCAM** / **LIMITS** / **TIMES** / **PROCESSOR**

,**RANGE** = ***ALL** / list-poss (6): **LOCAL** / ***PROCESSOR** / ***NEXT-HOP** / **REMOTE** / ***CHANGED** / ***IS-ROUTE** /

,**INFO** = list-poss (3): **LONG** / **SHORT** / **TIMES**

,**SELECT** = *none / (...)

(...)

| **APP#** = *none / <integer 0 .. 2147483647> / <x-string 1 .. 8>

| ,**TSN** = *none / <c-string 1 .. 4> / <x-string 1 .. 8>

| ,**TID** = *none / <x-string 1 .. 8>

| ,**CON#** = *none / <integer 0 .. 2147483647> / <x-string 1 .. 8>

| ,**FUNCT** = *none / **NEA** / **ISO** / **STREAMS**

| ,**IPSEC** = *none / **NO** / **YES**

| ,**ENDSYSTEM** = *none / <processor-name 1 .. 8>

| ,**PROT** = *none / ***ALL** / list-poss (3): **LOCAL** / **ISO4** / **TCP**

| ,**PARTNER** = *none / <application-name> / ([**NEA**] , <nea-name>) / (**OSI** , <osi-name>) /

| (**SOCKET**, <socket-name>)

| ,**PORT#** = **OWN** = <integer 1 .. 65535> , **PART** = <integer 1 .. 65535>

BCSHOW: BCAM info on hosts

BCSHOW for a named host

HOST = <host-name 1 .. 8>

,**SHOW** = *none / list-poss (7): **LINE** / **NODE** / **ROUTE** / **APPLICATION** / **TSAP-OPEN** /
CONNECTION / **PROCESSOR**

,**RANGE** = ***ALL** / list-poss (3): **LOCAL** / **REMOTE** / ***CHANGED**

,**STATE-OF-ROUTE** = ***ANY** / list-poss (5): **EXCLUDED** / **WAITING-FOR-ACTIVATION** / **ACTIVE** /
WAITING-FOR-DEACTIVATION / **INACTIVE**

,**TRANSFER =** ***ANY** / list-poss (4): **READY** / **WAITING-FOR-INITIALISATION** /
WAITING-FOR-READY / **NOT-READY**

,**INFO** = list-poss (3): **SHORT** / **LONG** / **TIMES**

,**SELECT** = *none / (...)

(...)

| **APP#** = *none / <integer 0 .. 2147483647> / <x-string 1 .. 8>

| ,**TSN** = *none / <c-string 1 .. 4> / <x-string 1 .. 8>

| ,**TID** = *none / <x-string 1 .. 8>

| ,**FUNCT** = *none / **NEA** / **ISO** / **STREAMS**

| ,**PORT#** = *none / (...)

| (...)

| | **OWN** = <integer 1 .. 65535>

| | ,**PART** = <integer 1 .. 65535>

| ,**CON#** = *none / <integer 0 .. 2147483647> / <x-string 1 .. 8>

| ,**IPSEC** = *none / **NO** / **YES**

| ,**VLAN-ID** = *none / ***ALL** / <integer 2 .. 4094>

| ,**ENDSYSTEM** = *none / <processor-name 1 .. 8>

| ,**PROT** = *none / ***ALL** / list-poss (3): **LOCAL** / **ISO4** / **TCP**

| ,**PARTNER** = *none / ([**NEA**] , <nea-name 1 .. 16> / <c-string 1 .. 16>) /
(**OSI** , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>) /
(**SOCKET**, <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>)

,**MAXMSG#** = <integer 1 .. 2147483647>

BCSHOW for all available (virtual) hosts

SHOW = **HOST**

,**MAXMSG#** = <integer 1 .. 2147483647>

HOST=<host-name 1..8>
Using HOST, you specify the host name for which information is displayed.
The information is displayed with console message BCA08E0.

SHOW=...
Using SHOW, the additional information to be displayed is specified.
The values can also be specified as a list (list-poss).

SHOW= *none
No additional information is displayed.

SHOW=HOST
Information is displayed about all available (virtual) hosts.
The information is displayed with console message BCA08E0.

SHOW=LINE
Information is displayed about the lines to this host.
The information is displayed with console message BCA08ED.

SHOW=NODE
Information is displayed about the LAN nodes, which are connected to this host.
The information is displayed with the console messages BCA08CB and BCA08EB.

SHOW=ROUTE
Information is displayed about the routes which lead to this host.
The information is displayed with the console messages BCA08E6 and BCA08EE.

SHOW=APPLICATION
Information is displayed about applications which are set up in this host.
The information is displayed with console message BCA08E7.

SHOW=TSAP-OPEN
Information is displayed about the opening of applications which are set up in this host.The information is displayed with console message BCA08E2.

SHOW=CONNECTION
Information is displayed about connections which lead from this host.
The information is displayed with console messages BCA08A1, BCA08A2 BCA08A7, BCA08A8 or BCA08E8 (depending on the INFO operand).

SHOW=PROCESSOR
Information is displayed about the processors which can be accessed from this host.The information is to be displayed with console message BCA08EA.

RANGE=...
Using RANGE, you specify the routes or processors for which information is displayed.Apart from the value *ALL, the remaining values can also be specified as a list (list-poss).

RANGE=*ALL
Information is displayed about all routes leading to this host, and the related processors.

RANGE=LOCAL
Information is displayed about all local routes leading to this host, and the related processors.
Routes which refer to the direct connections to the host or to a LAN node of the host are defined as local.

RANGE=REMOTE
Information is displayed about all remote routes leading to this host, and the related processors.
All routes which do not describe any direct connections to the host or to a LAN node of the host are defined as remote.

RANGE=*CHANGED
Information is displayed about all changed routes leading to this host. All routes which no longer correspond to their initial definition are regarded as changed.

STATE-OF-ROUTE=...
STATE-OF-ROUTE defines the permitted administration state of routes for which information is displayed.
Apart from the value *ANY, the remaining values can also be specified as a list (list-poss).

STATE-OF-ROUTE=*ANY
The routes may have any administration state.

STATE-OF-ROUTE=EXCLUDED
The routes must have the administration state EXCLUDED.

STATE-OF-ROUTE=WAITING-FOR-ACTIVATION
The routes must have the administration state WAITING-FOR-ACTIVATION.

STATE-OF-ROUTE=ACTIVE
The routes must have the administration state ACTIVE.

STATE-OF-ROUTE=WAITING-FOR-DEACTIVATION
The routes must have the administration state WAITING-FOR-DEACTIVATION.

STATE-OF-ROUTE=INACTIVE
The routes must have the administration state INACTIVE.

TRANSFER=...
TRANSFER specifies which transfer state the routes may have in order for information to be displayed.
Apart from the value *ANY, the remaining values can also be specified as a list (list-poss).

TRANSFER=*ANY
The routes can have any transfer state.

TRANSFER=READY
The routes must have the transfer state “READY-TO-TRANSFER”.

TRANSFER=WAITING-FOR-INITIALISATION
The routes must have the transfer state “WAITING-FOR-INITIALISATION”.

TRANSFER=WAITING-FOR-READY
The routes must have the transfer state “WAITING-FOR-READY-TO-TRANSFER”.

TRANSFER=NOT-READY
The routes must have the transfer state “NOT-READY-TO-TRANSFER”.

INFO=...
Using INFO, you specify which information about connections and/or which special information about routes is displayed.
The values can also be specified as a list (list-poss).

INFO=SHORT
The dynamic information about connections is displayed.
The information is displayed with console message BCA08E8.

INFO=LONG
The static information about connections is displayed.
The information is displayed with console message BCA08A1, BCA08A2, BCA08A7 and BCA08A8.

INFO=TIMES
The route-specific timer values are displayed.
The information is displayed with console message BCA08F6.

SELECT=...
SELECT enables you to select the applications and/or connections for which information is to be displayed.

SELECT= *none
No selection of applications and/or connections for which information is to be displayed is made.

SELECT=(...)
A selection of applications and/or connections for which information is to be displayed is made.

APP#=...
APP# defines the internal (current) application number of the (related) application as a selection criterion for the applications and connections to be displayed.

APP#= *none
Selection criterion for the applications and connections to be displayed is not the internal (current) application number.

APP#=<integer 0..2147483647> / <x-string 1..8>
Selection criterion for the applications and connections to be displayed is the specified internal (current) application number APP#.

TSN=...
TSN defines the TSN of a task, which the (related) application has opened, as the selection criterion for the applications and connections to be displayed.

TSN= *none
Selection criterion for the applications and connections to be displayed is not the TSN of a task.

TSN=<c-string 1..4> / <x-string 1..8>
Selection criterion for the applications and connections to be displayed is the specified TSN.

TID=...
TID defines the task ID of a task, which the (related) application has opened, as a selection criterion for the applications and connections to be displayed.

TID= *none
Selection criterion for the applications and connections to be displayed is not the task ID of a task.

TID=<x-string 1..8>
Selection criterion for the applications and connections to be displayed is the specified task ID.

FUNCT=...
FUNCT defines the interface functionality used by the (related) application as a selection criterion for the applications and connections to be displayed.

FUNCT= *none
Selection criterion for the applications and connections to be displayed is not the interface functionality.

FUNCT=NEA
Selection criterion for the applications and connections to be displayed is the interface functionality NEA service.

FUNCT=ISO
Selection criterion for the applications and connections to be displayed is the interface functionality ISO service.

FUNCT=STREAMS
Selection criterion for the applications and connections to be displayed is the interface functionality SOCKET service.

PORT#=...
PORT# defines Port# or Port#'n as a selection criterion for the applications and connections to be displayed.

PORT#= *none
Selection criterion for the applications and connections to be displayed is not the Port# or Port#'n.

PORT#=(...)
Selection criterion for the applications and connections to be displayed is the specified Port# or Port#'n.

OWN=<integer 1..65535>
Selection criterion for the connections to be displayed is the Port# of the application or the local Port# of the connection.
If Port# 0 is specified, the OWN operand is ignored.

PART=<integer 1..65535>
Selection criterion for the connections to be displayed is the specified partner Port# of the connection.
If Port# 0 is specified, the PART operand is ignored.

CON#=...
CON# defines the internal (current) connection number as a selection criterion for the connections to be displayed.

CON#= *none
Selection criterion for the connections to be displayed is not the internal (current) connection number.

CON#=<integer 0..2147483647> / <x-string 1..8>
Selection criterion for the connections to be displayed is the specified internal (current) connection number CON#.

IPSEC=...
Defines whether the connection can be securely used via IPSec as a selection criterion.

IPSEC= *none
Selection criterion for the connections to be displayed is *not* secure use via IPSec.

IPSEC=NO
Selection criterion for the connections to be displayed is that the connection is not used securely via IPSec.

IPSEC=YES
Selection criterion for the connections to be displayed is that the connection is used securely via IPSec.

VLAN-ID=...
Defines whether the connection is assigned to a VLAN as a selection criterion.

VLAN-ID= *none
Selection criterion for the connections to be displayed is *not* the assignment to a VLAN.

VLAN-ID=*ALL
Selection criterion for the connections to be displayed is the assignment to a VLAN.

VLAN-ID=<integer 2 .. 4094>
Selection criterion for the connections to be displayed is that the connection is assigned to the VLAN with the specified VLAN ID.

ENDSYSTEM=...
Defines the partner processor of the connection as a selection criterion.

ENDSYSTEM= *none
Selection criterion for the connections to be displayed is *not* the partner processor.

ENDSYSTEM=<processor-name 1 .. 8>
Selection criterion for the connections to be displayed is the specified partner processor.

PROT=...
PROT defines the Layer 4 protocol used on the connection as a selection criterion.
Apart from the value *ALL, the remaining values can also be specified as a list (list-poss).

PROT= *none
Selection criterion for the connections to be displayed is not the Layer 4 protocol of the connection.

PROT=*ALL
Selection criteria for the connections to be displayed are all Layer 4 protocols.

PROT=LOCAL
Selection criterion for the connections to be displayed is the Layer 4 protocol local connection.

PROT=ISO4 / **I4**
Selection criterion for the connections to be displayed is the Layer 4 protocol ISO8073 Class 4.

PROT=TCP
Selection criterion for the connections to be displayed is the Layer 4 protocol TCP.

PARTNER=...
PARTNER defines the name of the partner application as a selection criterion.

PARTNER= *none
Selection criterion for the connections to be displayed is not the name of the partner application.

PARTNER=([NEA],<nea-name 1..16> / <c-string 1..16>)
The NEA name of the partner application is the selection criterion for the connections to be displayed. For the NEA name, you use the first eight characters of the application name and the first eight characters of the processor name (one to eight alphanumeric characters in each case, left-justified, and padded with blanks). If the application name is shorter than eight characters, the NEA name must be specified as a C string.
If only the name part containing the NEA name is specified, the part containing the HOST name is derived from the HOST specification when BCAM is started.

PARTNER=(OSI,<osi-name 1..78> / <c-string 1..78> / <x-string 1..156>)
The OSI name of the partner application is a selection criterion for the connections to be displayed.
(1 to 78 alphanumeric characters)

PARTNER=(SOCKET,<socket-name 1..78> / <c-string 1..78> / <x-string 1..156>)
The SOCKET name of the partner application is a selection criterion for the applications to be displayed.
(1 to 78 alphanumeric characters)

MAXMSG#=...
Number of messages to be output for this command

MAXMSG#= *none
By default 50 messages may be output to SYSOUT and 10 displayed on the console.

MAXMSG#=<integer 1 .. 2147483647>
Number of messages which may be output for this command.

> The number of messages issued can be exceeded when information is output because of the restricted output length of a message.
> Multiple messages are frequently output for BCAM objects. Within BCAM these messages are counted as just one message.
> In some cases the message BCA0765 is also issued in order to facilitate the assignment of the output information for the specified command.

Command logging

For reasons of compatibility, the processing acknowledgment is supplied in news BCA0763 if it is positive and in news BCA0762 if it is negative, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA08E6, BCA08EE, BCA08ED, BCA08EB, BCA08EA, BCA08A1, BCA08A2, BCA08E8, BCA08A7, BCA08A8, BCA08E7, BCA08E2, BCA08E0 and BCA08F6 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	BCA0768	Syntax error in command
0	64	BCA07A4	Host does not exist
0	64	BCA08EF	Nothing found to display
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCSHOW: BCAM info on lines

BCSHOW for a named line

LINE = <line-name 1 .. 8>

,**SHOW** = *none / list-poss (4): **NODE** / **ROUTE** / **CONNECTION** / **PROCESSOR**

,**RANGE** = ***ALL** / list-poss (3): **LOCAL** / **REMOTE** / ***CHANGED**

,**STATE-OF-ROUTE** = ***ANY** / list-poss (5): **EXCLUDED** / **WAITING-FOR-ACTIVATION** / **ACTIVE** /
WAITING-FOR-DEACTIVATION / **INACTIVE**

,**TRANSFER =** ***ANY** / list-poss (4): **READY** / **WAITING-FOR-INITIALISATION** / **WAITING-FOR-READY** /
NOT-READY

,**INFO** = list-poss (3): **SHORT** / **LONG** / **TIMES**

,**SELECT** = *none / (...)

(...)

| **APP#** = *none / <integer 0 .. 2147483647> / <x-string 1 .. 8>

| ,**TSN** = *none / <c-string 1 .. 4> / <x-string 1 .. 8>

| ,**TID** = *none / <x-string 1 .. 8>

| ,**FUNCT** = *none / **NEA** / **ISO** / **STREAMS**

| ,**PORT#** = *none / (...)

| (...)

| | **OWN** = <integer 1 .. 65535>

| | ,**PART** = <integer 1 .. 65535>

| ,**CON#** = *none / <integer 0 .. 2147483647> / <x-string 1 .. 8>

| ,**IPSEC** = *none / **NO** / **YES**

| ,**VLAN-ID** = *none / ***ALL** / <integer 2 .. 4094>

| ,**ENDSYSTEM** = *none / <processor-name 1 .. 8>

| ,**PROT** = *none / ***ALL** / list-poss (3): **LOCAL** / **ISO4** / **TCP**

| ,**PARTNER** = *none / ([**NEA**] , <nea-name 1 .. 16> / <c-string 1 .. 16>) /

| (**OSI** , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>) /

| (**SOCKET**, <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>)

,**MAXMSG#** = <integer 1 .. 2147483647>

BCSHOW for all available lines

SHOW = **LINE**

,**MAXMSG#** = <integer 1 .. 2147483647>

LINE=<line-name 1..8>
Using LINE, you specify the name of the line for which information is displayed.
The information is to be displayed with the console message BCA08ED.

SHOW=...
Using SHOW, you specify the additional information for display.
The values can also be specified as a list (list-poss).

SHOW= *none
No additional information is displayed.

SHOW=LINE
Information is displayed about all available lines.
The information is displayed with console message BCA08ED.

SHOW=NODE
Information is displayed about the LAN nodes which are connected to this line.
The information is displayed with console message BCA08EB.

SHOW=ROUTE
Information is displayed about the routes which operate via this line.
The information is displayed with console messages BCA08E6 and BCA08EE.

SHOW=PROCESSOR
Information is displayed about the processors which are accessible via this line.
The information is displayed with console message BCA08EA.

SHOW=CONNECTION
Information is displayed about connections which are operated via this line.
The information is displayed with console messages BCA08A1, BCA08A2, BCA08A7, BCA08A8 or BCA08E8 (depending on the INFO operand).

RANGE=...
Using RANGE, you specify the routes or processors for which information is displayed.Apart from the value *ALL, the remaining values can also be specified as a list (list-poss).

RANGE=*ALL
Information is displayed about all routes which operate via this line, and the related processors.

RANGE=LOCAL
Information is displayed about all local routes which operate via this line, and the related processors.
All routes which refer to the direct connections to the host or to a LAN node of the host are defined as local.

RANGE=REMOTE
Information is displayed about all remote routes which operate via this line, and the related processors.
All routes which do not describe any direct connections to the host or to a LAN node of the host are defined as remote.

RANGE=*CHANGED
Information is displayed about all changed routes which lead to this host. All routes which no longer correspond to their initial definition are regarded as changed.

STATE-OF-ROUTE=...
STATE-OF-ROUTE defines the permitted administration state of routes for which information is displayed.
Apart from the value *ANY, the remaining values can also be specified as a list (list-poss).

STATE-OF-ROUTE=*ANY
The routes may have any administration state.

STATE-OF-ROUTE=EXCLUDED
The routes must have the administration state EXCLUDED.

STATE-OF-ROUTE=WAITING-FOR-ACTIVATION
The routes must have the administration state WAITING-FOR-ACTIVATION.

STATE-OF-ROUTE=ACTIVE
The routes must have the administration state ACTIVE.

STATE-OF-ROUTE=WAITING-FOR-DEACTIVATION
The routes must have the administration state WAITING-FOR-DEACTIVATION.

STATE-OF-ROUTE=INACTIVE
The routes must have the administration state INACTIVE.

TRANSFER=...
TRANSFER specifies which transfer state the routes may have in order for information to be displayed.
Apart from the value *ANY, the remaining values can also be specified as a list (list-poss).

TRANSFER=*ANY
The routes can have any transfer state.

TRANSFER=READY
The routes must have the transfer state “READY-TO-TRANSFER”.

TRANSFER=WAITING-FOR-INITIALISATION
The routes must have the transfer state “WAITING-FOR-INITIALISATION”.

TRANSFER=WAITING-FOR-READY
The routes must have the transfer state “WAITING-FOR-READY-TO-TRANSFER”.

TRANSFER=NOT-READY
The routes must have the transfer state “NOT-READY-TO-TRANSFER”.

INFO=...
Using INFO, you specify which information about connections and/or which special information about routes is displayed.
The values can also be specified as a list (list-poss).

INFO=SHORT
The dynamic information about connections is displayed.
The information is displayed with console message BCA08E8.

INFO=LONG
The static information about connections is displayed.
The information is displayed with console messages BCA08A1, BCA08A2, BCA08A7 and BCA08A8.

INFO=TIMES
The route-specific timer values are displayed.
The information is displayed with console message BCA08F6.

SELECT=...
SELECT enables you to select the applications and/or connections for which information is to be displayed.

SELECT= *none
No selection of applications and/or connections for which information is to be displayed is made.

SELECT=(...)
A selection of applications and/or connections for which information is to be displayed is made.

APP#=...
APP# defines the internal (current) application number of the (related) application for the applications and connections to be displayed.

APP#= *none
Selection criterion for the applications and connections to be displayed is not the internal (current) application number.

APP#=<integer 0..2147483647> / <x-string 1..8>
Selection criterion for the applications and connections to be displayed is the specified internal (current) application number APP#.

TSN=...
TSN defines the TSN of a task, which the (related) application has opened, as a selection criterion for the applications and connections to be displayed.

TSN= *none
Selection criterion for the applications and connections to be displayed is not the TSN of a task.

TSN=<c-string 1..4> / <x-string 1..8>
Selection criterion for the applications and connections to be displayed is the specified TSN.

TID=...
TID defines the task ID of a task, which the (related) application has opened, as a selection criterion for the applications and connections to be displayed.

TID= *none
Selection criterion for the applications and connections to be displayed is not the task ID of a task.

TID=<x-string 1..8>
Selection criterion for the applications and connections to be displayed is the specified task ID.

FUNCT=...
FUNCT defines the interface functionality used by the (related) application as a selection criterion for the applications and connections to be displayed.

FUNCT= *none
Selection criterion for the applications and connections to be displayed is not the interface functionality.

FUNCT=NEA
Selection criterion for the applications and connections to be displayed is the interface functionality NEA service.

FUNCT=ISO
Selection criterion for the applications and connections to be displayed is the interface functionality ISO service.

FUNCT=STREAMS
Selection criterion for the applications and connections to be displayed is the interface functionality SOCKET service.

PORT#=...
PORT# defines Port# or Port#'n as a selection criterion for the applications and connections to be displayed.

PORT#= *none
Selection criterion for the applications and connections to be displayed is not the Port# or Port#'n.

PORT#=(...)
Selection criterion for the applications and connections to be displayed are the specified Port# or Port#'n.

OWN=<integer 1..65535>
Selection criterion for the connections to be displayed is the Port# of the application or the local Port# of the connection.
If Port# 0 is specified, the OWN operand is ignored.

PART=<integer 1..65535>
Selection criterion for the connections to be displayed is the specified partner Port# of the connection.
If Port# 0 is specified, the PART operand is ignored.

CON#=...
CON# defines the internal (current) connection number as the selection criterion for the connections to be displayed.

CON#= *none
Selection criterion for the connections to be displayed is not the internal (current) connection number.

CON#=<integer 0..2147483647> / **<x-string 1..8>**
Selection criterion for the connections to be displayed is the specified internal (current) connection number CON#.

IPSEC=...
Defines whether the connection can be securely used via IPSec as a selection criterion.

IPSEC= *none
Selection criterion for the connections to be displayed is *not* secure use via IPSec.

IPSEC=NO
Selection criterion for the connections to be displayed is that the connection is not used securely via IPSec.

IPSEC=YES
Selection criterion for the connections to be displayed is that the connection is used securely via IPSec.

VLAN-ID=...
Defines whether the connection is assigned to a VLAN as a selection criterion.

VLAN-ID= *none
Selection criterion for the connections to be displayed is *not* the assignment to a VLAN.

VLAN-ID=*ALL
Selection criterion for the connections to be displayed is the assignment to a VLAN.

VLAN-ID=<integer 2 .. 4094>
Selection criterion for the connections to be displayed is that the connection is assigned to the VLAN with the specified VLAN ID.

ENDSYSTEM=...
Defines the partner processor of the connection as a selection criterion.

ENDSYSTEM= *none
Selection criterion for the connections to be displayed is *not* the partner processor.

ENDSYSTEM=<processor-name 1 .. 8>
Selection criterion for the connections to be displayed is the specified partner processor.

PROT=...
PROT defines the Layer 4 protocol which is used on the connection as a selection criterion.
Apart from the value *ALL, the remaining values can also be specified as a list (list-poss).

PROT= *none
Selection criterion for the connections to be displayed is not the Layer 4 protocol of the connection.

PROT=*ALL
Selection criteria for the connections to be displayed are all Layer 4 protocols.

PROT=LOCAL
Selection criterion for the connections to be displayed is the Layer 4 protocol local connection.

PROT=ISO4 / **I4**
Selection criterion for the connections to be displayed is the Layer 4 protocol ISO8073 Class 4.

PROT=TCP
Selection criterion for the connections is the Layer 4 protocol TCP.

PARTNER=...
PARTNER defines the name of the partner application as a selection criterion.

PARTNER= *none
Selection criterion for the connections to be displayed is not the name of the partner application.

PARTNER=([NEA],<nea-name 1..16> / **<c-string 1..16>)**
The NEA name of the partner application is the selection criterion for the connections to be displayed. For the NEA name, you use the first eight characters of the application name and the first eight characters of the processor name (one to eight alphanumeric characters in each case, left-justified, and padded with blanks). If the application name is shorter than eight characters, the NEA name must be specified as a C string.
If only the name part containing the NEA name is specified, the part containing the HOST name is derived from the HOST specification when BCAM is started.

PARTNER=(OSI,<osi-name 1..78> / **<c-string 1..78>)** / **<x-string 1..156>)**
The OSI name of the partner application is the selection criterion for the connections to be displayed.
(1 to 78 alphanumeric characters)

PARTNER=(SOCKET,<socket-name 1..78> / <c-string 1..78> / <x-string 1..156>)
The SOCKET name of the partner application is a selection criterion for the connections to be specified. (1 to 78 alphanumeric characters)

MAXMSG#=...
Number of messages to be output for this command

MAXMSG#= *none
By default 50 messages may be output to SYSOUT and 10 displayed on the console.

MAXMSG#=<integer 1 .. 2147483647>
Number of messages which may be output for this command.

> The number of messages issued can be exceeded when information is output because of the restricted output length of a message.
> Multiple messages are frequently output for BCAM objects. Within BCAM these messages are counted as just one message.
> In some cases the message BCA0765 is also issued in order to facilitate the assignment of the output information for the specified command.

Command logging

For reasons of compatibility, the processing acknowledgment is supplied in news BCA0763 if it is positive and in news BCA0762 if it is negative, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA08E6, BCA08EE, BCA08ED, BCA08EB, BCA08EA, BCA08A1, BCA08A2, BCA08E8, BCA08A7, BCA08A8 and BCA08E6 may also appear.
A description of the error messages that may be output during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	BCA0768	Syntax error in command
0	64	BCA07A2	Line is unknown
0	64	BCA08EF	Nothing found to display
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCSHOW: BCAM info on LAN nodes

BCSHOW for a named LAN node

NODE = <node-name 1 .. 8>

,**SHOW** = *none / list-poss (4): **LINE** / **ROUTE** / **CONNECTION** / **PROCESSOR**

,**RANGE** = ***ALL** / list-poss (3): **LOCAL** / **REMOTE** / ***CHANGED**

,**STATE-OF-ROUTE** = ***ANY** / list-poss (5): **EXCLUDED** / **WAITING-FOR-ACTIVATION** / **ACTIVE** /
WAITING-FOR-DEACTIVATION / **INACTIVE**

,**TRANSFER =** ***ANY** / list-poss (4): **READY** / **WAITING-FOR-INITIALISATION** / **WAITING-FOR-READY** /
NOT-READY

,**INFO** = list-poss (3): **SHORT** / **LONG** / **TIMES**

,**SELECT** = *none / (...)

(...)

| **APP#** = *none / <integer 0 .. 2147483647> / <x-string 1 .. 8>

| ,**TSN** = *none / <c-string 1 .. 4> / <x-string 1 .. 8>

| ,**TID** = *none / <x-string 1 .. 8>

| ,**FUNCT** = *none / **NEA** / **ISO** / **STREAMS**

| ,**PORT#** = *none / (...)

| (...)

| | **OWN** = <integer 1 .. 65535>

| | ,**PART** = <integer 1 .. 65535>

| ,**CON#** = *none / <integer 0 .. 2147483647> / <x-string 1 .. 8>

| ,**IPSEC** = *none / **NO** / **YES**

| ,**VLAN-ID** = *none / ***ALL** / <integer 2 .. 4094>

| ,**ENDSYSTEM** = *none / <processor-name 1 .. 8>

| ,**PROT** = *none / ***ALL** / list-poss (3): **LOCAL** / **ISO4** / **TCP**

| ,**PARTNER** = *none / ([**NEA**] , <nea-name 1 .. 16> / <c-string 1 .. 16>) /

| (**OSI** , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>) /

| (**SOCKET**, <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>)

,**MAXMSG#** = <integer 1 .. 2147483647>

BCSHOW for all available LAN nodes

SHOW = **NODE**

,**MAXMSG#** = <integer 1 .. 2147483647>

NODE=<node-name 1..8>
Using NODE, you specify the name of the LAN node for which information is displayed.The information is displayed with console message BCA08EB.

SHOW=...
Using SHOW, you specify the additional information for display.
The values can also be specified as a list (list-poss).

SHOW= *none
No additional information is displayed.

SHOW=NODE
Information is displayed about all available LAN nodes.
The information is displayed with the console messages BCA08CB and BCA08EB.

SHOW=LINE
Information is displayed about the lines which lead to this LAN node.
The information is displayed with console message BCA08ED.

SHOW=ROUTE
Information is displayed about the routes which lead to this LAN node.
The information is displayed with the console messages BCA08E6 and BCA08EE.

SHOW=CONNECTION
Information is displayed about connections which operate via this LAN node.
The information is displayed with console messages BCA08A1, BCA08A2, BCA08A7, BCA08A8 or BCA08E8 (depending on the INFO operand).

SHOW=PROCESSOR
Information is displayed about the processors which can be accessed via this LAN node.
The information is displayed with console message BCA08EA.

RANGE=...
Using RANGE, you specify the routes or processors for which information is displayed.Apart from the value *ALL, the remaining values can also be specified as a list (list-poss).

RANGE=*ALL
Information is displayed about all routes which operate via this LAN node, and the related processors.

RANGE=LOCAL
Information is displayed about all local processors which operate via this LAN node, and the related processors.
All routes which refer to direct connections to the host or to a LAN node of the host are defined as local.

RANGE=REMOTE
Information is displayed about all remote routes which operate via this LAN node, and the relevant processors.
All routes which do not describe any direct connections to the host or to a LAN node are defined as remote.

RANGE=*CHANGED
Information is displayed about all changed routes which lead to this host.
All routes which no longer correspond to their initial definition are regarded as changed.

STATE-OF-ROUTE=...
STATE-OF-ROUTE defines the permitted administration state of routes for which information is displayed.
Apart from the value *ANY, the remaining values can also be specified as a list (list-poss).

STATE-OF-ROUTE=*ANY
The routes may have any administration state.

STATE-OF-ROUTE=EXCLUDED
The routes must have the administration state EXCLUDED.

STATE-OF-ROUTE=WAITING-FOR-ACTIVATION
The routes must have the administration state WAITING-FOR-ACTIVATION.

STATE-OF-ROUTE=ACTIVE
The routes must have the administration state ACTIVE.

STATE-OF-ROUTE=WAITING-FOR-DEACTIVATION
The routes must have the administration state WAITING-FOR-DEACTIVATION.

STATE-OF-ROUTE=INACTIVE
The routes must have the administration state INACTIVE.

TRANSFER=...
TRANSFER specifies which transfer state the routes may have in order for information to be displayed.
Apart from the value *ANY, the remaining values can also be specified as a list (list-poss).

TRANSFER=*ANY
The routes can have any transfer state.

TRANSFER=READY
The routes must have the transfer state “READY-TO-TRANSFER”.

TRANSFER=WAITING-FOR-INITIALISATION
The routes must have the transfer state “WAITING-FOR-INITIALISATION”.

TRANSFER=WAITING-FOR-READY
The routes must have the transfer state “WAITING-FOR-READY-TO-TRANSFER”.

TRANSFER=NOT-READY
The routes must have the transfer state “NOT-READY-TO-TRANSFER”.

INFO=...
Using INFO, you specify which information about connections and/or which special information about routes is displayed.
The values can also be specified as a list (list-poss).

INFO=SHORT
The dynamic information about connections is displayed.
The information is displayed with console message BCA08E8.

INFO=LONG
The static information about connections is displayed.
The information is displayed with console messages BCA08A1, BCA08A2 , BCA08A7 and BCA08A8.

INFO=TIMES
The route-specific timer values are displayed.
The information is displayed with console message BCA08F6.

SELECT=...
SELECT enables you to select the connections for which information is to be displayed.

SELECT= *none
No selection of the connections for which information is to be displayed is made.

SELECT=(...)
A selection of the connections for which information is to be displayed is made.

APP#=...
APP# defines the internal (current) application number of the (related) application as a selection criterion for the connections to be displayed.

APP#= *none
Selection criterion for the connections to be displayed is not the internal (current) application number.

APP#=<integer 0..2147483647> / <x-string 1..8>
Selection criterion for the connections to be displayed is the specified internal (current) application number APP#.

TSN=...
TSN defines the TSN of a task, which the (related) application has opened, as a selection criterion for the connections to be displayed.

TSN= *none
Selection criterion for the connections to be displayed is not the TSN of a task.

TSN=<c-string 1..4> / <x-string 1..8>
Selection criterion for the connections to be displayed is the specified TSN.

TID=...
TID defines the task ID of a task, which the (related) application has opened, as a selection criterion for the applications to be displayed.

TID= *none
Selection criterion for the connections to be displayed is not the task ID of a task.

TID=<x-string 1..8>
Selection criterion for the connections to be displayed is the specified task ID.

FUNCT=...
FUNCT defines the interface functionality which the (related) application uses as a selection criterion for the connections to be displayed.

FUNCT= *none
Selection criterion for the connections to be displayed is not the interface functionality.

FUNCT=NEA
Selection criterion for the connections to be displayed is the interface functionality NEA service.

FUNCT=ISO
Selection criterion for the connections to be displayed is the interface functionality ISO service.

FUNCT=STREAMS
Selection criterion for the connections to be displayed is the interface functionality SOCKET service.

PORT#=...
PORT# defines Port# or Port#'n as a selection criterion for the connections to be displayed.

PORT#= *none
Selection criterion for the connections to be displayed is not the Port# or Port#'n.

PORT#=(...)
Selection criterion for the connections to be displayed is the specified Port# or Port#'n.

OWN=<integer 1..65535>
Selection criterion for the connections to be displayed is the Port# of the application or the local Port# of the connection.
If Port# 0 is specified, the OWN operand is ignored.

PART=<integer 1..65535>
Selection criterion for the connections to be displayed is the specified partner Port# of the connection.
If Port# 0 is specified, the PART operand is ignored.

CON#=...
CON# defines the internal (current) connection number as a selection criterion for the connections to be displayed.

CON#= *none
Selection criterion for the connections to be displayed is not the internal (current) connection number.

CON#=<integer 0..2147483647> / **<x-string 1..8>**
Selection criterion for the connections to be displayed is the specified internal (current) connection number CON#.

IPSEC=...
Defines whether the connection can be securely used via IPSec as a selection criterion.

IPSEC= *none
Selection criterion for the connections to be displayed is *not* secure use via IPSec.

IPSEC=NO
Selection criterion for the connections to be displayed is that the connection is not used securely via IPSec.

IPSEC=YES
Selection criterion for the connections to be displayed is that the connection is used securely via IPSec.

VLAN-ID=...
Defines whether the connection is assigned to a VLAN as a selection criterion.

VLAN-ID= *none
Selection criterion for the connections to be displayed is *not* the assignment to a VLAN.

VLAN-ID=*ALL
Selection criterion for the connections to be displayed is the assignment to a VLAN.

VLAN-ID=<integer 2 .. 4094>
Selection criterion for the connections to be displayed is that the connection is assigned to the VLAN with the specified VLAN ID.

ENDSYSTEM=...
Defines the partner processor of the connection as a selection criterion.

ENDSYSTEM= *none
Selection criterion for the connections to be displayed is *not* the partner processor.

ENDSYSTEM=<processor-name 1 .. 8>
Selection criterion for the connections to be displayed is the specified partner processor.

PROT=...
PROT defines the Layer 4 protocol, which is used on the connection, as a selection criterion.
Apart from the value *ALL, the remaining values can also be specified as a list (listposs).s

PROT= *none
Selection criterion for the connections to be displayed is not the Layer 4 protocol of the connection.

PROT=*ALL
Selection criteria for the connections to be displayed are all Layer 4 protocols.

PROT=LOCAL
Selection criterion for the connections to be displayed is the Layer 4 protocol local connection.

PROT=ISO4 / **I4**
Selection criterion for the connections to be displayed is the Layer 4 protocol ISO8073 Class 4.

PROT=TCP
Selection criterion for the connections to be displayed is the Layer 4 protocol TCP.

PARTNER=...
PARTNER defines the name of the partner application as the selection criterion.

PARTNER= *none
Selection criterion for the connections to be displayed is not the name of the partner application.

PARTNER=([NEA],<nea-name 1..16> / **<c-string 1..16>)**
The NEA name of the partner application is the selection criterion for the connections to be displayed. For the NEA name, you use the first eight characters of the application name and the first eight characters of the processor name (one to eight alphanumeric characters in each case, left-justified, and padded with blanks). If the application name is shorter than eight characters, the NEA name must be specified as a C string.
If only the name part containing the NEA name is specified, the part containing the HOST name is derived from the HOST specification when BCAM is started.

PARTNER=(OSI,<osi-name 1..78> / **<c-string 1..78>** / **<x-string 1..156>)**
The OSI name of the partner application is a selection criterion for the connections to be displayed.
(1 to 78 alphanumeric characters)

PARTNER=(SOCKET,<socket-name 1..78> / **<c-string 1..78>** / **<x-string 1..156>)**
The SOCKET name of the partner application is the selection criterion for the connections to be displayed.
(1 to 78 alphanumeric characters)

MAXMSG#=...
Number of messages to be output for this command

MAXMSG#= *none
By default 50 messages may be output to SYSOUT and 10 displayed on the console.

MAXMSG#=<integer 1 .. 2147483647>
Number of messages which may be output for this command.

> The number of messages issued can be exceeded when information is output because of the restricted output length of a message.
> Multiple messages are frequently output for BCAM objects. Within BCAM these messages are counted as just one message.
> In some cases the message BCA0765 is also issued in order to facilitate the assignment of the output information for the specified command.

Command logging

For reasons of compatibility, the processing acknowledgment is supplied in news BCA0763 if it is positive and in news BCA0762 if it is negative, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA08E6, BCA08EE, BCA08ED, BCA08EB, BCA08EA, BCA08A1, BCA08A2, BCA08E8, BCA08A7, BCA08A8 and BCA08F6 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	BCA0768	Syntax error in command
0	64	BCA07A3	LAN node is unknown
0	64	BCA08EF	Nothing found to display
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCSHOW: BCAM info on processors

BCSHOW for a named processor

PROCESSOR = <processor-name 1 .. 8>

,**SHOW** = *none / list-poss (3): **LINE** / **ROUTE** / **CONNECTION**

,**RANGE** = ***ALL** / list-poss (6): ***PROCESSOR** / **LOCAL** / **REMOTE** / ***NEXT-HOP** / ***IS-ROUTE** / ***CHANGED**

,**STATE-OF-ROUTE** = ***ANY** / list-poss (5): **EXCLUDED** / **WAITING-FOR-ACTIVATION** / **ACTIVE** /
WAITING-FOR-DEACTIVATION / **INACTIVE**

,**TRANSFER =** ***ANY** / list-poss (4): **READY** / **WAITING-FOR-INITIALISATION** / **WAITING-FOR-READY** /
NOT-READY

,**INFO** = list-poss (3): **SHORT** / **LONG** / **TIMES**

,**SELECT** = *none / (...)

(...)

| **APP#** = *none / <integer 0 .. 2147483647> / <x-string 1 .. 8>

| ,**TSN** = *none / <c-string 1 .. 4> / <x-string 1 .. 8>

| ,**TID** = *none / <x-string 1 .. 8>

| ,**FUNCT** = *none / **NEA** / **ISO** / **STREAMS**

| ,**PORT#** = *none / (...)

| (...)

| | **OWN** = <integer 1 .. 65535>

| | ,**PART** = <integer 1 .. 65535>

| ,**CON#** = *none / <integer 0 .. 2147483647> / <x-string 1 .. 8>

| ,**IPSEC** = *none / **NO** / **YES**

| ,**VLAN-ID** = *none / ***ALL** / <integer 2 .. 4094>

| ,**ENDSYSTEM** = *none / <processor-name 1 .. 8>

| ,**PROT** = *none / ***ALL** / list-poss (3): **LOCAL** / **ISO4** / **TCP**

| ,**PARTNER** = *none / ([**NEA**] , <nea-name 1 .. 16> / <c-string 1 .. 16>) /

| (**OSI** , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>) /

| (**SOCKET**, <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>)

,**MAXMSG#** = <integer 1 .. 2147483647>

BCSHOW for all available processors

SHOW = **PROCESSOR**

,**MAXMSG#** = <integer 1 .. 2147483647>

PROCESSOR=<processor-name 1..8>
Using PROCESSOR, you specify the name of the processor for which information is displayed.
The information is displayed with console message BCA08EA.

SHOW=...
Using SHOW, you specify the additional information for display.
The values can also be specified as a list (list-poss).

SHOW= *none
No additional information is displayed.

SHOW=PROCESSOR
Information is displayed about all available processors.
The information is displayed with console message BCA08EA.

SHOW=LINE
Information is displayed about the lines on routes to this processor.
SHOW=LINE only works if SHOW=ROUTE has also been selected, as SHOW=(ROUTE,LINE).
The information is displayed with console message BCA08ED.

SHOW=ROUTE
Information is displayed about the routes which lead to this processor.
The information is displayed with console messages BCA08E6 and BCA08EE.

SHOW=CONNECTION
Information is displayed about connections which operate via this processor.
The information is displayed with console messages BCA08A1, BCA08A2, BCA08A7, BCA08A8 or BCA08E8 (depending on the INFO operand).

RANGE=...
Using RANGE, you specify the routes or processors for which information is displayed.Apart from the value *ALL, the remaining values can also be specified as a list (list-poss).

RANGE=*ALL
Information is displayed about all routes which operate via this processor, and the related processors.

RANGE=*PROCESSOR
Information is displayed about all routes which operate via this processor.

RANGE=LOCAL
Information is displayed about all local routes which operate via this processor, and the related processors.
All routes which describe direct connections to the host or to a LAN node of the host are defined as local.

RANGE=REMOTE
Information is displayed about all remote routes which operate via this processor, and the relevant processors.
All routes which do not describe any direct connections to the host or to a LAN node of the host are defined as remote.

RANGE=*NEXT-HOP
Provided that the processor is acting as a router and/or gateway, information is displayed about all routes for which only this processor is acting as a router and/or gateway.

RANGE=*IS-ROUTE
For all specified routes, information is displayed about the intermediate system route, via which the current route operates. In the case of remote systems, for example, the route section which leads to the router (intermediate system) is considered to be the intermediate system route.

RANGE=*CHANGED
Information is displayed about all changed routes which lead to this host. All routes which no longer correspond to their initial definition are regarded as changed.

STATE-OF-ROUTE=...
STATE-OF-ROUTE defines the permitted administration state of routes for which information is displayed.
Apart from the value *ANY, the remaining values can also be specified as a list (list-poss).

STATE-OF-ROUTE=*ANY
The routes may have any administration state.

STATE-OF-ROUTE=EXCLUDED
The routes must have the administration state EXCLUDED.

STATE-OF-ROUTE=WAITING-FOR-ACTIVATION
The routes must have the administration state WAITING-FOR-ACTIVATION.

STATE-OF-ROUTE=ACTIVE
The routes must have the administration state ACTIVE.

STATE-OF-ROUTE=WAITING-FOR-DEACTIVATION
The routes must have the administration state WAITING-FOR-DEACTIVATION.

STATE-OF-ROUTE=INACTIVE
The routes must have the administration state INACTIVE.

TRANSFER=...
TRANSFER specifies which transfer state the routes may have in order for information to be displayed.
Apart from the value *ANY, the remaining values can also be specified as a list (list-poss).

TRANSFER=*ANY
The routes can have any transfer state.

TRANSFER=READY
The routes must have the transfer state “READY-TO-TRANSFER”.

TRANSFER=WAITING-FOR-INITIALISATION
The routes must have the transfer state “WAITING-FOR-INITIALISATION”.

TRANSFER=WAITING-FOR-READY
The routes must have the transfer state “WAITING-FOR-READY-TO-TRANSFER”.

TRANSFER=NOT-READY
The routes must have the transfer state “NOT-READY-TO-TRANSFER”.

INFO=...
Using INFO, you specify which information about connections and/or which special information about routes is displayed.
The values can also be specified as a list (list-poss).

INFO=SHORT
The dynamic information about connections is displayed.
The information is displayed with console message BCA08E8.

INFO=LONG
The static information about connections is displayed.
The information is displayed with console messages BCA08A1, BCA08A2, BCA08A7 and BCA08A8.

INFO=TIMES
The route-specific timer values are displayed.
The information is displayed with console message BCA08F6.

SELECT=...
SELECT enables you to select the connections for which information is to be displayed.

SELECT= *none
No selection of the connections for which information is to be displayed is made.

SELECT=(...)
A selection of the connections for which information is to be displayed is made.

APP#=...
APP# defines the internal (current) application number as a selection criterion for the connections to be displayed.

APP#= *none
Selection criterion for the connections to be displayed is not the internal (current) application number.

APP#=<integer 0..2147483647> / <x-string 1..8>
Selection criterion for the connections to be displayed is the specified internal (current) application number APP#.

TSN=...
TSN defines the TSN of a task, which the (related) application has opened, as a selection criterion for the connections to be displayed.

TSN= *none
Selection criterion for the connections to be displayed is not the TSN of a task.

TSN=<c-string 1..4> / <x-string 1..8>
Selection criterion for the connections to be displayed is the specified TSN.

TID=...
TID defines the task ID of a task, which the (related) application has opened, as a selection criterion for the connections to be displayed.

TID= *none
Selection criterion for the connections to be displayed is not the task ID of a task.

TID=<x-string 1..8>
Selection criterion for the connections to be displayed is the specified task ID.

FUNCT=...
FUNCT defines the interface functionality, which the (related) application uses, as a selection criterion for the connections to be displayed.

FUNCT= *none
Selection criterion for the connections to be displayed is not the interface functionality.

FUNCT=NEA
Selection criterion for the connections to be displayed is the interface functionality NEA service.

FUNCT=ISO
Selection criterion for the connections to be displayed is the interface functionality ISO service.

FUNCT=STREAMS
Selection criterion for the connections to be displayed is the interface functionality SOCKET service.

PORT#=...
PORT# defines Port# or Port#'n as a selection criterion for the connections to be displayed.

PORT#= *none
Selection criterion for the connections to be displayed is not the Port# or Port#'n.

PORT#=(...)
Selection criterion for the connections to be displayed is the specified Port# or Port#'n.

OWN=<integer 1..65535>
Selection criterion for the connections to be displayed is the Port# of the application or the local Port# of the connection.
If Port# 0 is specified, the OWN operand is ignored.

PART=<integer 1..65535>
Selection criterion for the connections to be displayed is the specified partner Port# of the connection.
If Port# 0 is specified, the PART operand is ignored.

CON#=...
CON# defines the internal (current) connection number as a selection criterion for the connections to be displayed.

CON#= *none
Selection criterion for the connections to be displayed is not the internal (current) connection number.

CON#=<integer 0..2147483647> / <x-string 1..8>
Selection criterion for the connections to be displayed is the specified internal (current) connection number CON#.

IPSEC=...
Defines whether the connection can be securely used via IPSec as a selection criterion.

IPSEC= *none
Selection criterion for the connections to be displayed is *not* secure use via IPSec.

IPSEC=NO
Selection criterion for the connections to be displayed is that the connection is not used securely via IPSec.

IPSEC=YES
Selection criterion for the connections to be displayed is that the connection is used securely via IPSec.

VLAN-ID=...
Defines whether the connection is assigned to a VLAN as a selection criterion.

VLAN-ID= *none
Selection criterion for the connections to be displayed is *not* the assignment to a VLAN.

VLAN-ID=*ALL
Selection criterion for the connections to be displayed is the assignment to a VLAN.

VLAN-ID=<integer 2 .. 4094>
Selection criterion for the connections to be displayed is that the connection is assigned to the VLAN with the specified VLAN ID.

ENDSYSTEM=...
Defines the partner processor of the connection as a selection criterion.

ENDSYSTEM= *none
Selection criterion for the connections to be displayed is *not* the partner processor.

ENDSYSTEM=<processor-name 1 .. 8>
Selection criterion for the connections to be displayed is the specified partner processor.

PROT=...
PROT defines the Layer 4 protocol, which is used on a connection, as a selection criterion.
Apart from the value *ALL, the remaining values can also be specified as a list (list-poss).

PROT= *none
Selection criterion for the connections to be displayed is not the Layer 4 protocol of the connection.

PROT=*ALL
Selection criteria for the connections to be displayed are all Layer 4 protocols.

PROT=LOCAL
Selection criterion for the connections to be displayed is the Layer 4 protocol local connection.

PROT=ISO4 / **I4**
Selection criterion for the connections to be displayed is the Layer 4 protocol ISO8073 Class 4.

PROT=TCP
Selection criterion for the connections to be displayed is the Layer 4 protocol TCP.

PARTNER=...
PARTNER defines the name of the partner application as a selection criterion.

PARTNER= *none
Selection criterion for the connections to be displayed is not the name of the partner application.

PARTNER=([NEA],<nea-name 1..16> / **<c-string 1..16>)**
The NEA name of the partner application is the selection criterion for the connections to be displayed. For the NEA name, you use the first eight characters of the application name and the first eight characters of the processor name (one to eight alphanumeric characters in each case, left-justified, and padded with blanks). If the application name is shorter than eight characters, the NEA name must be specified as a C string.
If only the name part containing the NEA name is specified, the part containing the HOST name is derived from the HOST specification when BCAM is started.

PARTNER=(OSI,<osi-name 1..78> / <c-string 1..78> / <x-string 1..156>)
The OSI name of the partner application is a selection criterion for the connections to be displayed.
(1 to 78 alphanumeric characters)

PARTNER=(SOCKET,<socket-name 1..78> / <c-string 1..78> / <x-string 1..156>)
The SOCKET name of the partner application is a selection criterion for the connections to be displayed.
(1 to 78 alphanumeric characters)

MAXMSG#=...
Number of messages to be output for this command

MAXMSG#= *none
By default 50 messages may be output to SYSOUT and 10 displayed on the console.

MAXMSG#=<integer 1 .. 2147483647>
Number of messages which may be output for this command.

> The number of messages issued can be exceeded when information is output because of the restricted output length of a message.
> Multiple messages are frequently output for BCAM objects. Within BCAM these messages are counted as just one message.
> In some cases the message BCA0765 is also issued in order to facilitate the assignment of the output information for the specified command.

Command logging

For reasons of compatibility, the processing acknowledgment is supplied in news BCA0763 if it is positive and in news BCA0762 if it is negative, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA08E6, BCA08EE, BCA08ED, BCA08EA, BCA08A1, BCA08A2, BCA08E8, BCA08A7, BCA08A8 and BCA08F6 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	BCA0768	Syntax error in command
0	64	BCA07A0	Line is unknown
0	64	BCA08EF	Nothing found to display
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCSHOW: BCAM info on routes

BCSHOW for a named route

ROUTE = <rout-name 1 .. 8>

,**SHOW** = *none / list-poss (3): **LINE** / **ROUTE** / **CONNECTION**

,**RANGE** = ***ALL** / list-poss (4): **REMOTE** / ***NEXT-HOP** / ***IS-ROUTE** / ***CHANGED**

,**STATE-OF-ROUTE** = ***ANY** / list-poss (5): **EXCLUDED** / **WAITING-FOR-ACTIVATION** / **ACTIVE** /
WAITING-FOR-DEACTIVATION / **INACTIVE**

,**TRANSFER =** ***ANY** / list-poss (4): **READY** / **WAITING-FOR-INITIALISATION** / **WAITING-FOR-READY** /
NOT-READY

,**INFO** = list-poss (3): **SHORT** / **LONG** / **TIMES**

,**SELECT** = *none / (...)

(...)

| **APP#** = *none / <integer 0 .. 2147483647> / <x-string 1 .. 8>

| ,**TSN** = *none / <c-string 1 .. 4> / <x-string 1 .. 8>

| ,**TID** = *none / <x-string 1 .. 8>

| ,**FUNCT** = *none / **NEA** / **ISO** / **STREAMS**

| ,**PORT#** = *none / (...)

| (...)

| | **OWN** = <integer 1 .. 65535>

| | ,**PART** = <integer 1 .. 65535>

| ,**CON#** = *none / <integer 0 .. 2147483647> / <x-string 1 .. 8>

| ,**IPSEC** = *none / **NO** / **YES**

| ,**VLAN-ID** = *none / ***ALL** / <integer 2 .. 4094>

| ,**ENDSYSTEM** = *none / <processor-name 1 .. 8>

| ,**PROT** = *none / ***ALL** / list-poss (3): **LOCAL** / **ISO4** / **TCP**

| ,**PARTNER** = *none / ([**NEA**] , <nea-name 1 .. 16> / <c-string 1 .. 16>) /

| (**OSI** , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>) /

| (**SOCKET**, <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>)

,**MAXMSG#** = <integer 1 .. 2147483647>

BCSHOW for all available or accordingly defined routes
SHOW = **ROUTE** ,**RANGE** = ***ALL** / list-poss (3): **LOCAL** / **REMOTE** / ***CHANGED** ,**STATE-OF-ROUTE** = ***ANY** / list-poss (5): **EXCLUDED** / **WAITING-FOR-ACTIVATION** / **ACTIVE** / **WAITING-FOR-DEACTIVATION** / **INACTIVE** ,**TRANSFER = *ANY** / list-poss (4): **READY** / **WAITING-FOR-INITIALISATION** / **WAITING-FOR-READY** / **NOT-READY** ,**INFO** = *none / **TIMES** ,**MAXMSG#** = <integer 1 .. 2147483647>

ROUTE=<rout-name 1..8>
Using ROUTE, you specify the name of the route for which information is displayed.
The information is displayed with console messages BCA08E6, BCA08A6, BCA08AB and BCA08EE.

SHOW=...
Using SHOW, you specify the additional information for display.
The values can also be specified as a list (list-poss).

SHOW= *none
No additional information is displayed

SHOW=LINE
Information is displayed about the lines, via which this route operates.
The information is displayed with console message BCA08ED.

SHOW=ROUTE
Information is displayed about the routes via which this named route (<rout-name>) operates.
In the event that no route was named, information for all available routes (possible restrictions) is requested using SHOW=ROUTE.
The information is displayed with console messages BCA08E6 and BCA08EE.

SHOW=CONNECTION
Information is displayed about connections which operate via this route.
The information is displayed with console messages BCA08A1, BCA08A2, BCA08A7, BCA08A8 or BCA08E8 (depending on the INFO operand).

RANGE=...
Using RANGE, the routes or processors for which information is displayed are specified. Apart from the value *ALL, the remaining values can also be specified as a list (list-poss).

RANGE=*ALL
Information is displayed about all remote routes which operate via this route.

RANGE=REMOTE
Information is displayed about all remote routes, which operate via this route.
All routes which do not describe any connections to the host or to a LAN node of the host are defined as remote.

RANGE=*NEXT-HOP
Provided that the route is functioning as a router and/or gateway, information is displayed about all routes for which only this route is functioning as a router and/or gateway.

RANGE=*IS-ROUTE
For all specified routes, information is displayed about the intermediate system route, via which the current route operates. In the case of remote processors, for example, the route section which leads to the router (intermediate system) is considered to be the intermediate system route.

RANGE=*CHANGED
Information is displayed about all changed routes which lead to this host. All routes which no longer correspond to their initial definition are regarded as changed.

STATE-OF-ROUTE=...
STATE-OF-ROUTE defines the permitted administration state of routes for which information is displayed.
Apart from the value *ANY, the remaining values can also be specified as a list (list-poss).

STATE-OF-ROUTE=*ANY
The routes may have any administration state.

STATE-OF-ROUTE=EXCLUDED
The routes must have the administration state EXCLUDED.

STATE-OF-ROUTE=WAITING-FOR-ACTIVATION
The routes must have the administration state WAITING-FOR-ACTIVATION.

STATE-OF-ROUTE=ACTIVE
The routes must have the administration state ACTIVE.

STATE-OF-ROUTE=WAITING-FOR-DEACTIVATION
The routes must have the administration state WAITING-FOR-DEACTIVATION.

STATE-OF-ROUTE=INACTIVE
The routes must have the administration state INACTIVE.

TRANSFER=...
TRANSFER specifies which transfer state the routes may have in order for information to be displayed..
Apart from the value *ANY, the remaining values can also be specified as a list (list-poss).

TRANSFER=*ANY
The routes can have any transfer state.

TRANSFER=READY
The routes must have the transfer state “READY-TO-TRANSFER”.

TRANSFER=WAITING-FOR-INITIALISATION
The routes must have the transfer state “WAITING-FOR-INITIALISATION”.

TRANSFER=WAITING-FOR-READY
The routes must have the transfer state “WAITING-FOR-READY-TO-TRANSFER”.

TRANSFER=NOT-READY
The routes must have the transfer state “NOT-READY-TO-TRANSFER”.

INFO=...
Using INFO, you specify which information about connections and/or which special information about routes is displayed.
The values can also be specified as a list (list-poss).

INFO=SHORT
The dynamic information about connections is displayed.
The information is displayed with console message BCA08E8 and BCA08A8.

INFO=LONG
The static information about connections is displayed.
The information is displayed with console messages BCA08A1, BCA08A2, BCA08A7, BCA08A8, BCA08AB, and BCA08AF.

INFO=TIMES
The route-specific timer values are displayed.
The information is displayed with console message BCA08F6.

SELECT=...
SELECT enables you to select the connections for which information is to be displayed.

SELECT= *none
No selection of the connections for which information is to be displayed is made.

SELECT=(...)
A selection of the connections for which information is to be displayed is made.

APP#=...
APP# defines the internal (current) application number of the (related) application as a selection criterion for the connections to be displayed.

APP#= *none
Selection criterion for the connections to be displayed is not the internal (current) application number.

APP#=<integer 0..2147483647> / <x-string 1..8>
Selection criterion for the connections to be displayed is the specified internal (current) application number APP#.

TSN=...
TSN defines the TSN of a task, which the (related) application has opened, as a selection criterion for the connections to be displayed.

TSN= *none
Selection criterion for the connections to be displayed is not the TSN of a task.

TSN=<c-string 1..4> / <x-string 1..8>
Selection criterion for the connections to be displayed is the specified TSN.

TID=...
TID defines the task ID of a task, which the (related) application has opened, as a selection criterion for the connections to be displayed.

TID= *none
Selection criterion for the connections to be displayed is not the task ID of a task.

TID=<x-string 1..8>
Selection criterion for the connections to be displayed is the specified task ID.

FUNCT=...
FUNCT defines the interface functionality, which the (related) application uses, as a selection criterion for the connections to be displayed.

FUNCT= *none
Selection criterion for the connections to be displayed is not the interface functionality.

FUNCT=NEA
Selection criterion for the connections to be displayed is the interface functionality NEA service.

FUNCT=ISO
Selection criterion for the connections to be displayed is the interface functionality ISO service.

FUNCT=STREAMS
Selection criterion for the connections to be displayed is the interface functionality SOCKET service.

PORT#=...
PORT# defines Port# or Port#'n as a selection criterion for the connections to be displayed.

PORT#= *none
Selection criterion for the connections to be displayed is not the Port# or Port#'n.

PORT#=(...)
Selection criterion for the connections to be displayed is the specified Port# or Port#'n.

OWN=<integer 1..65535>
Selection criterion for the connections to be displayed is the Port# of the application or the local Port# of the connection.
If Port# 0 is specified, the OWN operand is ignored.

PART=<integer 1..65535>
Selection criterion for the connections to be displayed is the specified partner Port# of the connection.
If Port# 0 is specified, the PART operand is ignored.

CON#=...
CON# defines the internal (current) connection number as a selection criterion for the connections to be displayed.

CON#= *none
Selection criterion for the connections to be displayed is not the internal (current) connection number.

CON#=<integer 0..2147483647> / **<x-string 1..8>**
Selection criterion for the connections to be displayed is the specified internal (current) connection number CON#.

IPSEC=...
Defines whether the connection can be securely used via IPSec as a selection criterion.

IPSEC= *none
Selection criterion for the connections to be displayed is *not* secure use via IPSec.

IPSEC=NO
Selection criterion for the connections to be displayed is that the connection is not used securely via IPSec.

IPSEC=YES
Selection criterion for the connections to be displayed is that the connection is used securely via IPSec.

VLAN-ID=...
Defines whether the connection is assigned to a VLAN as a selection criterion.

VLAN-ID= *none
Selection criterion for the connections to be displayed is *not* the assignment to a VLAN.

VLAN-ID=*ALL
Selection criterion for the connections to be displayed is the assignment to a VLAN.

VLAN-ID=<integer 2 .. 4094>
Selection criterion for the connections to be displayed is that the connection is assigned to the VLAN with the specified VLAN ID.

ENDSYSTEM=...
Defines the partner processor of the connection as a selection criterion.

ENDSYSTEM= *none
Selection criterion for the connections to be displayed is *not* the partner processor.

ENDSYSTEM=<processor-name 1 .. 8>
Selection criterion for the connections to be displayed is the specified partner processor.

PROT=...
PROT defines the Layer 4 protocol which is used on a connection as a selection criterion.
Apart from the value *ALL, the remaining values can also be specified as a list (listposs).

PROT= *none
Selection criterion for the connections to be displayed is not the Layer 4 protocol of the connection.

PROT=*ALL
Selection criteria for the connections to be displayed are all Layer 4 protocols.

PROT=LOCAL
Selection criterion for the connections to be displayed is the Layer 4 protocol local connection.

PROT=ISO4 / **I4**
Selection criterion for the connections to be displayed is the Layer 4 protocol ISO8073 Class 4.

PROT=TCP
Selection criterion for the connections to be displayed is the Layer 4 protocol TCP.

PARTNER=...
PARTNER defines the name of the partner application as a selection criterion.

PARTNER= *none
Selection criterion for the connections to be displayed is not the name of the partner application.

PARTNER=([NEA],<nea-name 1..16> / <c-string 1..16>)
The NEA name of the partner application is a selection criterion for the connections to be displayed.
For the NEA name, you use the first eight characters of the application name and the first eight characters of the processor name (one to eight alphanumeric characters in each case, left-justified, and padded with blanks). If the application name is shorter than eight characters, the NEA name must be specified as a C string.
If only the name part containing the NEA name is specified, the part containing the HOST name is derived from the HOST specification when BCAM is started.

PARTNER=(OSI,<osi-name 1..78> / <c-string 1..78> / <x-string 1..156>)
The OSI name of the partner application is a selection criterion for the connections to be displayed.
(1 to 78 alphanumeric characters)

PARTNER=(SOCKET,<socket-name 1..78> / <c-string 1..78> / <x-string 1..156>)
The SOCKET name of the partner application is a selection criterion for the connections to be displayed.
(1 to 78 alphanumeric characters)

MAXMSG#=...
Number of messages to be output for this command

MAXMSG#= *none
By default 50 messages may be output to SYSOUT and 10 displayed on the console.

MAXMSG#=<integer 1 .. 2147483647>
Number of messages which may be output for this command.

> The number of messages issued can be exceeded when information is output because of the restricted output length of a message.
> Multiple messages are frequently output for BCAM objects. Within BCAM these messages are counted as just one message.
> In some cases the message BCA0765 is also issued in order to facilitate the assignment of the output information for the specified command.

Command logging

For reasons of compatibility, the processing acknowledgment is supplied in news BCA0763 if it is positive and in news BCA0762 if it is negative. In addition, for positive acknowledgments, the messages BCA08E6, BCA08EE, BCA08ED, BCA08A1, BCA08A2, BCA08A6, BCA08AB, BCA08AF, BCA08E8, BCA08A7, BCA08A8, and BCA08F6 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	BCA0768	Syntax error in command
0	64	BCA07A1	Route is unknown
0	64	BCA08EF	Nothing found to display
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCSHOW: BCAM info on applications

BCSHOW for a named application

APPLICATION = ([**NEA**] , <nea-name 1 .. 16> / <c-string 1 .. 16>) /

(**OSI** , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>) /

(**SOCKET** , <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>)

,**SHOW** = *none / list-poss (3): **TSAP-OPEN** / **CONNECTION** / **ROUTE**

,**STATE-OF-ROUTE** = ***ANY** / list-poss (5): **EXCLUDED** / **WAITING-FOR-ACTIVATION** / **ACTIVE** /

WAITING-FOR-DEACTIVATION / **INACTIVE**

,**TRANSFER =** ***ANY** / list-poss (4): **READY** / **WAITING-FOR-INITIALISATION** / **WAITING-FOR-READY** /

NOT-READY

,**INFO** = list-poss (3): **SHORT** / **LONG** / **TIMES**

,**SELECT** = *none / (...)

(...)

| ,**PORT#** = *none / (...)

| (...)

| | **OWN** = <integer 1 .. 65535>

| | ,**PART** = <integer 1 .. 65535>

| ,**CON#** = *none / <integer 0 .. 2147483647> / <x-string 1 .. 8>

| ,**IPSEC** = *none / **NO** / **YES**

| ,**VLAN-ID** = *none / ***ALL** / <integer 2 .. 4094>

| ,**ENDSYSTEM** = *none / <processor-name 1 .. 8>

| ,**PROT** = *none / ***ALL** / list-poss (3): **LOCAL** / **ISO4** / **TCP**

| ,**PARTNER** = *none / ([**NEA**] , <nea-name 1 .. 16> / <c-string 1 .. 16>) /

(**OSI** , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>) /

(**SOCKET**, <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>)

,**MAXMSG#** = <integer 1 .. 2147483647>

BCSHOW for all available applications or connections

SHOW = list-poss (4): **APPLICATION** / **TSAP-OPEN** / **CONNECTION** / **ROUTE**

,**STATE-OF-ROUTE** = ***ANY** / list-poss (5): **EXCLUDED** / **WAITING-FOR-ACTIVATION** / **ACTIVE** / **WAITING-FOR-DEACTIVATION** / **INACTIVE**

,**TRANSFER =** ***ANY** / list-poss (4): **READY** / **WAITING-FOR-INITIALISATION** / **WAITING-FOR-READY** / **NOT-READY**

,**INFO** = list-poss (2): **SHORT** / **LONG**

,**SELECT** = *none / (...)

(...)

| **APP#** = *none / <integer 0 .. 2147483647> / <x-string 1 .. 8>

| ,**TSN** = *none / <c-string 1 .. 4> / <x-string 1 .. 8>

| ,**TID** = *none / <x-string 1 .. 8>

| ,**FUNCT** = *none / **NEA** / **ISO** / **STREAMS**

| ,**PORT#** = *none / (...)

| (...)

| | **OWN** = <integer 1 .. 65535>

| | ,**PART** = <integer 1 .. 65535>

| ,**CON#** = *none / <integer 0 .. 2147483647> / <x-string 1 .. 8>

| ,**IPSEC** = *none / **NO** / **YES**

| ,**VLAN-ID** = *none / ***ALL** / <integer 2 .. 4094>

| ,**ENDSYSTEM** = *none / <processor-name 1 .. 8>

| ,**PROT** = *none / ***ALL** / list-poss (3): **LOCAL** / **ISO4** / **TCP**

| ,**PARTNER** = *none / ([**NEA**] , <nea-name 1 .. 16> / <c-string 1 .. 16>) /

| (**OSI** , <osi-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>) /

| (**SOCKET**, <socket-name 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>)

,**MAXMSG#** = <integer 1 .. 2147483647>

APPLICATION=...

Using APPLICATION, you specify the name of the application for which information is displayed.
The information is displayed with console message BCA08E7.

APPLICATION=([NEA],<nea-name 1..16> / **<c-string 1..16>)**

The NEA name of the application for which information is to be displayed.

For the NEA name, you use the first eight characters of the application name and the first eight characters of the processor name (one to eight alphanumeric characters in each case, left-justified, and padded with blanks). If the application name is shorter than eight characters, the NEA name must be specified as a C string. If only the name part containing the NEA name is specified, the part containing the HOST name is derived from the HOST specification when BCAM is started.

APPLICATION=(OSI,<osi-name 1..78> / <c-string 1..78> / <x-string 1..156>)
The OSI name of the application for which information is displayed.
(1 to 78 alphanumeric characters)

APPLICATION=(SOCKET,<socket-name 1..78> / <c-string 1..78> / <x-string 1..156>)
The SOCKET name of the application for which information is displayed.
(1 to 78 alphanumeric characters)

SHOW=...
Using SHOW, you specify the additional information for display.
The values can also be specified as a list (list-poss).

SHOW= *none
No additional information is displayed.

SHOW=APPLICATION
If no application was named, information is displayed about all applications set up in this host using SHOW=APPLICATION.
The information is displayed with console message BCA08E7.

SHOW=TSAP-OPEN
Information is displayed about the opening of named applications (see APPLICATION=).
If no application was named, information is displayed about the opening of all applications set up in this host using SHOW=TSAP-OPEN.
The information is displayed with console message BCA08E2.

SHOW=CONNECTION
Information is displayed about connections which are maintained by the named application (see APPLICATION=).
In the event that no application was defined, information is displayed about all connections originating from this host, using SHOW=TSAP-OPEN=.
The information is displayed with console messages BCA08A1, BCA08A2, BCA08A7, BCA08A8 or BCA08E88 (depending on the INFO partner).

SHOW=ROUTE
Information is displayed about the routes which are occupied by this application.
The information is displayed with console messages BCA08E6 and BCA08EE.

STATE-OF-ROUTE=...
STATE-OF-ROUTE defines the permitted administration state of routes for which information is displayed.
Apart from the value *ANY, the remaining values can also be specified as a list (list-poss).

STATE-OF-ROUTE=*ANY
The routes may have any administration state.

STATE-OF-ROUTE=EXCLUDED
The routes must have the administration state EXCLUDED.

STATE-OF-ROUTE=WAITING-FOR-ACTIVATION
The routes must have the administration state WAITING-FOR-ACTIVATION.

STATE-OF-ROUTE=ACTIVE
The routes must have the administration state ACTIVE.

STATE-OF-ROUTE=WAITING-FOR-DEACTIVATION
The routes must have the administration state WAITING-FOR-DEACTIVATION.

STATE-OF-ROUTE=INACTIVE
The routes must have the administration state INACTIVE.

TRANSFER=...
TRANSFER specifies which transfer state the routes may have in order for information to be displayed.
Apart from the value *ANY, the remaining values can also be specified as a list (list-poss).

TRANSFER=*ANY
The routes can have any transfer state.

TRANSFER=READY
The routes must have the transfer state “READY-TO-TRANSFER”.

TRANSFER=WAITING-FOR-INITIALISATION
The routes must have the transfer state “WAITING-FOR-INITIALISATION”.

TRANSFER=WAITING-FOR-READY
The routes must have the transfer state “WAITING-FOR-READY-TO-TRANSFER”.

TRANSFER=NOT-READY
The routes must have the transfer state “NOT-READY-TO-TRANSFER”.

INFO=...
Using INFO, you specify which information about connections and/or which special information about routes is displayed.
The values can also be specified as a list (list-poss).

INFO=SHORT
The dynamic information about connections is displayed.
The information is displayed with console message BCA08E8.

INFO=LONG
The static information about connections is displayed.
The information is displayed with console messages BCA08A1, BCA08A2, BCA08A7 and BCA08A8.

INFO=TIMES
The route-specific timer values are displayed.
The information is displayed with console message BCA08F6.

SELECT=...
SELECT enables you to select the connections for which information is to be displayed.

SELECT= *none
No selection of the connections for which information is to be displayed is made.

SELECT=(...)
A selection of the connections for which information is to be displayed is made.

APP#=...
APP# defines the internal (current) application number of the (related) application as a selection criterion for the applications and connections to be displayed.

APP#= *none
Selection criterion for the applications and connections to be displayed is not the internal (current) application number.

APP#=<integer 0..2147483647> / <x-string 1..8>
Selection criterion for the applications and connections to be displayed is the internal (current) application number APP#.

TSN=...
TSN defines the TSN of a task, which the (related) application has opened, as a selection criterion for the applications and connections to be displayed.

TSN= *none
Selection criterion for the applications and connections to be displayed is not the TSN of a task.

TSN=<c-string 1..4> / <x-string 1..8>
Selection criterion for the applications and connections to be displayed is the specified TSN.

TID=...
TID defines the task ID of a task, which the (related) application has opened, as a selection criterion for the applications and connections to be displayed.

TID= *none
Selection criterion for the applications and connections to be displayed is not the task ID of a task.

TID=<x-string 1..8>
Selection criterion for the applications and connections to be displayed is the specified task ID.

FUNCT=...
FUNCT defines the interface functionality, which the (related) application uses, as a selection criterion for the applications and connections to be displayed.

FUNCT= *none
Selection criterion for the applications and connections to be displayed is not the interface functionality.

FUNCT=NEA
Selection criterion for the applications and connections to be displayed is the interface functionality NEA service.

FUNCT=ISO
Selection criterion for the applications and connections to be displayed is the interface functionality ISO service.

FUNCT=STREAMS
Selection criterion for the applications and connections to be displayed is the interface functionality SOCKET service.

PORT#=...
PORT# defines Port# or Port#'n as a selection criterion for the connections to be displayed.

PORT#= *none
Selection criterion for the connections to be displayed is not the Port# or Port#'n.

PORT#=(...)
Selection criterion for the connections to be displayed is the specified Port# or Port#'n.

OWN=<integer 1..65535>
Selection criterion for the connections to be displayed is the Port# of the application or the local Port# of the connection.
A Port# 0 is regarded as a non-specified OWN operand.

PART=<integer 1..65535>
Selection criterion for the connections to be displayed is the specified partner Port# of the connection.
If Port# 0 is specified, the PART operand is ignored.

CON#=...
CON# defines the internal (current) connection number as a selection criterion for the connections to be displayed.

CON#= *none
Selection criterion for the connections to be displayed is not the internal (current) connection number.

CON#=<integer 0..2147483647> / <x-string 1..8>
Selection criterion for the connections to be displayed is the specified internal (current) connection number CON#.

IPSEC=...
Defines whether the connection can be securely used via IPSec as a selection criterion.

IPSEC= *none
Selection criterion for the connections to be displayed is *not* secure use via IPSec.

IPSEC=NO
Selection criterion for the connections to be displayed is that the connection is not used securely via IPSec.

IPSEC=YES
Selection criterion for the connections to be displayed is that the connection is used securely via IPSec.

VLAN-ID=...
Defines whether the connection is assigned to a VLAN as a selection criterion.

VLAN-ID= *none
Selection criterion for the connections to be displayed is *not* the assignment to a VLAN.

VLAN-ID=*ALL
Selection criterion for the connections to be displayed is the assignment to a VLAN.

VLAN-ID=<integer 2 .. 4094>
Selection criterion for the connections to be displayed is that the connection is assigned to the VLAN with the specified VLAN ID.

ENDSYSTEM=...
Defines the partner processor of the connection as a selection criterion.

ENDSYSTEM= *none
Selection criterion for the connections to be displayed is *not* the partner processor.

ENDSYSTEM=<processor-name 1 .. 8>
Selection criterion for the connections to be displayed is the specified partner processor.

PROT=...
PROT defines the Layer 4 protocol which is used on the connection as a selection criterion.
Apart from the value *ALL, the remaining values can also be specified as a list (listposs).

PROT= *none
Selection criterion for the connections to be displayed is not the Layer 4 protocol of the connection.

PROT=*ALL
Selection criteria for the connections to be displayed are all Layer 4 protocols.

PROT=LOCAL
Selection criterion for the connections to be displayed is the Layer 4 protocol local connection.

PROT=ISO4 / **I4**
Selection criterion for the connections to be displayed is the Layer 4 protocol ISO8073 Class 4.

PROT=TCP
Selection criterion for the connections to be displayed is the Layer 4 protocol TCP.

PARTNER=...
PARTNER defines the name of the partner application as a selection criterion.

PARTNER= *none
Selection criterion for the connections to be displayed is not the name of the partner application.

PARTNER=([NEA],<nea-name 1..16> / **<c-string 1..16>)**
The NEA name of the partner application is a selection criterion for the connections to be displayed.
For the NEA name, you use the first eight characters of the application name and the first eight characters of the processor name (one to eight alphanumeric characters in each case, left-justified, and padded with blanks). If the application name is shorter than eight characters, the NEA name must be specified as a C string.
If only the name part containing the NEA name is specified, the part containing the HOST name is derived from the HOST specification when BCAM is started.

PARTNER=(OSI,<osi-name 1..78> / **<c-string 1..78>** / **<x-string 1..156>)**
The OSI name of the partner application is a selection criterion for the connections to be displayed.
(1 to 78 alphanumeric characters)

PARTNER=(SOCKET,<socket-name 1..78> / **<c-string 1..78>** / **<x-string 1..156>)**
The SOCKET name of the partner application is a selection criterion for the connections to be displayed.
(1 to 78 alphanumeric characters)

MAXMSG#=...
Number of messages to be output for this command

MAXMSG#= *none
By default 50 messages may be output to SYSOUT and 10 displayed on the console.

MAXMSG#=<integer 1 .. 2147483647>
Number of messages which may be output for this command.

> The number of messages issued can be exceeded when information is output because of the restricted output length of a message.
> Multiple messages are frequently output for BCAM objects. Within BCAM these messages are counted as just one message.
> In some cases the message BCA0765 is also issued in order to facilitate the assignment of the output information for the specified command.

Command logging

For reasons of compatibility, the processing acknowledgment is supplied in news BCA0763 if it is positive and in news BCA0762 if it is negative, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA08E6, BCA08EE, BCA08A1, BCA08A2, BCA08E8, BCA08E7, BCA08E2, BCA08A7, BCA08A8 and BCA08F6 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	BCA0768	Syntax error in command
0	64	BCA0791	Application is unknown
0	64	BCA08EF	Nothing found to display
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCSHOW: BCAM info on global values

BCSHOW
SHOW = list-poss (4): **BCAM** / **LIMITS** / **TIMES** / **SERVER-PORTS** **,MAXMSG#** = <integer 1 .. 2147483647>

SHOW=...
Using SHOW, you specify the additional information for display.
The values can also be specified as a list (list-poss).

SHOW=BCAM
BCAM values are displayed.
The information is displayed with console message BCA08F1.

SHOW=LIMITS
Information is displayed about global limit values.
The information is displayed with console message BCA08F8.

SHOW=TIMES
Information is displayed about global timer values.
The information is displayed with console message BCA08F7.

SHOW=SERVER-PORTS
Information is displayed about server ports.
The information is displayed with console message BCA08F9.

MAXMSG#=...
Number of messages to be output for this command

MAXMSG#= *none
By default 50 messages may be output to SYSOUT and 10 displayed on the console.

MAXMSG#=<integer 1 .. 2147483647>
Number of messages which may be output for this command.

> The number of messages issued can be exceeded when information is output because of the restricted output length of a message.
> Multiple messages are frequently output for BCAM objects. Within BCAM these messages are counted as just one message.
> In some cases the message BCA0765 is also issued in order to facilitate the assignment of the output information for the specified command.

Command logging

For reasons of compatibility, the processing acknowledgment is supplied in news BCA0763 if it is positive and in news BCA0762 if it is negative, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA08F8, BCA08F7 and BCA08F6 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	BCA0768	Syntax error in command
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCSWP: Switch PORT

Using this command, you change the assignment of lines to mnemonic device names. The mnemonic device name of the line is changed. If the line is in the “active” state, it is first deactivated and then reactivated after the device name has been changed.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x		x	x	

List of valid command sources

BCSWP
<line-name 1 .. 8> **,DEV** = list-poss (2): <device 2 .. 4>

<line-name 1 .. 8>
Name of the line whose device name is changed.

DEV=...
Specifies the mnemonic device name of the line.
<device 2..4> consists of two to four alphanumeric characters. In BS2000 system generation the DVC statement defines the physical line on which the system named mn is accessed.

The following device types are possible:

1. mnemonic device name of the write device
2. mnemonic device name of the read device

Command logging

For reasons of compatibility, the processing acknowledgment is supplied in news BCA0763 if it is positive and in news BCA0762 if it is negative, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA08CF, BCA0854 and BCA0630 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0631	Switching aborted
0	1	BCA0768	Syntax error in command
0	1	BCA0770	Parameter invalid. Cause:
0	64	BCA0856	<x> is not included
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

BCTIMES: Define BCAM time intervals

You use BCTIMES to dynamically specify the time intervals for protocol timers and additional protocol timers. With this command you can also specify the time intervals for monitoring incoming messages, connection requests or warnings.

> The values which can be set with BCTIMES are mostly protocol timers. The setting of these must be carried out homogeneously in the network and requires a sound knowledge of the relevant standards and networks.

When using MSCF in multiprocessor networks, please note that MSCF must be terminated before BCEND is issued.
You should also use MAX-MSCF-DELAY to define an interval that is long enough to ensure a structured shutdown of the MSCF connections before BCEND. This value will depend on the size of the network.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x		x	x	

List of valid command sources

BCTIMES
ARP-SUPERVISION = *unchanged / <integer 5 .. 32765 seconds>
,CONFIGURATION = *unchanged / <integer 150 .. 900 seconds>
,CONN = *unchanged / <integer 5 .. 32765 seconds>
,DATAGRAM = *unchanged / <integer 5 .. 32765 seconds>
,INTF-LIFETIME = *unchanged / <integer 1 .. 127 seconds>
,IP-LIFETIME = *unchanged / <integer 1 .. 255 seconds>
,I-REASSEMBLY = *unchanged / <integer 1 .. 255 seconds>
,LETT = *unchanged / <integer 1 .. 32767 seconds>
,**MAX-MSCF-DELAY** = *unchanged / <integer 5 .. 32675 seconds>
,RETRANSMISSION = ***UNCHANGED** / ***STD** / <integer 2 .. 36 seconds>
,WARN = *unchanged / <integer 5 .. 32765 seconds>
,WINDOW = ***UNCHANGED** / ***STD** / <integer 2 .. 180 seconds>

ARP-SUPERVISION=...
Time interval in seconds for ARP monitoring.
The value is rounded up to a multiple of 5 seconds; the timer has a precision of 5 seconds.

ARP-SUPERVISION= *unchanged
The value set remains unchanged.
BCAM session default: 300

ARP-SUPERVISION=<integer 5..32765>
The time interval is set to the specified value.

CONFIGURATION=...
Time interval for the ISO9542 configuration timer for the sending of ESHs in seconds.Values which are greater than 900 or less than 150 are changed to 900 or 150. The value is rounded up to a multiple of 2 seconds; the timer has a precision of 2 seconds.

CONFIGURATION= *unchanged
The value set remains unchanged.
BCAM session default: 300

CONFIGURATION=<integer 150..900>
The time interval is set to the specified value.

CONN=...
Timeout for connection requests in seconds.
Connection requests which are not accepted or rejected within the timeout are automatically rejected (passive connection setup).
Active connection setups are terminated following the timeout.
The value is rounded up to a multiple of 5. The timer has a precision of 5 seconds. Protocol timers (e.g. ISO8073 Retransmit) have precedence! The time-out is extended when multiple routes are present for an active connection setup.

CONN= *unchanged
The value set remains unchanged.
BCAM session default: 30

CONN=<integer 5..32765>
The time interval is set to the specified value.

DATAGRAM=...
Timeout for incoming requests of the connectionless transport service in seconds.Messages which are not received within the timeout are automatically deleted.
The value is rounded up to a multiple of 5 seconds; the timer has a precision of 5 seconds.

DATAGRAM= *unchanged
The value set remains unchanged.
BCAM session default: 90

DATAGRAM=<integer 5..32765>
The time interval is set to the specified value.

INTF-LIFETIME=...
Time interval for ISO8473-LIFETIME (Layer 3 profile=INTF) in seconds.
The value is entered in the ISO8473 protocol elements. Values which are greater than 127 are changed to 127.

INTF-LIFETIME= *unchanged
The value set remains unchanged.
BCAM session default: 30

INTF-LIFETIME=<integer 1..127>
The time interval is set to the specified value.

IP-LIFETIME=...
Time interval for IP-LIFETIME in seconds.
The value is entered in the IP protocol elements. Values which are greater than 255 are changed to 255.

IP-LIFETIME= *unchanged
The value set remains unchanged.
BCAM session default: 32

IP-LIFETIME=<integer 1..255>
The time interval is set to the specified value.

I-REASSEMBLY=...
Time interval for the IP and ISO8473 reassembly timers in seconds.
Elements which are not completely reassembled within the time interval are deleted. Values which are greater than 255 are changed to 255. The timer has a precision of 2 seconds.

I-REASSEMBLY= *unchanged
The value set remains unchanged.
BCAM session default: 30

I-REASSEMBLY=<integer 1..255>
The time interval is set to the specified value.

LETT=...
Timeout for incoming messages of the connection-oriented transport service in seconds. Messages which are not received within the timeout are deleted.

> The value 0 (for infinite) can no longer be set subsequently. Instead you should set a large value from the time interval.

LETT= *unchanged
The set value remains unchanged.
BCAM session default: 0 (stands for infinite).

LETT=<integer 0..32767>
The time interval is set to the specified value.

MAX-MSCF-DELAY=...
Time interval in seconds for termination of MSCF on BCEND.
The value is rounded to a multiple of 5 seconds. The timer operates to a precision of 5 seconds. If BS2000 is operated without MSCF then the timer has no effect.

MAX-MSCF-DELAY= *unchanged
The set value remains unchanged.
Default for a BCAM session: 60

MAX-MSCF-DELAY=<integer 5..32765>
The time interval is set to the specified value.

RETRANSMISSION=...
Time interval for the ISO8073 retransmission timer in seconds (2 to180).
A protocol element which must be acknowledged is retransmitted if it was not acknowledged by the partner transport control during the time interval.
The value is rounded up to a multiple of 2 seconds. The timer has a precision of 2 seconds.The retransmission timer is only to be changed where absolutely essential.
The timer has major effects on the loading of the system and the network.
It should be noted that changes to WINDOW values also affect RETRANSMISSION!
For WINDOW=*STD, the RETRANSMISSION value is 10.

RETRANSMISSION=*UNCHANGED
The value set remains unchanged.
BCAM session default: 10

RETRANSMISSION=*STD
The time interval is changed to the default value of 10 seconds.

RETRANSMISSION=<integer 2..36>
The time interval is set to the specified value for the currently existing routes with L3 profile ISO.
The default value for all routes with L3 profile ISO set up following the BCTIMES command remains unchanged.

WARN=...
Timeout for warnings in seconds, 1 to 32765.
The value is rounded up to a multiple of 5; the timer has a precision of 5 seconds.
Corresponding command functions are only executed if the timeout expires after the warning (see the W operand in the BCAPPL, BCOUT, BCDAC, BCCONN, and BCEND commands).

WARN= *unchanged
The value set remains unchanged.
BCAM session default: 10

WARN=<integer 5 ..10..32765>
The time interval is set to the specified value.

WINDOW=...
Time interval for the ISO8073 window timer in seconds.
If nothing was sent on a connection during the time interval, an acknowledgment element (AK-TPDU) is sent.
The value is rounded up to a multiple of 2 seconds; the timer has a precision of 2 seconds. Values which are greater than 180 are changed to 180.
If the value for WINDOW is changed, the maximum for the RETRANSMISSION value (one fifth of the WINDOW value) is also changed.

WINDOW=*UNCHANGED
The time interval of the window timer remains unchanged.
BCAM session default: 60

WINDOW=*STD
The time interval of the window timer is set to the default value of 60 seconds.

WINDOW=<integer 2..180>
The time interval of the window timer is set to the specified value.

Command logging

For reasons of compatibility, the processing acknowledgment is supplied in news BCA0763 if it is positive and in news BCA0762 if it is negative, followed by the message NBR0740. For positive acknowledgments, the message BCA0628 appears.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0629	Setting of the timer aborted
0	1	BCA0768	Syntax error in command
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

CALL-BCAM-COMMANDS: Process commands from a file

You use this command to initialize the processing of BCAM commands from a file.
This command can also be used to start an SOF file with BCAM running. The DCOPT command of the SOF file is ignored in this case.

To control processing of the BCAM command file as a function of the results, you can use the BCOPTION CMDFILE-CONTINUATION and the following branching instructions (see also section "Command sequences"):

- /IF-BCAM-ACK
- /IF-BCAM-NAK
- /ELSE-BCAM
- /END-IF-BCAM

In addition, the host- and system-specific branching instructions can also be used to control command sequences. A detailed description of how these are controlled is provided in the section "Command sequences".

To improve the overview it is possible to display remark lines in the command file. The remark lines begin with * in the first column or with /REMARK.

If an SOF or command file is being edited, no other command file can be started via the console until it has been processed. However, it is possible to call up to seven further command files from an SOF or a command file.

The alias name CLBCCMD exists for CALL-BCAM-COMMANDS.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
x		x		

List of valid command sources

CALL-BCAM-COMMANDS / **CLBCCMD**
FILE-NAME = <filename 1 .. 54>
,TIME-LIMIT = **600** / <integer 1 .. 99999999>
,**SYNTAX-CHECK-ONLY** = ***OFF** / ***ON** / ***ERROR-ONLY**

FILE-NAME=<filename 1..54>
Specifies the name of the file containing the BCAM commands. If the command file does not exist under the TSOS system administrator ID, the file name must be fully qualified including USERID. In any case the filename of the command file must be cataloged in the home pubset, otherwise errors can occur in connection with files cataloged on data pubsets or shared pubsets.

TIME-LIMIT=<integer 1..99999999>
Specifies the monitoring period (specification in seconds) for the processing of the command file.
1 < 600 < 99999999 sec

SYNTAX-CHECK-ONLY=...
Controls the processing of the command file. As an alternative to the normal processing of the command file, you can also use the SYNTAX-CHECK-ONLY operand to initiate a syntax check of the BCAM commands present in the command file. In this case the commands are not executed.

SYNTAX-CHECK-ONLY=*OFF
All the commands present in the command file – with the exception of DCSTART and DCSOF – are processed normally.

SYNTAX-CHECK-ONLY=*ON
All the BCAM commands are subjected to a syntax check and all the other commands are ignored. No commands are executed.
Logging is performed using the messages BCA0769 (syntactically correct) and BCA0768 (syntax error).

SYNTAX-CHECK-ONLY=*ERROR-ONLY
All the BCAM commands are subjected to a syntax check and all the other commands are ignored. No commands are executed.
However, in contrast to the *ON parameter, only syntactically wrong commands are logged.

Command logging

The processing acknowledgment is supplied in news BCA0890 if it is positive and in news BCA089E if it is negative. In addition, for positive acknowledgments, the messages BCA0769 and BCA076C may appear.
A description of the error messages that can be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
2	0	BCA089E	Command file editing cancelled
0	1	BCA0768	Syntax error in command
0	1	BCA089D	Command too long
0	64	BCA0777	Interface used for...
0	64	BCA0898	TIMEOUT of editing command file
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	128	BCA08B0	Another command file or SOF being edited
0	130	BCA0766	BCAM is not active

CREATE-LINE / CRLN: Create line

You use the CREATE-LINE command to create a line. If the CREATE-LINE command is executed successfully, the line has the status INCLUDED.

The alias name CRLN also exists for CREATE-LINE in order to provide SNMP support LINE-NAME=<composed-name 1..8> / <c-string 1..8>

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

CREATE-LINE / CRLN

LINE-NAME = <composed-name 1..8> / <c-string 1 .. 8>

,**HOST-NAME** = ***STD** / <composed-name 1 .. 8> / <c-string 1 .. 8>

,**IP-ADDRESS** = ***NONE** / <text 7 .. 18> / <x-string 7 .. 8>

,**IPV6-ADDRESS** = ***NONE** / <text 9 .. 49> / <c-string 9 .. 49>

,I**SO-ADDRESS** = ***NONE** / <x-string 1 .. 40>

,**L2-PROTOCOL** = ***CSMACD**(...)

***CSMACD**(...)

| **NODE-NAME** = <composed-name 1 .. 8> / <c-string 1 .. 8>

| ,**REDUNDANT-LINE** = ***STD** / ***NONE** / ***FIRST** / <composed-name 1 .. 8>

| **,REDUNDANT-SUBGROUP** = ***NONE** / <text 1 .. 1> / <c-string 1 .. 1>

| ,**WRITE-DEVICE** = <alphanum-name 2 .. 2> / <x-text 4 .. 4> / <alphanum-name 4 .. 4> / <x-text 8 .. 8>

| ,**READ-DEVICE** = <alphanum-name 2 .. 2> / <x-text 4 .. 4> / <alphanum-name 4 .. 4> / <x-text 8 .. 8>

| ,**SLOW-POLL** = ***STD** / ***ON** / ***OFF**

| ,**BROADCAST** = ***STD** / ***ON** / ***OFF**

| ,**MULTICAST** = ***STD** / ***ON** / ***OFF**

| ,**AUTO-ROUTE-SWITCHING** = ***ON** / ***OFF**

| ,**ROUTE-RESWITCHING** = ***OFF** / ***ON**

| ,**MAX-LPDU-SIZE** = ***STD** / ***BY-DEVICE**

| ,**LAN-ADDRESS** = ***DYNAMIC** / <x-string 1 .. 12>

LINE-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the line to be created.

HOST-NAME=...
In HOST-NAME you specify the name of the host to which the line is to be connected.

HOST-NAME=*STD
The name of the default host (host name from the DCSTART or DCOPT command) is used as the host name.

HOST-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the host to which the line is connected

IP-ADDRESS=...
In IPADR you specify the local IP address at which the host can be addressed via the line.

IP-ADDRESS=*NONE
No local IP address at which the host can be addressed via the line is defined.

IP-ADDRESS=<text 7..18> / <x-string 7..8>
Local IP address, if required with specification of the prefix length, via which the host can be addressed over the line. If the prefix length is not specified, the default prefix length which matches the IPv4 address is determined.
Address syntax: <IPv4-address>/<IPv4-prefix-length> or <IPv4-address>.

IPV6-ADDRESS=...
In IPV6-ADDRESS you specify the local IPv6 address at which the host can be addressed via the line together with the IPv6 prefix length.

IPV6-ADDRESS=*NONE
No local IPv6 address at which the host can be addressed via the line is defined.

IPV6-ADDRESS<text 9..49> / <c-string 9..49>
In IPV6-ADDRESS you specify the local IPv6 address at which the host can be addressed via the line together with the IPv6 prefix length.
(Address syntax: <IPv6 address>/<IPv6 prefix length>)

ISO-ADDRESS=...
In ISO-ADDRESS you specify the local ISO Internet address at which the host can be addressed via the line.

ISO-ADDRESS=*NONE
No local ISO Internet address at which the host can be addressed via the line is defined.

ISO-ADDRESS=<x-string 1..40>
In ISO-ADDRESS you specify the local ISO Internet address at which the host can be addressed via the line.

L2-PROTOCOL=*CSMACD(...)
The Layer 2 protocol CSMACD is used on the line to a LAN.

NODE-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the associated LAN node.

REDUNDANT-LINE=...
You use REDUNDANT-LINE to assign the line to a group of redundant lines.

REDUNDANT-LINE=*STD
The line is to be redundant for all lines which belong to the standard group. The standard group consists

of all the lines of a node which have the same profile and are defined with *STD. Specification of a subgroup has no effect for the standard group.

REDUNDANT-LINE=*NONE
The line is to be redundant for no group of lines of the assigned node. Consequently it plays no part in redundancy.

REDUNDANT-LINE=*FIRST
The line defines the “first” line of a group of redundant lines. The group name is the same as the name of this line (LINE-NAME= operand). All lines in which the name of the line is subsequently specified in REDUNDANT-LINE= are assigned to this group.

REDUNDANT-LINE=<composed-name 1..8>
The line is assigned to the group with this name. Before this is done, this group must have been configured with REDUNDANT-LINE=*FIRST.

REDUNDANT-SUBGROUP=...
A subgroup is specified to enable a preferred line switchover for lines which are explicitly defined as redundant. When a line switchover occurs, this ensures that first of all a line with the same subgroup ID is switched to. If this is not possible, an alternate line is searched for among the lines defined in the REDUNDANT-LINE entry.

REDUNDANT-SUBGROUP=*NONE
The line does not belong to a subgroup.

REDUNDANT-SUBGROUP=<text 1..1> / <c-string 1..1>
Name of the subgroup.

WRITE-DEVICE=<alphanum-name 2..2> / <x-text 4..4> / <alphanum-name 4 .. 4> / <x-text 8 .. 8>
Mnemonic device name of the write device.

READ-DEVICE=<alphanum-name 2..2> / <x-text 4..4> / <alphanum-name 4 .. 4> / <x-text 8 .. 8>
Mnemonic device name of the read device.

SLOW-POLL=...
Defines the SLOW-POLL behavior for the line.

SLOW-POLL=*STD
The general SLOW-POLL default setting (BCOPT command / MODIFY-BCAM-OPTIONS command) is used.

SLOW-POLL=*ON
Causes automatic reactivation following a line failure. This reactivation is attempted every 15 seconds until it succeeds or until a DEACTIVATE-LINE command is issued.

SLOW-POLL=*OFF
No reactivation following a line failure.

BROADCAST=...
Defines the BROADCAST option.

BROADCAST=*STD
The general BROADCAST default setting (BCOPTION command /MODIFY-BCAM-OPTIONS command) is used.

BROADCAST=*ON
The BROADCAST option is activated.

BROADCAST=*OFF
The BROADCAST option is deactivated.

MULTICAST=...
Defines the MULTICAST option.

MULTICAST=*STD
The general MULTICAST default setting (BCOPTION command /MODIFY-BCAM-OPTIONS command) is used.

MULTICAST=*ON
The MULTICAST option is activated.

MULTICAST=*OFF
The MULTICAST option is deactivated.

AUTO-ROUTE-SWITCHING=...
Defines the AUTO-ROUTE-SWITCHING option. This specifies whether IP, IPv6 and INTF routes can be switched to a replacement route (on the same LAN) in the event of a line failure.

AUTO-ROUTE-SWITCHING=*ON
The AUTO-ROUTE-SWITCHING option is activated: routes can be switched.

AUTO-ROUTE-SWITCHING=*OFF
The AUTO-ROUTE-SWITCHING option is deactivated: routes cannot be switched.

ROUTE-RESWITCHING=...
Defines the ROUTE-RESWITCHING option.
The ROUTE-RESWITCHING option specifies whether IP, IPV6 and INTF routes can be switched back to the original path definition, i.e. to this line, in the event of reactivation.

ROUTE-RESWITCHING=*OFF
The ROUTE-RESWITCHING option is deactivated.

ROUTE-RESWITCHING=*ON
The ROUTE-RESWITCHING option is activated.

MAX-LPDU-SIZE=...
MAX-LPDU-SIZE specifies the maximum data length on the line.

MAX-LPDU-SIZE=*STD
The LPDU length will be set to the Ethernet default.

MAX-LPDU-SIZE=*BY-DEVICE
The LPDU length will be set to the value read by the device.

LAN-ADDRESS=...
In LAN-ADDRESS you specify the Ethernet address at which the line is connected to the LAN.
The LAN address must be specified if you wish to operate a partner system with profile (ISO4,INT0) via this line consnection.

LAN-ADDRESS=*DYNAMIC
The Ethernet address for line connection is determined dynamically (by BCAM).

LAN-ADDRESS=<x-string 1..12>
Ethernet address of the line connection.

Command logging

Positive acknowledgments are supplied in news BCA0674, and negative acknowledgments in news BCA06C4.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	1	BCA0768	Syntax error in command
0	1	BCA0770	Parameter <> is incorrect < >
0	64	BCA0601	line <> does not have the same profile as line <>
0	64	BCA0602	line <> does not have the same redundancy as line <>
0	64	BCA0773	Incorrect data type for LINE-NAME
0	64	BCA07A3	NODE-NAME not found
0	64	BCA07A4	HOST-NAME not found
0	64	BCA07AE	Node is a VLAN node
0	64	BCA07E2	LINE-NAME already exists
0	64	BCA0836	Maximum number of possible lines reached
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Example

Create LAN line:

```
[ /CREATE-NODE NODE-NAME=LAN ]

/CREATE-LINE LINE-NAME=L#LAN#1 ,IP-ADDRESS=139.25.24.52, -
/     L2-PROTOCOL=*CSMACD(NODE-NAME=LAN,WRITE-DEVICE=Y6, -
/     READ-DEVICE=Y7)
```

CREATE-LINK-AGGREGATION / CRLAG: Create link aggregation

You use the CREATE-LINK-AGGREGATION command to create a link aggregation of network connections.

The alias name CRLAG exists for CREATE-LINK-AGGREGATION in order to provide SNMP support.

BS2000 console	BS2000-SDF command	Command/ SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

CREATE-LINK-AGGREGATION / CRLAG
AGGREGATION-NAME = <composed-name 1..8>

AGGREGATION-NAME=<composed-name 1..8>
Name of the link aggregation to be created.

Command logging

Positive acknowledgments are supplied in news BCA0677, and negative acknowledgments in news BCA06C7.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	1	BCA0768	Syntax error in command
0	64	BCA07E7	Aggregation name already exists
0	64	BCA0770	Parameter invalid
0	64	BCA0773	Incorrect data type for aggregation name
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Example

Create link aggregation:

```
/CREATE-LINK-AGGREGATION AGGREGATION-NAME=AGGRNA01
```

CREATE-NODE / CRND: Create LAN/VLAN node

You use the CREATE-NODE command to create a LAN/VLAN node. If the CREATE-NODE command is executed successfully, the LAN/VLAN node has the status INCLUDED.

The alias name CRND exists for CREATE-NODE in order to provide SNMP support.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

CREATE-NODE / **CRND**

NODE-NAME = <composed-name 1..8>

,**IP-SUBNET-MASK** = ***STD** / <text 7 .. 18> / <x-string 7 .. 8>

,**LAN-TYPE** = ***NORMAL** / ***VIRTUAL**(...)

***VIRTUAL**(...)

| **VLAN-ID** = ***UNTAGGED** / <integer 2 .. 4094>

| **PRIORITY** = ***STD** / <integer 2 .. 7>

,**TYPE-OF-NODE** = ***NORMAL** / ***CONTROL**

NODE-NAME=<composed-name 1..8>
Name of the LAN node to be created.

IP-SUBNET-MASK=...
You use IP-SUBNET-MASK or the IP address with the prefix length to specify the IP subnet mask that is used on this LAN.

IP-SUBNET-MASK=*STD
The IP subnet mask or IP address with the prefix length that is used on this LAN is derived from the IP address of the first line to be generated with an IP address for connection to the LAN node.

IP-SUBNET-MASK= <text 7..18> / <x-string 7..8>
The IP subnet mask or IP address with the prefix length that is used on this LAN.
Address syntax: <IPv4-address>/<IPv4-prefix-length> or <IPv4-address>.

LAN-TYPE=...
In LAN-TYPE you specify the LAN type.

LAN-TYPE=*NORMAL
The standard LAN-TYPE is used.

LAN-TYPE=*VIRTUAL(...)
The virtual LAN-TYPE is used.

VLAN-ID=...
In VLAN-ID you specify the VLAN ID which is used on this LAN.

VLAN-ID=*UNTAGGED
No VLAN ID is used on the LAN.

VLAN-ID=<integer 2 .. 4094>
VLAN ID which is used on this LAN.

PRIORITY=...
Specifies the priority which is used on this LAN.

PRIORITY=*STD
The standard setting which is used on this LAN.
Default: *STD

PRIORITY=<integer 2 .. 7>
PRIORITY which is used on this LAN.

TYPE-OF-NODE =...
With TYPE-OF-NODE you specify the type of node.
Use of this operand is reserved for Customer Support to support the SE servers.

TYPE-OF-NODE=*NORMAL
The standard type is used.

TYPE-OF-NODE=*CONTROL
The type for a control LAN is set.
The control LAN is used to display information and administer an SE server. The control LAN uses the IPv6 functionality for this purpose. The processors known in the control LAN are created automatically.

Command logging

Positive acknowledgments are supplied in news BCA0671, and negative acknowledgments in news BCA06C1.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	1	BCA0768	Syntax error in command
0	64	BCA0773	Incorrect data type for NODE-NAME
0	64	BCA07E0	Name is already being used as PROCESSOR-NAME
0	64	BCA07E3	Name is already being used as NODE-NAME
0	64	BCA07E4	Name is already being used as HOST-NAME
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

CREATE-PROCESSOR / CRPRR: Create processor

CREATE-PROCESSOR creates a (partner) processor and consequently provides part of the functionality of dynamic BCIN. If the CREATE-PROCESSOR command is executed successfully the processor has the status INCLUDED.

The alias name CRPRR exists for CREATE-PROCESSOR in order to provide SNMP support.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

CREATE-PROCESSOR / **CRPRR**

PROCESSOR-NAME = <composed-name 1..8>

,**SOCKETHOST-NAME** = ***PROCESSOR-NAME** / ***DYNAMIC** / <composed-name 1 .. 32> / <c-string 1 .. 32>

,**MAX-TSDU-SIZE** = **4096** / <integer 4096 .. 65530>

,**ROUTE-SELECTION** = ***SEQUENTIAL-WITH-RETRY** / ***SEQUENTIAL** / ***BALANCED-WITH-RETRY** /

***BALANCED**

,**MAPPING** = ***ALLOWED** / ***NOT-ALLOWED**

,**ADMINISTRATION-TYPE** = ***UNKNOWN** / ***BCAM**

PROCESSOR-NAME=<composed-name 1..8>
Name of the (partner) processor to be created.

SOCKETHOST-NAME=...
Specifies the socket host name of the (partner) processor.

SOCKETHOST-NAME=*PROCESSOR-NAME
The name defined for the (partner) processor with PROCESSOR-NAME is used as the socket host name.

SOCKETHOST-NAME=*DYNAMIC
The socket host name is taken from the socket host file as soon as the (partner) processor is assigned an IP route by means of CREATE-ROUTE (or BCIN GEN=).

SOCKETHOST-NAME=<composed-name 1..32> / <c-string 1..32>
Socket host name of the (partner) processor.

MAX-TSDU-SIZE=4096 / <integer 4096..65530>
This operand describes the maximum message length (in bytes) that the partner processor can receive.

ROUTE-SELECTION=...
ROUTE-SELECTION determines how transport connections are distributed over the routes to a (partner) processor when a connection is being actively established.

ROUTE-SELECTION=*SEQUENTIAL-WITH-RETRY
Sequential distribution (i.e. the next route is not tried until the maximum number of transport connections for the previous route has been reached) with repetition of the connection on a different route if the attempt using the currently selected route fails.

ROUTE-SELECTION=*SEQUENTIAL
Sequential distribution (i.e. the next route is not tried until the maximum number of transport connections for the previous route has been reached) without repetition of the connection on a different route if the attempt using the currently selected route fails.

ROUTE-SELECTION=*BALANCED-WITH-RETRY
Balanced distribution of transport connections across the routes with repetition of the connection on a different route if the attempt using the currently selected route fails.

ROUTE-SELECTION=*BALANCED
Balanced distribution of transport connections across the routes without repetition of the connection on a different route if the attempt using the currently selected route fails.

MAPPING=...
With MAPPING you specify whether the name of the (partner) processor can be used in a mapping definition (BCMAP command).

MAPPING=*ALLOWED
The name of the (partner) processor may be used in a mapping definition (BCMAP command).

MAPPING=*NOT-ALLOWED
The name of the (partner) processor may not be used in a mapping definition (BCMAP command).

ADMINISTRATION-TYPE=...
In ADMINISTRATION-TYPE you specify the administration type for the (partner) processor.

ADMINISTRATION-TYPE=*UNKNOWN
The administration type for the (partner) processor is unknown.

ADMINISTRATION-TYPE=*BCAM
The (partner) processor is administered by BCAM.

Command logging

Positive acknowledgments are supplied in news BCA0672, and negative acknowledgments in news BCA06C2.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	1	BCA0768	Syntax error in command
0	64	BCA0770	Parameter error
0	64	BCA0773	Incorrect data type for PROCESSOR-NAME
0	64	BCA07E0	Name is already being used as PROCESSOR-NAME
0	64	BCA07E3	Name is already being used as NODE-NAME
0	64	BCA07E4	Name is already being used as HOST-NAME
0	64	BCA0833	Name already exists
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

CREATE-ROUTE / CRRT: Create route

You use the CREATE-ROUTE command to create a route. If the CREATE-ROUTE command is executed successfully the route has the status INCLUDED.

The alias name CRRT exists for CREATE-ROUTE in order to provide SNMP support.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

For all route definitions, at least one route name must be specified:

CREATE-ROUTE / **CRRT**

ROUTE-NAME = <composed-name 1..8>

,**PROCESSOR-NAME** = ***ROUTE-NAME** / <composed-name 1 .. 8> / <c-string 1 .. 8>

,**PATH** = ***NODE** / ***VIA-ROUTER** / ***VIA-TUNNEL**

,**ATTRIBUTES** = ***STD** / [***PARAMETERS**](**...**)

[***PARAMETERS**](...)

| **ROUTE-DOWN** = ***KEEP-CONNECTION** / ***DISCONNECT**

| ,**ROUTE-SEQUENCE-NUM** = **0** / <integer 0..99>

BCAM distinguishes between the following route types on the basis of the connection type and accessibility within the network. The distinction is made in the PATH operand:

1. LAN node route

   A LAN node route is used to access an end system which is directly connected to a LAN.
   Defined by: ,PATH=*NODE(...)

2. Router route

   A router route is used to access a remote end system whose L3 protocol corresponds to that of the router.
   Defined by: ,PATH=*VIA-ROUTER(...)

3. Tunnel route

   A tunnel route is used to access a remote end system that is connected via an IPv4 network whose L3 protocol is IPv6.
   Defined by: ,PATH=*VIA-TUNNEL(...)

CREATE-ROUTE: Create LAN node route

CREATE-ROUTE / **CRRT** for a LAN node route

ROUTE-NAME = <composed-name 1 .. 8>

,**PROCESSOR-NAME** = ***ROUTE-NAME** / <composed-name 1 .. 8> / <c-string 1 .. 8>

,**PATH** = ***NODE**(...)

***NODE**(...)

| **NODE-NAME =** <composed-name 1 .. 8> / <c-string 1 .. 8>

| ,**HOST-NAME =** ***STD** / <composed-name 1 .. 8> / <c-string 1 .. 8>

| ,**LINE-NAME** = ***STD** / <composed-name 1 .. 8> / <c-string 1 .. 8>

| ,**L3-PROTOCOL** = ***IP** (...) / ***IPV6**(...) / ***INTF**(...) / ***INT0**(...)

| ***IP** (...)

| | **L4-PROTOCOL** = ***TCP**

| | ,**L3-SUBPROTOCOL** = ***NONE** / ***SNAP**

| | ,**IP-ADDRESS** = ***STD** / <text 7 .. 15> / <x-string 7 .. 8>

| | ,**OWN-IP-ADDRESS** = ***STD** / <text 7 .. 18> / <x-string 7 .. 8>

| | ,**LAN-ADDRESS** = ***DYNAMIC** / <x-string 1 .. 12>

| | ,**AUTO-ROUTE-SWITCHING** = ***ON** / ***OFF**

| | ,**ROUTE-RESWITCHING** = ***OFF** / ***ON**

| | ,**RARP-REPLIES** = ***** **NOT-ALLOWED** / ***ALLOWED**

| | ,**TRANSON-USAGE** = ***OFF** / ***ON**

| ***IPV6**(...)

| | **L4-PROTOCOL** = ***TCP**

| | ,**L3-SUBPROTOCOL** = ***NONE** / ***SNAP**

| | ,**IPV6-ADDRESS** = ***STD** / <text 9 .. 45> / <c-string 9 .. 45>

| | ,**OWN-IPV6-ADDRESS** = ***STD** / <text 9 .. 49> / <c-string 9 .. 49>

| | ,**LAN-ADDRESS** = ***DYNAMIC** / <x-string 1 .. 12>

| | ,**AUTO-ROUTE-SWITCHING** = ***ON** / ***OFF**

| | ,**ROUTE-RESWITCHING** = ***OFF** / ***ON**

| ***INTF**(...)

| | **L4-PROTOCOL** = ***ISO-4**

```
        |                |       ,ISO-ADDRESS = *STD / <x-string 1..40>
        |                |       ,OWN-ISO-ADDRESS = *STD / <x-string 1..40>
        |                |       ,LAN-ADDRESS = *DYNAMIC / <x-string 1..12>
        |                |       ,AUTO-ROUTE-SWITCHING = *ON / *OFF
        |                |       ,ROUTE-RESWITCHING = *OFF / *ON
        |            *INT0(...)
        |                |       L4-PROTOCOL = *ISO-4
        |                |       ,LAN-ADDRESS = <x-string 1..12>
        |       ,MAX-LPDU-SIZE = *STD / *ETHERNET-STD
, ATTRIBUTES = *STD / [ *PARAMETERS ](...)
    [ *PARAMETERS ](...)
        |       ROUTE-DOWN = *KEEP-CONNECTION / *DISCONNECT
        |       , ROUTE-SEQUENCE-NUM = 0 / <integer 0..99>
```

ROUTE-NAME=<composed-name 1..8>
Name of the route that is to be generated.

PROCESSOR-NAME=...
In PROCESSOR-NAME you specify the name of the processor to which the route leads.

PROCESSOR-NAME=*ROUTE-NAME
The name of the route (ROUTE-NAME operand) is used as the processor name.

PROCESSOR-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the processor to which the route leads.

PATH=*NODE(...)
You want to define a LAN route.

NODE-NAME=<composed-name 1..8> / <c-string 1..8>
In NODE-NAME you specify the name of the associated LAN node.

HOST-NAME=...
In HOST-NAME you specify the name of the host from which the route starts.

HOST-NAME=*STD
The name of the default host (host name from the DCSTART or DCOPT command) is used as the host name.

HOST-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the host from which the route starts.

LINE-NAME=...
In LINE-NAME you specify the name of the line via which the route operates.

LINE-NAME=*STD
The name of the only line leading to the node *or* – if there are multiple lines to the node – the name of the LAN node (NODE-NAME operand) is used as the line name.

LINE-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the line via which the route operates.

L3-PROTOCOL=...
In L3-PROTOCOL you specify which Layer 3 protocol is used on the route.

L3-PROTOCOL=*IP
The Layer 3 protocol IP is used on the route.

L4-PROTOCOL=...
In L4-PROTOCOL you specify which Layer 4 protocol is used on the route.

L4-PROTOCOL=*TCP
The Layer 4 protocol TCP is used on the route.

L3-SUBPROTOCOL=...
In L3-SUBPROTOCOL you specify which Layer 3 subprotocol is used on the route.

L3-SUBPROTOCOL=*NONE
No Layer 3 subprotocol is used on the route.

L3-SUBPROTOCOL=*SNAP
The Layer 3 subprotocol SNAP is used on the route.

IP-ADDRESS=...
In IP-ADDRESS you specify the partner IP address of the route.

IP-ADDRESS=*STD
The IP address assigned to the processor (PROCESSOR-NAME) is used as the IP partner address of the route.

IP-ADDRESS=<text 7..15> / <x-string 7..8>
Partner IP address of the route.

OWN-IP-ADDRESS=...
In OWN-IP-ADDRESS you specify the local IP address of the route.

OWN-IP-ADDRESS=*STD
The IP address assigned to the line (LINE-NAME) is used as the local IP address of the route.

OWN-IP-ADDRESS=<text 7..18> / <x-string 7..8>
Local IP address of the route, if required with specification of the prefix length, via which the host can be addressed over a line. If the prefix length is not specified, the default prefix length which matches the IPv4 address is determined.
Address syntax:
<IPv4-address>/<IPv4-prefix-length> or <IPv4-address>.

LAN-ADDRESS=...
In LAN-ADDRESS you specify the partner Ethernet address of the route.

LAN-ADDRESS=*DYNAMIC
The partner Ethernet address of the route is dynamically determined.

LAN-ADDRESS=<x-string 1..12>
Partner Ethernet address of the route.

AUTO-ROUTE-SWITCHING=...
Defines the AUTO-ROUTE-SWITCHING option.
The AUTO-ROUTE-SWITCHING option specifies whether the route's path definitions can be changed as a result of routing protocol functions.

AUTO-ROUTE-SWITCHING=*ON
The AUTO-ROUTE-SWITCHING option is activated: the route can be modified.

AUTO-ROUTE-SWITCHING=*OFF
The AUTO-ROUTE-SWITCHING option is deactivated: the route cannot be modified.

ROUTE-RESWITCHING=...
Defines the ROUTE-RESWITCHING option.
The ROUTE-RESWITCHING option specifies whether the route can be switched back to the original path definition in the event of reactivation.

ROUTE-RESWITCHING=*OFF
The ROUTE-RESWITCHING option is deactivated.

ROUTE-RESWITCHING=*ON
The ROUTE-RESWITCHING option is activated.

RARP-REPLIES=...
In RARP-REPLIES you specify whether RARP is supported, i.e. whether incoming RARP requests can be responded to with the corresponding RARP replies.

RARP-REPLIES=*NOT-ALLOWED
There is no passive RARP support.

RARP-REPLIES=*ALLOWED
There is passive RARP support.

TRANSON-USAGE=...
You use TRANSON-USAGE to specify whether the route is used to access a TranSON server.

TRANSON-USAGE=*OFF
The route is not used to access a TranSON server.

TRANSON-USAGE=*ON
The route is used to access a TranSON server.

L3-PROTOCOL=*IPV6
The Layer 3 protocol IPv6 is used on the route.

L4-PROTOCOL=...
In L4-PROTOCOL you specify which Layer 4 protocol is used on the route.

L4-PROTOCOL=*TCP
The Layer 4 protocol TCP is used on the route.

L3-SUBPROTOCOL=...
In L3-SUBPROTOCOL you specify which Layer 3 subprotocol is used on the route.

L3-SUBPROTOCOL=*NONE
No Layer 3 subprotocol is used on the route.

L3-SUBPROTOCOL=*SNAP
The Layer 3 subprotocol SNAP is used on the route.

IPV6-ADDRESS=...
In IPv6-ADDRESS you specify the partner IPv6 address of the route.

IPV6-ADDRESS=*STD
The IPv6 address assigned to the processor (PROCESSOR-NAME) is used as the IPv6 partner address of the route.

IPV6-ADDRESS=<text 9..45> / <c-string 9..45>
Partner IPv6 address of the route.

OWN-IPV6-ADDRESS=...
In OWN-IPv6-ADDRESS you specify the local IPv6 address of the route.

OWN-IPV6-ADDRESS=*STD
The IPv6 address assigned to the line (LINE-NAME) is used as the local IPv6 address of the route.

OWN-IPV6-ADDRESS=<text 9..49> / <c-string 9..49>
Local IPv6 address under which the host can be addressed on this LAN. The address must be specified with the IPv6 prefix length.
Syntax: IPv6 address/IPv6 prefix length

LAN-ADDRESS=...
In LAN-ADDRESS you specify the partner Ethernet address of the route.

LAN-ADDRESS=*DYNAMIC
The partner Ethernet address of the route is dynamically determined.

LAN-ADDRESS=<x-string 1..12>
Partner Ethernet address of the route.

AUTO-ROUTE-SWITCHING=...
Defines the AUTO-ROUTE-SWITCHING option.
The AUTO-ROUTE-SWITCHING option specifies whether the route’s path definitions can be changed as a result of routing protocol functions.

AUTO-ROUTE-SWITCHING=*ON
The AUTO-ROUTE-SWITCHING option is activated: the route can be modified.

AUTO-ROUTE-SWITCHING=*OFF
The AUTO-ROUTE-SWITCHING option is deactivated: the route cannot be modified.

ROUTE-RESWITCHING=...
Defines the ROUTE-RESWITCHING option.
The ROUTE-RESWITCHING option specifies whether the route can be switched back to the original path definition in the event of reactivation.

ROUTE-RESWITCHING=*OFF
The ROUTE-RESWITCHING option is deactivated.

ROUTE-RESWITCHING=*ON
The ROUTE-RESWITCHING option is activated.

L3-PROTOCOL=*INTF
The Layer 3 protocol ISO8473 Full Internet is used on the route.

L4-PROTOCOL=...
In L4-PROTOCOL you specify which Layer 4 protocol is used on the route.

L4-PROTOCOL=*ISO-4
The Layer 4 protocol ISO8073 Class 4 is used on the route.

ISO-ADDRESS=...
In ISO-ADDRESS you specify the partner ISO Internet address of the route.

ISO-ADDRESS=*STD
The ISO Internet address assigned to the processor (PROCESSOR-NAME) is used as the ISO Internet partner address of the route.

ISO-ADDRESS=<x-string 1..40>
Partner ISO Internet address of the route.

OWN-ISO-ADDRESS=...
In OWN-ISO-ADDRESS you specify the local ISO Internet address of the route.

OWN-ISO-ADDRESS=*STD
The ISO Internet address assigned to the line (LINE-NAME) is used as the local ISO Internet address of the route.

OWN-ISO-ADDRESS=<x-string 1..40>
Local ISO Internet address of the route.

LAN-ADDRESS=...
In LAN-ADDRESS you specify the partner Ethernet address of the route.

LAN-ADDRESS=*DYNAMIC
The partner Ethernet address of the route is dynamically determined.

LAN-ADDRESS=<x-string 1..12>
Partner Ethernet address of the route.

AUTO-ROUTE-SWITCHING=...
Defines the AUTO-ROUTE-SWITCHING option.
The AUTO-ROUTE-SWITCHING option specifies whether the route’s path definitions can be changed as a result of routing protocol functions.

AUTO-ROUTE-SWITCHING=*ON
The AUTO-ROUTE-SWITCHING option is activated: the route can be modified.

AUTO-ROUTE-SWITCHING=*OFF
The AUTO-ROUTE-SWITCHING option is deactivated: the route cannot be modified.

ROUTE-RESWITCHING=...
Defines the ROUTE-RESWITCHING option.
The ROUTE-RESWITCHING option specifies whether the route can be switched back to the original path definition in the event of reactivation.

ROUTE-RESWITCHING=*OFF
The ROUTE-RESWITCHING option is deactivated.

ROUTE-RESWITCHING=*ON
The ROUTE-RESWITCHING option is activated.

L3-PROTOCOL=*INT0
The Layer 3 protocol ISO8473 Null Internet is used on the route.

L4-PROTOCOL=...
In L4-PROTOCOL you specify which Layer 4 protocol is used on the route.

L4-PROTOCOL=*ISO-4
The Layer 4 protocol ISO8073 Class 4 is used on the route.

LAN-ADDRESS=<x-string 1..12>
In LAN-ADDRESS you specify the partner Ethernet address of the route.

MAX-LPDU-SIZE=...
In MAX-LPDU-SIZE you specify the maximum data length that can be used on the associated line for the route.

MAX-LPDU-SIZE=*STD
The default length of the associated line is used.

MAX-LPDU-SIZE=*ETHERNET-STD
The default length of an Ethernet LAN is used.

ATTRIBUTES=...
ATTRIBUTES defines the route's attributes.

ATTRIBUTES=*STD
The default attributes are defined.

ATTRIBUTES=[*PARAMETERS](...)
Specifies the route's attributes.

ROUTE-DOWN=...
Specifies whether the allocated transport connections should be shut down if the route fails.

ROUTE-DOWN=*KEEP-CONNECTION
If the route fails, the allocated transport connections are not shut down.

ROUTE-DOWN=*DISCONNECT
If the route fails, the allocated transport connections are shut down.

ROUTE-SEQUENCE-NUM=0 / <integer 0..99>
Route number for route selection.
Determines the sequence of routes during route selection in order to distribute the transport connections (when actively set up) to routes.

Command logging

Positive acknowledgments are supplied in news BCA0676, and negative acknowledgments in news BCA06C6.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	1	BCA0768	Syntax error in command
0	1	BCA0770	Parameter invalid
0	64	BCA0773	Incorrect data type for ROUTE-NAME
0	64	BCA0775	Address of type... undefined
0	64	BCA07A0	PROCESSOR-NAME not found
0	64	BCA07A2	LINE-NAME not found
0	64	BCA07A3	NODE-NAME not found
0	64	BCA07A4	HOST-NAME not found
0	64	BCA07E1	Name is already being used as ROUTE-NAME
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

CREATE-ROUTE: Create ROUTER route

CREATE-ROUTE / **CRRT** for a router route

ROUTE-NAME = <composed-name 1 .. 8>

,**PROCESSOR-NAME** = ***ROUTE-NAME** / <composed-name 1 .. 8> / <c-string 1 .. 8>

,**PATH** = ***VIA-ROUTER**(...)

***VIA-ROUTER**(...)

| **ROUTER-ROUTE-NAME** = <composed-name 1 .. 8> / <c-string 1 .. 8>

| ,**L3-PROTOCOL** = ***IP** (...) / ***IPV6**(...) / ***INTF**(...)

| ***IP** (...)

| | **L4-PROTOCOL** = ***TCP**

| | ,**L3-SUBPROTOCOL** = ***NONE** / ***SNAP**

| | ,**IP-ADDRESS** = ***STD** / <text 7 .. 15> / <x-string 7 .. 8>

| | ,**OWN-IP-ADDRESS** = ***STD** / <text 7 .. 18> / <x-string 7 .. 8>

| | ,**AUTO-ROUTE-SWITCHING** = ***ON** / ***OFF**

| | ,**ROUTE-RESWITCHING** = ***OFF** / ***ON**

| | ,**TRANSON-USAGE** = ***OFF** / ***ON**

| ***IPV6**(...)

| | **L4-PROTOCOL** = ***TCP**

| | ,**L3-SUBPROTOCOL** = ***NONE** / ***SNAP**

| | ,**IPV6-ADDRESS** = ***STD** / <text 9 .. 45> / <c-string 9 .. 45>

| | ,**OWN-IPV6-ADDRESS** = ***STD** / <text 9 .. 49> / <c-string 9 .. 49>

| | ,**AUTO-ROUTE-SWITCHING** = ***ON** / ***OFF**

| | ,**ROUTE-RESWITCHING** = ***OFF** / ***ON**

| ***INTF**(...)

| | **L4-PROTOCOL** = ***ISO-4**

| | ,**ISO-ADDRESS** = ***STD** / <x-string 1..40>

| | ,**OWN-ISO-ADDRESS** = ***STD** / <x-string 1..40>

| | ,**AUTO-ROUTE-SWITCHING** = ***ON** / ***OFF**

| | ,**ROUTE-RESWITCHING** = ***OFF** / ***ON**

| ,**MAX-LPDU-SIZE** = ***STD** / ***ETHERNET-STD**

,**ATTRIBUTES** = ***STD** / [***PARAMETERS**](...)

[***PARAMETERS**](...)

| **ROUTE-DOWN** = ***KEEP-CONNECTION** / ***DISCONNECT**

| ,**ROUTE-SEQUENCE-NUM** = **0** / <integer 0 .. 99>

ROUTE-NAME=<composed-name 1..8>
Name of the route that is to be generated.

PROCESSOR-NAME=...
In PROCESSOR-NAME you specify the name of the processor to which the route leads.

PROCESSOR-NAME=*ROUTE-NAME
The name of the route (ROUTE-NAME operand) is used as the processor name.

PROCESSOR-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the processor to which the route leads.

PATH=*VIA-ROUTER(...)
You want to define a ROUTER route.

ROUTER-ROUTE-NAME=<composed-name 1..8> / <c-string 1..8>
In ROUTER-ROUTE-NAME you specify the name of the route to the associated router.

L3-PROTOCOL=...
In L3-PROTOCOL you specify which Layer 3 protocol is used on the route.

L3-PROTOCOL=*IP
The Layer 3 protocol IP is used on the route.

L4-PROTOCOL=...
In L4-PROTOCOL you specify which Layer 4 protocol is used on the route.

L4-PROTOCOL=*TCP
The Layer 4 protocol TCP is used on the route.

L3-SUBPROTOCOL=...
In L3-SUBPROTOCOL you specify which Layer 3 subprotocol is used on the route.
This operand is only valid for routes which pass via a router which is accessed via a LAN node.

L3-SUBPROTOCOL=*NONE
No Layer 3 subprotocol is used on the route.

L3-SUBPROTOCOL=*SNAP
The Layer 3 subprotocol SNAP is used on the route.

IP-ADDRESS=...
In IP-ADDRESS you specify the partner IP address of the route.

IP-ADDRESS=*STD
The IP address assigned to the processor (PROCESSOR-NAME) is used as the IP partner address of the route.

IP-ADDRESS=<text 7..15> / <x-string 7..8>
Partner IP address of the route.

OWN-IP-ADDRESS=...
In OWN-IP-ADDRESS you specify the local IP address of the route.

OWN-IP-ADDRESS=*STD
The local IP address of the route to the router (ROUTER-ROUTE-NAME) is used as the local IP address of the route.

OWN-IP-ADDRESS=<text 7..18> / <x-string 7..8>
Local IP address of the route, if required with specification of the prefix length, via which the host can be addressed over a line. If the prefix length is not specified, the default prefix length which matches the IPv4 address is determined.
Address syntax:
<IPv4-address>/<IPv4-prefix-length> or <IPv4-address>.

AUTO-ROUTE-SWITCHING=...
Defines the AUTO-ROUTE-SWITCHING option.
The AUTO-ROUTE-SWITCHING option specifies whether the route's path definitions can be changed as a result of routing protocol functions.

AUTO-ROUTE-SWITCHING=*ON
The AUTO-ROUTE-SWITCHING option is activated: the route can be modified.

AUTO-ROUTE-SWITCHING=*OFF
The AUTO-ROUTE-SWITCHING option is deactivated: the route cannot be modified.

ROUTE-RESWITCHING=...
Defines the ROUTE-RESWITCHING option.
The ROUTE-RESWITCHING option specifies whether the route can be switched back to the original path definition in the event of reactivation.

ROUTE-RESWITCHING=*OFF
The ROUTE-RESWITCHING option is deactivated.

ROUTE-RESWITCHING=*ON
The ROUTE-RESWITCHING option is activated.

TRANSON-USAGE=...
You use TRANSON-USAGE to specify whether the route is used to access a TranSON server.

TRANSON-USAGE=*OFF
The route is not used to access a TranSON server.

TRANSON-USAGE=*ON
The route is used to access a TranSON server.

L3-PROTOCOL=*IPV6
The Layer 3 protocol IPv6 is used on the route.

L4-PROTOCOL=...
In L4-PROTOCOL you specify which Layer 4 protocol is used on the route.

L4-PROTOCOL=*TCP
The Layer 4 protocol TCP is used on the route.

L3-SUBPROTOCOL=...
In L3-SUBPROTOCOL you specify which Layer 3 subprotocol is used on the route.
This operand is only valid for routes which pass via a router which is accessed via a LAN node.

L3-SUBPROTOCOL=*NONE
No Layer 3 subprotocol is used on the route.

L3-SUBPROTOCOL=*SNAP
The Layer 3 subprotocol SNAP is used on the route.

IPV6-ADDRESS=...
In IPv6-ADDRESS you specify the partner IPv6 address of the route.

IPV6-ADDRESS=*STD
The IPv6 address assigned to the processor (PROCESSOR-NAME) is used as the IPv6 partner address of the route.

IPV6-ADDRESS=<text 9..45> / <c-string 9..45>
Partner IPv6 address of the route.

OWN-IPV6-ADDRESS=...
In OWN-IPv6-ADDRESS you specify the local IPv6 address of the route.

OWN-IPV6-ADDRESS=*STD
The local IPv6 address of the route to the router (ROUTER-ROUTE-NAME) is used as the local IPv6 address of the route..

OWN-IPV6-ADDRESS=<text 9..49> / <c-string 9..49>
Local IPv6 address under which the host can be addressed on this LAN. The address must be specified with the IPv6 prefix length.
Syntax: IPv6 address/IPv6 prefix length

AUTO-ROUTE-SWITCHING=...
Defines the AUTO-ROUTE-SWITCHING option.
The AUTO-ROUTE-SWITCHING option specifies whether the route's path definitions can be changed as a result of routing protocol functions.

AUTO-ROUTE-SWITCHING=*ON
The AUTO-ROUTE-SWITCHING option is activated: the route can be modified.

AUTO-ROUTE-SWITCHING=*OFF
The AUTO-ROUTE-SWITCHING option is deactivated: the route cannot be modified.

ROUTE-RESWITCHING=...
Defines the ROUTE-RESWITCHING option.
The ROUTE-RESWITCHING option specifies whether the route can be switched back to the original path definition in the event of reactivation.

ROUTE-RESWITCHING=*OFF
The ROUTE-RESWITCHING option is deactivated.

ROUTE-RESWITCHING=*ON
The ROUTE-RESWITCHING option is activated.

L3-PROTOCOL=*INTF
The Layer 3 protocol ISO8473 Full Internet is used on the route.

L4-PROTOCOL=...
In L4-PROTOCOL you specify which Layer 4 protocol is used on the route.

L4-PROTOCOL=*ISO-4
The Layer 4 protocol ISO8073 Class 4 is used on the route.

ISO-ADDRESS=...
In ISO-ADDRESS you specify the partner ISO Internet address of the route.

ISO-ADDRESS=*STD
The ISO Internet address assigned to the processor (PROCESSOR-NAME) is used as the ISO Internet partner address of the route.

ISO-ADDRESS=<x-string 1..40>
Partner ISO Internet address of the route.

OWN-ISO-ADDRESS=...
In OWN-ISO-ADDRESS you specify the local ISO Internet address of the route.

OWN-ISO-ADDRESS=*STD
The local ISO Internet address of the route to the router (ROUTER-ROUTE-NAME) is used as the local ISO Internet address of the route.

OWN-ISO-ADDRESS=<x-string 1..40>
Local ISO Internet address of the route.

AUTO-ROUTE-SWITCHING=...
Defines the AUTO-ROUTE-SWITCHING option.
The AUTO-ROUTE-SWITCHING option specifies whether the route's path definitions can be changed as a result of routing protocol functions.

AUTO-ROUTE-SWITCHING=*ON
The AUTO-ROUTE-SWITCHING option is activated: the route can be modified.

AUTO-ROUTE-SWITCHING=*OFF
The AUTO-ROUTE-SWITCHING option is deactivated: the route cannot be modified.

ROUTE-RESWITCHING=...
Defines the ROUTE-RESWITCHING option.
The ROUTE-RESWITCHING option specifies whether the route can be switched back to the original path definition in the event of reactivation.

ROUTE-RESWITCHING=*OFF
The ROUTE-RESWITCHING option is deactivated.

ROUTE-RESWITCHING=*ON
The ROUTE-RESWITCHING option is activated.

MAX-LPDU-SIZE=...
In MAX-LPDU-SIZE you specify the maximum data length that can be used on the associated line for the route.

MAX-LPDU-SIZE=*STD
The default length of the associated line is used.

MAX-LPDU-SIZE=*ETHERNET-STD
The default length of an Ethernet LAN is used.

ATTRIBUTES=...
ATTRIBUTES defines the route's attributes.

ATTRIBUTES=*STD
The default attributes are defined.

ATTRIBUTES=[*PARAMETERS](...)
Specifies the route's attributes.

ROUTE-DOWN=...
Specifies whether the allocated transport connections should be shut down if the route fails.

ROUTE-DOWN=*KEEP-CONNECTION
If the route fails, the allocated transport connections are not shut down.

ROUTE-DOWN=*DISCONNECT
If the route fails, the allocated transport connections are shut down.

ROUTE-SEQUENCE-NUM=0 / <integer 0..99>
Route number for route selection.
Determines the sequence of routes during route selection in order to distribute the transport connections (when actively set up) to routes.

Command logging

Positive acknowledgments are supplied in news BCA0676, and negative acknowledgments in news BCA06C6.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	1	BCA0768	Syntax error in command
0	1	BCA0770	Parameter invalid
0	64	BCA0773	Incorrect data type for ROUTE-NAME
0	64	BCA0775	Address of this type not defined
0	64	BCA07A0	PROCESSOR-NAME not found
0	64	BCA07A1	ROUTER-ROUTE-NAME not found
0	64	BCA07E1	Name is already being used as ROUTE-NAME
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

CREATE-ROUTE: Create tunnel route

CREATE-ROUTE / **CRRT** for a tunnel route

ROUTE-NAME = <composed-name 1 .. 8>

,**PROCESSOR-NAME** = ***ROUTE-NAME** / <composed-name 1 .. 8> / <c-string 1 .. 8>

,**PATH** = ***VIA-TUNNEL**(...)

***VIA-TUNNEL**(...)

| **TUNNEL-ROUTE-NAME** = <composed-name 1..8> / <c-string 1..8>

| ,**L3-PROTOCOL** = ***IPV6** (...)

| ***IPV6**(...)

| | **L4-PROTOCOL** = ***TCP**

| | ,**IPV6-ADDRESS** = ***STD** / <text 9 .. 45> / <c-string 9 .. 45>

| | ,**OWN-IPV6-ADDRESS** = ***STD** / <text 9 .. 49> / <c-string 9 .. 49>

| | ,**AUTO-ROUTE-SWITCHING** = ***ON** / ***OFF**

| | ,**ROUTE-RESWITCHING** = ***OFF** / ***ON**

,**ATTRIBUTES** = ***STD** / [***PARAMETERS**](...)

[***PARAMETERS**](...)

| **ROUTE-DOWN** = ***KEEP-CONNECTION** / ***DISCONNECT**

| ,**ROUTE-SEQUENCE-NUM** = **0** / <integer 0 .. 99>

ROUTE-NAME=<composed-name 1..8>
Name of the route that is to be generated.

PROCESSOR-NAME=...
In PROCESSOR-NAME you specify the name of the processor to which the route leads.

PROCESSOR-NAME=*ROUTE-NAME
The name of the route (ROUTE-NAME operand) is used as the processor name.

PROCESSOR-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the processor to which the route leads.

PATH=*VIA-TUNNEL(...)
You want to define a TUNNEL route.

TUNNEL-ROUTE-NAME=<composed-name 1..8> / <c-string 1..8>
In TUNNEL-ROUTE-NAME you specify the name of the associated tunnel router. The tunnel router must have the IP profile.

L3-PROTOCOL=...
In L3-PROTOCOL you specify which Layer 3 protocol is used on the route.

L3-PROTOCOL=*IPV6
The Layer 3 protocol IPv6 is used on the route.

L4-PROTOCOL=...
In L4-PROTOCOL you specify which Layer 4 protocol is used on the route.

L4-PROTOCOL=*TCP
The Layer 4 protocol TCP is used on the route.

IPV6-ADDRESS=...
In IPv6-ADDRESS you specify the partner IPv6 address of the route.

IPV6-ADDRESS=*STD
The IPv6 address assigned to the processor (PROCESSOR-NAME) is used as the IPv6 partner address of the route.

IPV6-ADDRESS=<text 9..45> / <c-string 9..45>
Partner IPv6 address of the route.

OWN-IPV6-ADDRESS=...
In OWN-IPv6-ADDRESS you specify the local IPv6 address of the route.

OWN-IPV6-ADDRESS=*STD
The route line to the tunnel (TUNNEL-ROUTE-NAME) is used as the local IPv6 partner address of the route..

OWN-IPV6-ADDRESS=<text 9..49> / <c-string 9..49>
Local IPv6 address under which the host can be addressed on this LAN. The address must be specified with the IPv6 prefix length.
Syntax: IPv6 address/IPv6 prefix length

AUTO-ROUTE-SWITCHING=...
Defines the AUTO-ROUTE-SWITCHING option.
The AUTO-ROUTE-SWITCHING option specifies whether the route’s path definitions can be changed as a result of routing protocol functions.

AUTO-ROUTE-SWITCHING=*ON
The AUTO-ROUTE-SWITCHING option is activated: the route can be modified.

AUTO-ROUTE-SWITCHING=*OFF
The AUTO-ROUTE-SWITCHING option is deactivated: the route cannot be modified.

ROUTE-RESWITCHING=...
Defines the ROUTE-RESWITCHING option.
The ROUTE-RESWITCHING option specifies whether the route can be switched back to the original path definition in the event of reactivation.

ROUTE-RESWITCHING=*OFF
The ROUTE-RESWITCHING option is deactivated.

ROUTE-RESWITCHING=*ON
The ROUTE-RESWITCHING option is activated.

ATTRIBUTES=...
ATTRIBUTES defines the route’s attributes.

ATTRIBUTES=*STD
The default attributes are defined.

ATTRIBUTES=[*PARAMETERS](...)
Specifies the route's attributes.

ROUTE-DOWN=...
Specifies whether the allocated transport connections should be shut down if the route fails.

ROUTE-DOWN=*KEEP-CONNECTION
If the route fails, the allocated transport connections are not shut down.

ROUTE-DOWN=*DISCONNECT
If the route fails, the allocated transport connections are shut down.

ROUTE-SEQUENCE-NUM=0 / <integer 0..99>
Route number for route selection.
Determines the sequence of routes during route selection in order to distribute the transport connections (when actively set up) to routes.

Command logging

Positive acknowledgments are supplied in news BCA0676, and negative acknowledgments in news BCA06C6.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	1	BCA0768	Syntax error in command
0	1	BCA0770	Parameter invalid
0	64	BCA0773	Incorrect data type for ROUTE-NAME
0	64	BCA0775	Address to type... not defined
0	64	BCA07A0	PROCESSOR-NAME not found
0	64	BCA07A1	TUNNEL-ROUTE-NAME not found
0	64	BCA07E1	Name is already being used as ROUTE-NAME
0	64	BCA07ED	Rout is no IP route
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

CREATE-VIRTUAL-HOST / CRVTHT: Create virtual host

You use the CREATE-VIRTUAL-HOST command to take over a virtual host and its network view from the RDF or to define these directly by means of attributes. .

Any definitions that have been taken over cannot be undone.

The alias name CRVTHT exists for CREATE-VIRTUAL-HOST in order to provide SNMP support.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

CREATE-VIRTUAL-HOST / CRVTHT

HOST-NAME = <composed-name 1..8> / <c-string 1 .. 8>

,**ATTRIBUTES** = ***BY-RDF-FILE** (...) / ***PARAMETERS**(...)

***BY-RDF-FILE**(...)

| **RDF-FILE-NAME** = ***STD** / <filename 1 .. 54>

***PARAMETERS**(...)

| **SOCKETHOST-NAME** = ***HOST-NAME** / <composed-name 1 .. 32> / <c-string 1 .. 32>

| ,**MAX-TSDU-SIZE** = **4096** / <integer 4096 .. 65530>

,**STATUS-JV** = ***NONE** / <filename 1 .. 54 without-gen-vers>

HOST-NAME=<composed-name 1..8> / <c-string 1 .. 32>
Name of the virtual host that is to be created.

ATTRIBUTES=...
Specifies the network description attributes present in the virtual host (and its network view).

ATTRIBUTES=*BY-RDF-FILE(...)
The description of the virtual host (and its network view) is taken from an RDF file.

RDF-FILE-NAME=...
You must specify an RDF file name.

RDF-FILE-NAME=*STD
The RDF file used for DCOPT/DCSTART is used.

RDF-FILE-NAME=<filename 1..54>
File name of the RDF file.

> i If the file is not available under the system administrator ID TSOS, then the file name must be specified in fully qualified form with USERID.
> The RDF must always be cataloged in the home pubset, otherwise errors may occur in connection with files cataloged on data pubsets or shared pubsets.

ATTRIBUTES=*PARAMETERS(...)
The definition of the virtual host is taken from the following operands.

SOCKETHOST-NAME=...
Specifies the socket host name of the virtual host.

SOCKETHOST-NAME=*HOST-NAME
The name of the virtual host, padded out with blanks to the length of the socket host name, is used as the socket host name.

SOCKETHOST-NAME=<composed-name 1..32> / <c-string 1..32>
Socket host name of the virtual host.

MAX-TSDU-SIZE=4096 / <integer 4096..65530>
This operand describes the maximum message length (in bytes) that the virtual host can receive.

STATUS-JV=...
Name of the job variable (JV) in which the status information for the virtual host is stored. For the layout refer to section "Event monitoring using BCAM job variables".

STATUS-JV=*NONE
No status information is stored in the job variable.

STATUS-JV=<filename 1..54 without-gen-vers>
File name of the job variable in which the status information of the virtual host is stored.

> If the JV is not available under the system administrator ID TSOS, then the file name must be specified in fully qualified form with USERID.
> The JV must always be cataloged in the home pubset, otherwise errors may occur in connection with JVs cataloged on data pubsets or shared pubsets.
> If multiple hosts are defined in an RDF segment then the JV is assigned to the host that is specified in the command. In this case, no JVs can be assigned to the other hosts.

Command logging

Positive acknowledgments are supplied in news BCA0720, and negative acknowledgments in news BCA0728.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
2	0	BCA0235	JV <> cannot be used because of <>
2	0	BCA0728	Host not created
0	1	BCA0768	Syntax error in command
0	1	BCA077A	Incorrect route definition
0	1	BCA0825	Not a BCAM host
2	0	BCA0728	Host not generated
0	64	BCA0770	Name already exists
0	64	BCA0777	Interface used for...
0	64	BCA08E5	Host unknown
0	64	BCA082B	RDF was generated with incorrect BCAMDEF version
0	64	BCA0833	Name already exists
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	128	BCA0766	BCAM is not active

Examples

Read information from the RDF specified on BCAM start:

```
/CREATE-VIRTUAL-HOST HOST-NAME=VHRDF
```

Dynamic specification of virtual host:

```
/CREATE-VIRTUAL-HOST HOST-NAME=VHTEST,ATTRIBUTES=                    -
/               *PARAMETERS(SOCKETHOST-NAME=SOCHOS#VHTEST)

/CREATE-VIRTUAL-HOST HOST-NAME=VHTEST1,ATTRIBUTES=                   -
/               *PARAMETERS(SOCKETHOST-NAME=SOCHOS#VHTEST1),         -
/               ,STATUS-JV=JV.VHTEST1
```

CREATE-VLAN-DEVICE / CRVLDV: Create VLAN device

You use the CREATE-VLAN-DEVICE command to create a VLAN device. After a CREATE-VLAN-DEVICE command has been executed successfully the VLAN device is in the INCLUDED status.

The alias name CRVLDV exists for CREATE-VLAN-DEVICE in order to support SNMP.

BS2000 console	SOF file	Command file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

CREATE-VLAN-DEVICE / **CRVLDV**

DEVICE-NAME = <composed-name 1..8> / <c-string 1 .. 8>

,**AGGREGATION-NAME** = ***NONE** / <composed-name 1..8>

,**WRITE-DEVICE** = <alphanum-name 2 .. 2> / <x-text 4 .. 4> / <alphanum-name 4 .. 4> / <x-text 8 .. 8>

,**READ-DEVICE** = <alphanum-name 2 .. 2> / <x-text 4 .. 4> / <alphanum-name 4 .. 4> / <x-text 8 .. 8>

,**SLOW-POLL** = ***STD** / ***ON** / ***OFF**

,**LAN-ADDRESS** = ***DYNAMIC** / <x-string 1 .. 12>

,**MAX-LPDU-SIZE** = ***BY-DEVICE** / ***STD**

DEVICE-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the VLAN device that is to be created.

AGGREGATION-NAME= ...
Specifies the name of the link aggregation to be assigned.

AGGREGATION-NAME=*NONE
The VLAN line is not to be assigned to any link aggregation.

AGGREGATION-NAME=<composed-name 1..8>
Name of the link aggregation to be assigned.

WRITE-DEVICE=<alphanum-name 2..2> / <x-text 4..4> / <alphanum-name 4..4> / <x-text 8..8>
Mnemonic device name of the write device.

READ-DEVICE=<alphanum-name 2..2> / <x-text 4..4> / <alphanum-name 4..4> / <x-text 8..8>
Mnemonic device name of the read device.

SLOW-POLL=...
Defines the SLOW-POLL behavior for the VLAN device.

SLOW-POLL=*STD
The general SLOW-POLL presetting (BCOPTION command /MODIFY-BCAM-OPTIONS command) is accepted.

SLOW-POLL=*ON
After failure of the VLAN device causes automatic reactivation. Reactivation is attempted every 15 seconds until it is successful or until a DEACTIVATE-VLAN-DEVICE / DEACTIVATE-VLAN-LINE command is issued.

SLOW-POLL=*OFF
No reactivation after line failure.

LAN-ADDRESS=...
In LAN-ADDRESS you specify the Ethernet address at which the VLAN device is connected.
Specification of the LAN address is mandatory if you want to operate a partner system with profile (ISO4,INT0) via this VLAN device.

LAN-ADDRESS=*DYNAMIC
The Ethernet address for the VLAN device is determined dynamically (by BCAM).

LAN-ADDRESS=<x-string 1..12>
Ethernet address of the VLAN device.

> i LAN-ADDRESS may not be specified if an AGGREGATION-NAME has already been specified. If you specify a LAN-ADDRESS nevertheless, message BCA077B is issued.

MAX-LPDU-SIZE=...
Specifies the maximum data length on the VLAN device.

MAX-LPDU-SIZE=*BY-DEVICE
The LPDU length is set to the value read by the device.

MAX-LPDU-SIZE=*STD
The LPDU length is set to the Ethernet default.

Command logging

Positive acknowledgments are supplied in news BCA0675, and negative acknowledgments in news BCA06C5.
A description of the error messages that may be issued during command processing is provided in the table below.

Commando return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	1	BCA0768	Syntax error in command
0	64	BCA0770	Parameter invalid
0	64	BCA0773	Incorrect data type for DEVICE-NAME
0	64	BCA077B	Invalid LAN-ADDRESS operand if the LINK-AGGREGATION operand was specified
0	64	BCA07A7	Link aggregation not found
0	64	BCA07E5	DEVICE-NAME already exists
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Examples

Create VLAN device:

```
/CREATE-VLAN-DEVICE DEVICE-NAME=L#DEV#1 ,    -
/    ,WRITE-DEVICE=Y6,READ-DEVICE=Y7
```

Create VLAN device for link aggregation:

```
/CREATE-LINK-AGGREGATION AGGREGATION-NAME=AGGRE#01

/CREATE-VLAN-DEVICE DEVICE-NAME=D#AGG#A1, -
/WRITE-DEVICE=AA01,READ-DEVICE=AA02,AGGREGATION-NAME=AGGRE#01
```

CREATE-VLAN-LINE / CRVLLN: Create VLAN line

You use the CREATE-VLAN-LINE command to create a VLAN line.
A prerequisite is that the associated VLAN device or the link aggregation has already been defined.
After a CREATE-VLAN-LINE command has been executed successfully the VLAN line is in the INCLUDED status.

The alias name CRVLLN exists for CREATE-VLAN-LINE in order to support SNMP.

BS2000 console	SOF file	Command file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

CREATE-VLAN-LINE / CRVLLN
LINE-NAME = <composed-name 1..8> / <c-string 1 .. 8>
,**HOST-NAME** = ***STD** / <composed-name 1 .. 8> / <c-string 1 .. 8>
,**AGGREGATION-NAME** = ***NONE** / <composed-name 1..8>
,**DEVICE-NAME** = ***NONE** / <composed-name 1..8> / <c-string 1 .. 8>
,**IP-ADDRESS** = ***NONE** / <text 7 .. 18> / <x-string 7 .. 8>
,**IPV6-ADDRESS** = ***NONE** / <text 9 .. 49> / <c-string 9 .. 49>
,**ISO-ADDRESS** = ***NONE** / <x-string 1 .. 40>
,**REDUNDANT-LINE** = ***STD** / ***NONE** / ***FIRST** / <composed-name 1 .. 8>
,REDUNDANT-SUBGROUP = ***NONE** / <text 1 .. 1> / <c-string 1 .. 1>
,**NODE-NAME** = <composed-name 1 .. 8> / <c-string 1 .. 8>
,**SLOW-POLL** = ***STD** / ***ON** / ***OFF**
,**BROADCAST** = ***STD** / ***ON** / ***OFF**
,**MULTICAST** = ***STD** / ***ON** / ***OFF**
,**AUTO-ROUTE-SWITCHING** = ***ON** / ***OFF**
,**ROUTE-RESWITCHING** = ***OFF** / ***ON**
,**MAX-LPDU-SIZE** = ***STD** / ***BY-DEVICE**

LINE-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the VLAN line that is to be created.

HOST-NAME=...
In HOST-NAME you specify the name of the host to which the VLAN line is to be connected.

HOST-NAME=*STD
The name of the standard host (host name from the DCSTART or DCOPT command) is used as the host name.

HOST-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the host to which the VLAN line is connected.

AGGREGATION-NAME= ...
Specifies the name of the link aggregation to be assigned.

AGGREGATION-NAME=*NONE
The VLAN line is not to be assigned to any link aggregation.

AGGREGATION-NAME=<composed-name 1..8>
Name of the link aggregation to be assigned.

DEVICE-NAME= ...
Name of the associated VLAN device. The device name is not evaluated if a link aggregation was specified. If you specify a device name nevertheless, it is ignored.

DEVICE-NAME=*NONE
The VLAN line is not assigned to any VLAN device.

DEVICE-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the assigned VLAN device.

IP-ADDRESS=...
In IPADR you specify the local IP address under which the host can be addressed via the VLAN line.

IP-ADDRESS=*NONE
No local IP address is defined under which the host can be addressed via the VLAN line.

IP-ADDRESS=<text 7..18> / <x-string 7..8>
Local IP address, if required with specification of the prefix length, via which the host can be addressed over the VLAN line. If the prefix length is not specified, the default prefix length which matches the IPv4 address is determined.
Address syntax: <IPv4-address>/<IPv4-prefix-length> or <IPv4-address>.

IPV6-ADDRESS=...
In IPV6-ADDRESS you specify the local IPv6 address under which the host can be addressed via the VLAN line, and also the IPv6 prefix length.

IPV6-ADDRESS=*NONE
No local IP address is defined under which the host can be addressed via the VLAN line.

IPV6-ADDRESS<text 9..49> / <c-string 9..49>
In IPV6-ADDRESS you specify the local IPv6 address under which the host can be addressed via the VLAN line, and also the IPv6 prefix length.
(Address syntax: <IPv6-address>/<IPv6-prefix-length>)

ISO-ADDRESS=...
In ISO-ADDRESS you specify the local ISO Internet address under which the host can be addressed via the VLAN line.

ISO-ADDRESS=*NONE
No local ISO Internet address is defined under which the host can be addressed via the VLAN line.

ISO-ADDRESS=<x-string 1..40>
In ISO-ADDRESS you specify the local ISO Internet address under which the host can be addressed via the VLAN line.

NODE-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the associated VLAN node.

REDUNDANT-LINE=...
The VLAN line is assigned to a group of redundant lines by the specification in REDUNDANT-LINE.

REDUNDANT-LINE=*STD
The VLAN line is to be redundant for all lines which belong to the standard group. The standard group consists of all the lines of a node which have the same profile and are defined with *STD. Specification of a subgroup has no effect for the standard group.

REDUNDANT-LINE=*NONE
The VLAN line is to be redundant for no group of lines of the assigned node. Consequently it plays no part in redundancy.

REDUNDANT-LINE=*FIRST
The VLAN line defines the “first” line of a group of redundant lines. The group name is the same as the name of this line (LINE-NAME= operand). All VLAN lines in which the name of the line is subsequently specified in REDUNDANT-LINE= are assigned to this group.

REDUNDANT-LINE=<composed-name 1..8>
The VLAN line is assigned to the group of lines with this name. Before this is done, this group must have been configured with REDUNDANT-LINE=*FIRST.

REDUNDANT-SUBGROUP= *NONE / <text 1..1> / <c-string 1..1>
A subgroup is specified to enable a preferred line switchover for lines which are explicitly defined as redundant. When a line switchover occurs, this ensures that first of all a line with the same subgroup ID is switched to. If this is not possible, an alternate line is searched for among the lines defined in the REDUNDANT-LINE entry.

REDUNDANT-SUBGROUP=*NONE
The VLAN line does not belong to a subgroup..

REDUNDANT-SUBGROUP=<text 1..1> / <c-string 1..1>
Name of the subgroup of a line.

SLOW-POLL=...
Defines the SLOW-POLL behavior for the VLAN device.

SLOW-POLL=*STD
The general SLOW-POLL presetting (BCOPTION command /MODIFY-BCAM-OPTIONS command) is accepted.

SLOW-POLL=*ON
After failure of the VLAN device causes automatic reactivation. Reactivation is attempted every 15 seconds until it is successful or until a DEACTIVATE-VLAN-LINE command is issued.

SLOW-POLL=*OFF
No reactivation after line failure.

BROADCAST=...
Defines the BROADCAST option.

BROADCAST=*STD
The general BROADCAST default setting (BCOPTION command /MODIFY-BCAM-OPTIONS command) is used.

BROADCAST=*ON
The BROADCAST option is activated.

BROADCAST=*OFF
The BROADCAST option is deactivated.

MULTICAST=...
Defines the MULTICAST option.

MULTICAST=*STD
The general MULTICAST default setting (BCOPTION command /MODIFY-BCAM-OPTIONS command) is used.

MULTICAST=*ON
The MULTICAST option is activated.

MULTICAST=*OFF
The MULTICAST option is deactivated.

AUTO-ROUTE-SWITCHING=...
Defines the AUTO-ROUTE-SWITCHING option. This specifies whether IP, IPv6 and INTF routes can be switched to a replacement route (on the same LAN) in the event of a VLAN line failure.

AUTO-ROUTE-SWITCHING=*ON
The AUTO-ROUTE-SWITCHING option is activated: routes can be switched.

AUTO-ROUTE-SWITCHING=*OFF
The AUTO-ROUTE-SWITCHING option is deactivated: routes cannot be switched.

ROUTE-RESWITCHING=...
Defines the ROUTE-RESWITCHING option.
The ROUTE-RESWITCHING option specifies whether IP, IPV6 and INTF routes can be switched back to the original path definition, i.e. to this VLAN line, in the event of reactivation.

ROUTE-RESWITCHING=*OFF
The ROUTE-RESWITCHING option is deactivated.

ROUTE-RESWITCHING=*ON
The ROUTE-RESWITCHING option is activated.

MAX-LPDU-SIZE=...
MAX-LPDU-SIZE specifies the maximum data length on the VLAN line. The value is limited by the value permitted by the VLAN device.

MAX-LPDU-SIZE=*STD
The LPDU length is set to the Ethernet standard.

MAX-LPDU-SIZE=*BY-DEVICE
The LPDU length is set to the value read by the VLAN device.

Command logging

Positive acknowledgments are supplied in news BCA0673, and negative acknowledgments in news BCA06C3.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
2	0	BCA05B9	No device for link aggregation
2	0	BCA05D8	VLAN device is assigned to a link aggregation
0	1	BCA0768	Syntax error in command
0	64	BCA05E4	VLAN line for VLAN device and VLAN ID already exists
0	64	BCA0609	line <> does not have the same node as VLAN line <>
0	64	BCA060A	line <> does not have the same redundancy as VLAN line <>
0	64	BCA0773	Incorrect data type for LINE-NAME
0	64	BCA07A3	NODE-NAME not found
0	64	BCA07A4	HOST-NAME not found
0	64	BCA07A5	DEVICE-NAME not found
0	64	BCA07A7	Link aggregation not found
0	64	BCA07AF	Node is not a VLAN node
0	64	BCA07E2	LINE-NAME already exists
0	64	BCA0836	Maximum number of possible lines reached
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Examples

1. Create VLAN line:

```
/CREATE-VLAN-DEVICE DEVICE-NAME=L#DEV#1 , -
/    ,WRITE-DEVICE=Y6,READ-DEVICE=Y7)

/CREATE-NODE NODE-NAME=NODEVLAN,LAN-TYPE=*VIRTUAL

/CREATE-VLAN-LINE LINE-NAME=L#VLAN#1 ,IP-ADDRESS=139.25.24.52, -
/     NODE-NAME=NODEVLAN,DEVICE-NAME=L#DEV#1
```

2. Create VLAN line for a link aggregation:

```
/CREATE-LINK-AGGREGATION AGGREGATION-NAME=AGGRE#01

/CREATE-VLAN-DEVICE DEVICE-NAME=D#AGG#A1, -
/WRITE-DEVICE=AA01,READ-DEVICE=AA02,AGGREGATION-NAME=AGGRE#01

/CREATE-NODE NODE-NAME=NODE#VA1,LAN-TYPE=*VIRTUAL(VLAN-ID=*UNTAGGED)

/CREATE-VLAN-LINE LINE-NAME=L#VLAN#1,NODE-NAME=NODE#VA1, -
/IP-ADDRESS=172.25.92.77,AGGREGATION-NAME=AGGRE#01, -
/ MAX-LPDU-SIZE=*BY-DEVICE
```

DCDIAG: Control DCAM traces

Using the DCDIAG command, you dynamically control BCAM and DCAM traces.
Use of this command is reserved for system developers, systems engineers, and diagnostics engineers.

DCDIAG switches one or more traces on or off and initializes a security task which writes the information produced onto a disk.
The activation of a trace only takes place if the corresponding producing function unit is registered with the trace function.

The command is also permitted if the BCAM is not active. In this way, traces can be activated even before the communication system is started up.

If the trace entries are being saved to a file because of a MODE=SAVE, note that there can only be one such file at any time to which all trace entries are written.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
x		x	x	x

List of valid command sources

DCDIAG

<trace-name 1 .. 24>

,MODE = **INIT** / **HOLD**

| **,BUFNUM** = *unchanged / <integer 1 .. 256>

| **,BUFLEN** = *unchanged / <integer 4096 .. 28672>

.....

<trace-name 1 .. 24>

,MODE = **SAVE**

| **,BUFNUM** = *unchanged / <integer 1 .. 256>

| **,BUFLEN** = *unchanged / <integer 4096 .. 28672>

| **,FILE-NAME** = *unchanged / <filenname 1 .. 49>

| **,FILE-SIZE** = *unchanged / <integer 512 .. 16384>

| **,#FILES** = *unchanged / <integer 1 .. 99>

.....

<trace-name 1 .. 24>

,MODE = **STOP** / **SHOW** / **FREEZE** / **UNFREEZE**

.....

,MODE = **DUMP-FROZEN**

| **,FILE-NAME** = *unchanged / <filenname 1 .. 49>

.....

,MODE = **OPEN**

| **,FILE-NAME** = *unchanged / <filenname 1 .. 49>

| **,FILE-SIZE** = *unchanged / <integer 512 .. 16384>

| **,#FILES** = *unchanged / <integer 1 .. 99>

.....

,MODE = **CLOSE**

<trace-name>
Identifies the trace(s) which are to be switched on or off and/or saved.
<trace-name> can be a fully or partially qualified name. When a partially qualified name is specified, the DCDIAG command refers to all traces with the specified qualification. The other operands are valid for each individual trace

of the group. Specification of a name is mandatory with MODE=INIT/SAVE/HOLD/STOP/FREEZE/UNFREEZE.
With MODE=OPEN/CLOSE/DUMP-FROZEN, this operand is not evaluated.
trace-name is used for the purposes of coordination between originator (system function) and console (=DCDIAG command).
When MODE=SHOW this operand is optional; it can be specified as the initial string of the name.

For this reason, the trace names must be centrally managed and made known. Up to present the following names have been defined as binding for trace control users:

Name	**Meaning**
CRYPT.COM	for the CRYPTO-ADM trace and the user interface trace
CRYPT.PORT.<port-name>	for the CRYPTO-PORT traces
DCM.BCAM.ADM	for the ADM trace
DCM.BCAM.BASIC	for the distribution trace of the Port or Network Layer
DCM.BCAM.BUF	for the buffer management trace
DCM.BCAM.CON	for the CONHAND trace
DCM.BCAM.EXIT	for the exit trace
DCM.BCAM.FILE	for the file trace
DCM.BCAM.INTERFACE	for the INTERFACE trace
DCM.BCAM.IPSEC	for the IPSEC trace of BCAM
DCM.BCAM.LOC	for the TRAHAND trace for local connections
DCM.BCAM.LOOPBACK	for the LOOPBACK trace
DCM.BCAM.MAP	for the mapping trace
DCM.BCAM.MGMT	for the management trace
DCM.BCAM.NET	for the global BCAM network trace
DCM.BCAM.PORT.<line-name>	for the BCAM-PORT traces
DCM.BCAM.A-PORT.<aggregation-name>	for the BCAM-PORT link aggregation traces
DCM.BCAM.G-PORT. <devicename>	for the BCAM-PORT VLAN device traces
DCM.BCAM.V-PORT<line-name>	for the BCAM-PORT VLAN line traces
DCM.BCAM.SM2	for the BCAM-SM2 trace
DCM.BCAM.SNMP	for the SNMP trace
DCM.BCAM.TRANS	for the TRAHAND trace for remote connections

DCM.BCAM.TSAP	for the TSAP management trace
DCM.DCAM.TRC.1	for the DCAM trace for manipulative macros
DCM.DCAM.TRC.2	for the DCAM OPEN/CLOSE trace
DCM.DCAM.TRC.3	for the DCAM message trace
DCM.DCAM.TRC.4	for the DCAM connection trace
DCM.DCAM.CBT	for the DCAM trace control block
DCM.INFO	for the INFO trace of the DCM information services
IPSEC.COM	for the IPSEC subsystem trace
ONETSTOR.COM	for the ONETSTOR subsystem trace
TIAM.COM	for the TIAM subsystem trace
VTSU.B.COM	for the VTSU-B subsystem trace

List of the DCAM trace names

The qualifiers have the following meaning:List of the DCAM trace names

<port-name>
Name of a crypto port:

<line-name>
Name of the line (corresponds to LINE-NAME in SHOW-LINE and SHOW-LINE-ATTRIBUTES and SHOW-VLAN-LINE)

<device-name>
Name of the device (corresponds to DEVICE-NAME in SHOW-VLAN-DEVICE)

MODE=...
Function to be executed.
Each of the functions defined with MODE= consists of a number of different individual actions. There are basically ten such actions:

Number	Action	Explanation
1	Single initialization	The trace function notes that entries may be made in the trace with the specified name(s) for a logon period.
2	Permanent initialization	The trace function notes that entries may be made in the trace with the specified name(s) for the duration of the current trace session.
3	Switch on	If the associated originator has logged on, the trace function gives permission to write entries to his/her trace.
4	Save	The trace function notes that the entries of the trace with the specified name(s) are to be saved, and saves them to a file.
5	Switch off	The trace function cancels the “Switch on” and “Save” actions.

6	Single stop	The trace function cancels the “Single initialization” action.
7	Permanent stop	The trace function cancels the “Permanent initialization” action.
8	Open	The trace function opens a save file.
9	Close	The trace function closes any open save file.
10	List	The trace function lists all traces logged by BCAM. The current state (RUNNING /STOPPED) is also displayed.
11	Freeze	The trace function prevents entries from being made in the trace.
12	Unfreeze	The trace function reverses the freeze and permits entries to be made in the trace again.
13	Save frozen traces	The trace function saves all frozen traces in a file.

Actions of the trace function

The following actions are performed by the trace function for the individual MODE specifications:

MODE=INIT
Action 2 (Permanent initialization) is canceled,

Action 4 (Save) is canceled,
Action 1 (Single initialization) is performed,
Action 3 (Switch on) is performed.

MODE=SAVE

Action 2 (Permanent initialization) is canceled,
Action 1 (Single initialization) is performed,
Action 8 (Open) is performed,
Action 4 (Save) is performed,
Action 3 (Switch on) is performed.

MODE=OPEN

Action 9 (Close) is performed,
Action 8 (Open) is performed.

MODE=CLOSE

Action 9 (Close) is performed.

MODE=HOLD

Action 1 (Single initialization) is canceled,
Action 4 (Save) is canceled,
Action 2 (Permanent initialization) is performed,
Action 3 (Switch on) is performed.

MODE=STOP

Action 5 (Switch off) is performed,
Action 4 (Save) is canceled,
Action 1 (Single initialization) is canceled.

MODE=SHOW

Action 10 (List) is performed.

MODE=FREEZE

Action 11 (Freeze) is performed.

MODE=UNFREEZE

Action 12 (Unfreeze) wird durchgeführt.

MODE=DUMP-FROZEN

Action 13 (Save-Frozen) wird durchgeführt.

BUFNUM=...
Dynamically controls the number of trace buffers to be allocated to the specified trace.
The operand can accept values 1-256. If BUFNUM is not specified or if BUFNUM=0 is specified, the current number of trace buffers is not changed.
If the volume of messages is very large BUFNUM=256 should be selected in order to avoid gaps in the trace.

If BUFNUM exceeds or falls below its limiting value, the respective limiting value is assumed.

BUFNUM=*unchanged
The number of trace buffers remains unchanged.
Default: 2

BUFNUM=<integer 1..256>
The number of trace buffers is set to the specified value.

BUFLEN=...
Dynamically changes the length of the trace buffer.
BUFLEN can accept values from 4096 to 28672 bytes. If BUFLEN is not specified or if BUFLEN=0, the current length of the trace buffer is not changed.
The trace function internally optimizes the length of the trace buffer to multiples of 4096 bytes. The buffers contain a 56-byte “buffer header”. The actual available buffer length is reduced by this value.

If BUFLEN exceeds or falls below its limiting value, the respective limiting value is assumed.

BUFLEN=*unchanged
The length of the trace buffer remains unchanged.
Default: 4096

BUFLEN=<integer 4096..28672>
The length of the trace buffer is set to the specified value.

FILE-NAME=...
Defines the name of the save file.
If the save file is not assigned a name, the backup is placed in the file S.DCTRAC.SAV.<yyyyhhmmss> (Julian date + time). In this case, the specification of the size (FILE-SIZE) or number (#FILES) has no effect.

FILE-NAME= *unchanged
The name of the save file remains unchanged.

FILE-NAME=<filename 1..49>.<integer 1..999>
The specified file name is used for the save file.
This file name is automatically extended with a suffix (integer 1 - 999). On opening a new file, the suffix *n* is incremented by 1 until the value defined with #FILES is reached. On reaching this value, the oldest respective file in each case is deleted thereafter.

FILE-SIZE=...
Defines the size of the save file.
This operand is only evaluated if the FILE-NAME is specified.
When the file reaches its specified size, it is closed and the next save file is opened. The trace function records the number of occupied PAM pages in the save file cyclically at the user interface.

FILE-SIZE= *unchanged
The size of the save file remains unchanged.

FILE-SIZE=<integer 512..16384>
Size of the save file in PAM pages.

#FILES=..
Defines the number of save files, provided FILE-NAME is specified.

#FILES= *unchanged
The number of save files remains unchanged.

#FILES=<integer 1..2..99>
The specified number of save files are used.
If #FILES=1 is set then the save operation is performed to the file S.DCTRAC.SAV.yyy.hhmmss (Julian date + time). In this case the specification of the size (FILE-SIZE) or name (FILE-NAME) has no effect.

> If no file name is specified or if #FILES=1 is set then the save is automatically performed to S.DCTRAC.SAV.yyyhhmmss. If you only want to have one save file you should therefore set #FILES=1. This process is therefore suitable for switching a backup with a limited file size to one with an unlimited file size.

Command logging

For reasons of compatibility, the processing acknowledgment is supplied in news BCA0763 if it is positive and in news BCA0762 if it is negative, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA0330 and BCA0632 may also appear.
A description of the error messages that can be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0633	DCDIAG aborted
2	0	BCA0764	Command not accepted for processing
0	1	BCA0768	Syntax error in command
0	64	BCA0777	Interface used at ... supplies return code ...

Examples

In the example traces are enabled (on the console or under TSOS), specifically the Management and Adm traces in order to record a potential error situation. The traces are evaluated and written to a trace file within ASTRID. The control blocks and tables are output from BCAM to a text file.

To enable ADM and MGMT traces:

```
/DCDIAG DCM.BCAM.ADM
/DCDIAG DCM.BCAM.MGMT
```

To reproduce a potential error situation and subsequently freeze the trace:

```
/DCDIAG DCM.BCAM.ADM,MODE=FREEZE
/DCDIAG DCM.BCAM.MGMT,MODE=FREEZE
```

ASTRID enables the trace file and the control blocks to be dumped. For example, the diagnostic tool TEDDY can be used to evaluate the trace file. The trace file contains the entries for the ADM and MGMT traces. The information for the control blocks is then contained in the text file:

```
/ASSIGN-SYSLST ASTRID.TXT

/START-ASTRID
DCM
RS
FILE
TRC (ADM,MGMT),INFO=*SAVING-FILE
END

/ASSIGN-SYSLST *PRIMARY
```

DCOPT: Predefine DCSTART parameters

The first command of a SOF must always be the DCOPT command. The only exceptions are the two host- and system-specific branching instructions which may also precede the DCOPT command (see the section "Command sequences", IF-BCAM-HOST and IF-BCAM-SYSINF). The settings for the DCSTART command are therefore already defined in the SOF. In the DCSTART command, you need then only specify the name of the SOF using the DCSOF operand. Any additional specifications modify the values predefined with DCOPT for this startup. This means that operands in the DCSTART command overwrite the corresponding operands in the DCOPT set, if the BCAM data communication system is started with an SOF.

A slash (/) must be specified before the operation code of all commandsin an SOF.
The DCOPT command can be written with continuation lines in the SOF. '-' must be used as the continuation character. This continuation character can be at any column position in the line, provided it is the last character. The continuation line must begin with a slash (/).
The DCOPT command is skipped and ignored in the command file.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
		x		

List of valid command sources

DCOPT

HOST = *none / <host-name 1 .. 8>

,**DCRDF** = *none / <filename 1..54> / ***NONE**, ...

***NONE** ,...

| ,**MAXTSDU** = *none / <integer 4096 .. 65530>

,**LWRESD** = **YES** / **NO**

,**JV-READY** = *none / <filename 1..54>

,**JV-RDFNAME** = *none / <filename 1..54>

,**JV-BCAM-STATUS** = *none / <filename 1..54>

,**MAXNPA** = *none / <integer 1 .. 2147483647>

,**MAXNPT** = *none / <integer 1 .. 2147483647>

,**MAXCNN** = *none / <integer 1 .. 2147483647>

,**PAGMEM** = *none / <integer 1024 .. 1048576>

,**RESMEM** = *none / <integer 1024 .. 1048576>

,**SOKHOST** = *none / <text 1 .. 32> / <c-string 1 .. 32>

,**PRIVPORT#** = *none / <integer 1 .. 65535>

,**FREEPORT#** = *none / <integer 1 .. 65535>

,**MSG** = *unchanged / **ALL** / **NAK** / **ERROR-ONLY**

,**#BITMAP** = *none / <integer 1 .. 32>

,**RETRY** = *none / **ABNORMAL** / **NO**

,**INI** = *none / **ONLY**, ... / **LOCAL**, ... / **NODE**, ... / **ALL**, ...

ONLY, ...

| **ACT** = *none / **NO** / **YES** / **ONLY**

LOCAL, ...

| **ACT** = *none / **NO** / **YES** / **ONLY** / **LOCAL**

NODE, ...

| **ACT** = *none / **NO** / **YES** / **ONLY** / **LOCAL** / **NODE**

ALL, ...

| **ACT** = *none / **NO** / **YES** / **ONLY** / **LOCAL** / **NODE** / **ALL**

, **APPLICATION-TABLE** = *none / (...)

(...)

| **FILE** = *none / <filename 1..50>

, **SOCKETHOST-TABLE** = *none / (...)

(...)

| **FILE** = *none / <filename 1..50>

, **PROCESSOR-TABLE** = *none / (...)

(...)

| **FILE** = *none / <filename 1..50>

| , **ACCESS** = *none / **UPDATE** / **READ** / **ALLOW**

, **FQDN-TABLE** = *none / (...)

(...)

| **FILE** = *none / <filename 1..50>

, **SERVICES-TABLE** = *none / (...)

(...)

| **FILE** = *none / <filename 1..50>

, **MAX-ISAM-POOL-SIZE** = *unchanged / ***STD** / <integer 128 .. 32766>

, **MAX-SLOT-PAGES** = *unchanged / ***STD** / <integer 2048 .. 65535>

, **MAX-DNS-ACC-ENTRIES** = *unchanged / <integer 0 .. 32766>

, **MAX-VLAN-ASSIGNMENT-ENTRIES** = *unchanged / <integer 0 .. 32766>

, **REASON** = *none / list-poss (10): **BS2-SS** / **BOURSE-SS** / **TIMER-SS** / **DEVICE-SS** / **SIGNAL-SS** /

CONTINGENCY-SS / **SLOTPOOL-SS** / **TASK-SS** / **USER-TIMEOUT** / **MEMORY-SS**

, **ACTION** = *none / list-poss (2): **MSG** / **DUMP**

, **REMOTE-IP-NSDU =** *unchanged / ***STD** / <integer 512 .. 65530>

, **SOFTIME** = **600** / <integer 1 .. 2147483 seconds>

, **CMDFILE-CONTINUATION =** *unchanged / **ALL-RESULTS** / **POSITIVE-RESULT** / **NEGATIVE-RESULT**

HOST=...
Name of the BS2000 system, as it was specified in the RDF.

HOST= *none
No specification of the host name, the host name must be given either in the DCOPT or the DCSTART command.

HOST=<host-name 1..8>
Specification of the host name.

DCRDF=...
Refers to the name of the file which contains the network description (RDF). The RDF must always be cataloged in the home pubset, otherwise errors can occur in connection with files cataloged on data pubsets or shared pubsets.

DCRDF= *none
No RDF is explicitly specified.
BCAM default is $TSOS.DCRDF in this case.

DCRDF=<filename 1..54>
Name of the RDF
The fully qualified file name is to be specified if the RDF does not exist under the TSOS user ID.

DCRDF=*NONE,...
When *NONE is specified, startup occurs without an RDF.

MAXTSDU=...
This operand describes the maximum receive message length for the host.

MAXTSDU=*none
No specification of the maximum message length.

MAXTSDU=<integer 4096..65530>
Specification of the maximum message length in bytes.
Default: 4096

LWRESD=...
With the LWRESD operand you specify whether LWRESD can be started automatically.

> ¡ In a BS2000 parameter file (parameter service) LWRESD=NO must be specified.

LWRESD=YES
LWRESD is started automatically.
Default: YES

LWRESD=NO
LWRESD is not started automatically. NO must be selected in the case of a BCAM early start (parameter service).

JV-READY=...
Name of the job variable in which the BCAM state is displayed. If the content of the job variable is "BCAM READY", the active state of BCAM is displayed. Any other content indicates that BCAM is not ready.
The BCAM job variable is reset only if BCAM is terminated normally (message BCA0716); in all other cases, it must be reset manually by the system administrator. If no job variable is available, BCAM does not log the BCAM state.

> ¡ The JV-READY parameter cannot be used in a BS2000 parameter file (parameter service). The JV subsystem must be active by the time "BCAM READY" is displayed.

JV-READY= *none
The specification of the use of a job variable for monitoring the BCAM operating mode is omitted.

JV-READY=<filename 1..54>
Defines the name of the job variable which displays the BCAM operating mode. The JV must always be cataloged in the home pubset, otherwise errors may occur in connection with JVs cataloged on data pubsets or shared pubsets.

JV-RDFNAME=...
Name of the job variable in which the name of the current RDF is stored – equivalent to entry in operand DCRDF. If the content of the job variable is “NONE”, this indicates that BCAM is operated without RDF (RDF-less operation).
The BCAM job variable is only reset if BCAM is terminated normally (message BCA0716), in all other cases it must be manually reset by the system administrator. If no job variable is available, the current RDF name is not logged by BCAM.

> ¡ The JV-RDFNAME parameter cannot be used in a BS2000 parameter file (parameter service). The JV subsystem must be active by the time “BCAM READY” is displayed.

JV-RDFNAME= *none
The specification of the use of a job variable for monitoring the RDF name is omitted.

JV-RDFNAME=<filename 1..54>
Defines the file name of the job variable in which the current RDF name is stored. The job variable must always be cataloged in the home pubset, otherwise errors may occur in connection with JVs cataloged on data pubsets or shared pubsets.

JV-BCAM-STATUS=...
Name of the job variable in which the current BCAM status is displayed (see "Event monitoring using BCAM job

variables"). The BCAM job variable is reset only if BCAM is terminated normally (message BCA0716). In all other cases, it must be reset by the system administrator manually. If no job variable is available, BCAM does not log the current BCAM state.

> The JV-BCAM-STATUS parameter cannot be used in a BS2000 parameter file (parameter service). The JV subsystem must be active by the time "BCAM READY" is displayed.

JV-BCAM-STATUS= *none
The specification of the use of a job variable for monitoring the BCAM operating mode is omitted.

JV-BCAM-STATUS=<filename 1..54>
Defines the name of the job variable in which the current BCAM-Status is stored. The job variable must always be cataloged in the home pubset, otherwise errors may occur in connection with JVs cataloged on data pubsets or shared pubsets.

MAXNPA=...
Restricts the number of applications that are not predefined which may be opened simultaneously in the BS2000 system.

MAXNPA= *none
The specification of the number of applications that are not predefined is omitted.

MAXNPA=<integer 1..2147483647>
Number of applications that are not predefined which may be opened simultaneously in the BS2000 system.
Default: 20000

MAXNPT=...
Restricts the number of applications that are not predefined which may be opened simultaneously in the BS2000 system by a single TASK.

MAXNPT= *none
No specification of the number of applications that are not predefined.

MAXNPT=<integer 1..2147483647>
Number of applications that are not predefined which may be opened simultaneously in the BS2000 system by a single TASK.
Default: 20000

MAXCNN=...
Restricts the number of connections which an application that is not predefined may simultaneously maintain.

MAXCNN= *none
The specification of the number of connections is omitted.

MAXCNN=<integer 1..2147483647>
Number of connections which an application that is not predefined may simultaneously maintain.
Default: 20000

PAGMEM=...
With this operand, the size of the pageable memory (backup storage, paging memory, paging area), which BCAM may use for data transfer, is specified in Kbytes.

PAGMEM= *none
The specification of the size of the pageable memory is omitted.

PAGMEM=<integer 1024..1048576>
Size of the pageable memory in Kbytes.
Default: system-dependent; see also the following table for RESMEM=...

RESMEM=...
Specifies the size (in Kbytes) of the resident memory (MEM-RES) that may be used by BCAM for data transfers.

memory size in MB	RESMEM in Kbytes	PAGMEM in Kbytes
up to 50	5000	3000
50 to 100	10000	6000
100 to 200	20000	12000
200 to 500	40000	30000
500 to 1000	60000	60000
over 1000	100000	100000

RESMEM= *none
The default system-dependent value set by BCAM is unchanged.

RESMEM=<integer 1024..1048576>
The value for RESMEM is changed.

SOKHOST=...
Specifies the socket host name of the host.

SOKHOST= *none
The specification of the socket host name is omitted.
The host name is used as the socket host name; it is extended with blanks to the length of the socket host name.

SOKHOST=<text 1..32> / <c-string 1..32>
Socket host name of the host.

PRIVPORT#=...
With PRIVPORT#, the first socket port number which can be occupied by non-privileged applications is specified. Low socket port numbers (with the exception of port number 20) may only be occupied by privileged applications. Privileged applications are those which run under the TSOS or NET-ADMINISTRATION BS2000 system privileges.

PRIVPORT#= *none
The value 2050 set as the default by BCAM is not changed.

PRIVPORT#=<integer 1..65535>
Defines the first free port number which can be occupied by non-privileged applications. PRIVPORT# must always be less than or equal to FREEPORT#. If PRIVPORT# is larger than FREEPORT#, the value is set to the specification for FREEPORT#.

FREEPORT#=...
Specifies the first free port number which BCAM may dynamically occupy for an application. If SNMP-AGENTS is used on this processor, the port number is 3161 for the internal BCAM communication between master and subagent.

FREEPORT#= *none
The value 4096 set as the default by BCAM remains unchanged.

FREEPORT#=<integer 1..65535>
Defines the first free port number.
FREEPORT# must always be greater than or equal to PRIVPORT#. If FREEPORT# is smaller than PRIVPORT#, the value is set to the specification for PRIVPORT#.

MSG=...
Controls the extent of the message output.
The BCAM messages are described in chapter "Messages".

MSG=*unchanged
The value ALL set as the default by BCAM remains unchanged.

MSG=ALL
All messages are output.

MSG=NAK
Certain positive messages for processors are not output.
The message for directly addressed systems is always output (otherwise sequences may run incorrectly).
Positive messages are suppressed only for the subsequent systems.
The following positive messages are suppressed:
BCA0740
BCA0763 for the BCIN (format 1), BCACT, BCDAC, BCOUT commands
BCA082A
BCA083F
BCA0851 with reason 00/01/02
BCA0852
BCA0853
BCA0854 with reason 00/01/02
BCA0856
BCA085B with reason 00/01/02
BCA085F
BCA08D7
BCA08DB
BCA08DC
BCA08DD
BCA08DE
BCA08DF
BCA08E5

MSG=ERROR-ONLY
Only negative messages are output.
This setting makes it possible to start BCAM more quickly (Quick Startup).
All messages that have the Weight Code 50, 70 and 99 in the message file are output. This corresponds to filter level 3 or 4 and "not suppressible at the operator terminal".

> **i** You can modify this setting with /BCMOD MSG=ALL/NAK. You should change this setting after BCAM start if you want to resume the logging of all BCAM commands.

#BITMAP=...
Number of 256 byte-long bitmaps for administering each data slotpool. If this value is not specified, it is derived from the system memory MEMORY-SIZE as follows:

MEMORY-SIZE in Mbytes	Number of bitmaps
up to 50	2
50 to 100	4
100 to 200	6
200 to 500	8
500 to 1000	10
over 1000	16

#Bitmap restricts the size of the data slot pool. The maximum number of slots in a data slot pool is determined by multiplying #BITMAP by 2048.

#BITMAP= *none
The specification of the number of bitmaps is omitted.

#BITMAP=<integer 1..32>
Number of bitmaps for administering each data slotpool.

RETRY=...
This operand controls the behavior for abnormal termination of BCAM.

RETRY= *none
No specification is made on the behavior after abnormal BCAM termination.
Default: NO

RETRY=ABNORMAL
In the event of abnormal termination of BCAM, a restart is carried out using the operands of the last DCSTART command.

RETRY=NO
No restart is carried out in the event of abnormal termination of BCAM.

INI=...
Specifies the initialized objects.
The INI operand only has an affect on the objects defined in an RDF.

INI= *none
The specification of which objects are initialized is omitted (corresponds to INI=ONLY).

INI=ONLY
Only the host is initialized.

ACT=...
Specifies the activated objects.
The ACT operand only has an affect on the objects defined in an RDF.

ACT= *none
The specification of which objects are to be activated is omitted.

ACT=NO
No objects are activated.

ACT=YES
Only those objects that have also been initialized are activated.

ACT=ONLY
Only the host is activated.

INI=LOCAL
All LAN nodes are initialized.

ACT=...
Specifies the activated objects.
The ACT operand only has an affect on the objects defined in an RDF.

ACT= *none
The specification of which objects are to be activated is omitted (corresponds to ACT=YES).

ACT=NO
No objects are activated.

ACT=YES
Only those objects that have also been initialized are activated.

ACT=ONLY
Only the host is activated.

ACT=LOCAL
All LAN nodes are activated.

INI=NODE
All LAN nodes , as well as all processors directly connected to the LAN, are initialized.

ACT=...
Specifies the activated objects.
The ACT operand only has an affect on the objects defined in an RDF.

ACT= *none
The specification of which objects are to be activated is omitted (corresponds to ACT=YES).

ACT=NO
No objects are activated.

ACT=YES
Those objects which were initialized are also activated.

ACT=ONLY
Only the host is activated.

ACT=LOCAL
All LAN nodes are activated.

ACT=NODE
All LAN nodes , as well as all processors directly connected to the LAN, are activated.

INI=ALL
All LAN nodes , all processors directly connected to the LAN, as well as all processors which can be accessed via the above named processor, are initialized.

ACT=...
Specifies the activated objects.
The ACT operand only has an affect on the objects defined in an RDF.

ACT= *none
The specification of which objects are to be activated is omitted.

ACT=NO
No objects are activated.

ACT=YES
Those objects which were initialized are also activated (corresponds to ACT=YES).

ACT=ONLY
Only the host is activated.

ACT=LOCAL
All LAN nodes are activated.

ACT=NODE
All LAN nodes , as well as all processors directly connected to the LAN, are activated.

ACT=ALL
All LAN nodes , all processors directly connected to the LAN, as well as all processors which can be accessed via the above named processor, are activated.

APPLICATION-TABLE=...
Relevant for applications which do not run on the standard host.
APPLICATION-TABLE defines the SAM file (application file) which contains the assignment of applications to virtual hosts. The information from this file is transferred periodically to the BCAM tables, but only takes effect for the individual application when the application is terminated and restarted.

APPLICATION-TABLE= *none
No specifications for using the APPLICATION-TABLE.
The default name is used.

APPLICATION-TABLE=(...)
Specifications are made for using the application file.

FILE=...
Specifies the name of the application file. The file name mus always be cataloged in the home pubset, otherwise errors can occur in connection with files cataloged on data pubsets or shared pubsets.

FILE= *none
No specifications for the name of the application file.
In this instance the default name $TSOS.SYSDAT.BCAM.APPLICATIONS is used.

FILE=<filename 1..50>
Defines local filename for the application file.

> The filename of BCAM is supplemented by a four-character suffix.

SOCKETHOST-TABLE=...
Only relevant for automatic end system creation.
SOCKETHOST-TABLE defines the SAM file (socket host file) which contains the assignment of socket host names to IP addresses. The information from this file is transferred periodically to the BCAM tables. ISOCKET calls, which request the conversion of socket host names to IP addresses and vice versa, access the BCAM tables.

SOCKETHOST-TABLE= *none
No specifications for using the socket host file.
The default name is used.

SOCKETHOST-TABLE=(...)
Specifications are made for using the socket host file.

FILE=...
Specifies the name of the socket host file. The file must always be cataloged in the home pubset, otherwise errors can occur in connection with files cataloged on data pubsets or shared pubsets.

FILE= *none
No specifications for the name of the socket host file.
In this instance the default name $TSOS.SYSDAT.BCAM.ETC.HOSTS is used.

FILE=<filename 1..50>
Defines local filename for the socket host file.

> The filename of BCAM is supplemented by a four-character suffix.

PROCESSOR-TABLE=...
Only relevant for automatic end system creation.
PROCESSOR-TABLE defines the SAM file (processor file) which contains the assignment of processor names to network addresses. ACCESS=UPDATE/READ/ALLOW is used to control automatic end system creation.

PROCESSOR-TABLE= *none
No specifications for using the processor file.
The default name is used.

PROCESSOR-TABLE=(...)
Specifications are made for using the processor file.

FILE=...
Specifies the name of the processor file. The file name must always be cataloged in the home pubset, otherwise errors can occur in connection with files cataloged on data pubsets or shared pubsets.

FILE= *none
No specifications for the name of the processor file.
In this instance the default name $TSOS.SYSDAT.BCAM.PROCESSORS is used.

FILE=<filename>
Defines a local filename for the processor file.

> The filename of BCAM is supplemented by a four-character suffix.

ACCESS=...
Controls the scope of automatic end system creation. A detailed description of this operand is provided in the section "Processor file".

ACCESS= *unchanged
No specification is entered for controlling automatic end system creation.Default: UPDATE

ACCESS=UPDATE
Any partner end system may be created.

ACCESS=ALLOW
Any partner end system may be created, but not created in the files which are assigned to the processor file.

ACCESS=READ
The partner end systems which have the specified processor names and are described in the processor file may be created.

FQDN-TABLE=...
FQDN-TABLE defines the SAM file containing the assignment of FQDN to BCAM names and/or IP addresses. The information from this file (FQDN file) is transferred periodically to the BCAM tables.

FQDN-TABLE= *none
The use of the FQDN file is not specified.
The default name is used.

FQDN-TABLE=(...)
Specifies how the FQDN file is used.

FILE=...
Specifies the name of the FQDN file. The file name must be cataloged on the home pubset. Errors may occur in connection with files which are cataloged on data pubsets or shared pubsets.

FILE= *none
The name of the FQDN file is not specified.
In this case the default name $TSOS.SYSDAT.BCAM.FQDN is used.

FILE=<filename 1..50>
Defines an own file name for the FQDN file.

> The file name of BCAM is supplemented by a four-character suffix.

SERVICES-TABLE=...
Defines a new SAM file containing the assignment of services to port numbers. The information from this file (services file) is transferred periodically to the BCAM tables.

SERVICES-TABLE= *unchanged
SAM file containing the assignment of services to port numbers is not specified.

SERVICES-TABLE=(...)
SAM file containing the assignment of services to port numbers.

FILE=...
Specifies the name of the SAM file containing the assignment of services to port numbers.
The file name must be cataloged on the home pubset. Errors may occur in connection with files which are cataloged on data pubsets or shared pubsets.
Default name: $TSOS.SYSDAT.BCAM.ETC.SERVICES
The file name is compared with the file names of other BCAM tables which have also been entered or are already available to prevent this file being assigned to more than one BCAM table.

FILE= *unchanged
The name of the SAM file containing the assignment of services to port numbers is not specified.

FILE=<filename 1..50>
Name of the SAM file containing the assignment of services to port numbers.

> The file name of BCAM is supplemented by a four-character suffix.

MAX-ISAM-POOL-SIZE=...
MAX-ISAM-POOL-SIZE defines the maximum size of the ISAM pool (specified in PAM pages) for the auxiliary ISAM files of the BCAM control files (application file, processor file, socket host file, FDQN file, and services file).

MAX-ISAM-POOL-SIZE=*unchanged
You do not specify the absolute size of the ISAM pool.

MAX-ISAM-POOL-SIZE=*STD
The size of the ISAM pool is set to the default value of 1536 PAM pages..

MAX-ISAM-POOL-SIZE=<integer 128..32766>
Maximum size of the ISAM pool (specified in PAM pages)

MAX-SLOT-PAGES =
MAX-SLOT-PAGES defines the maximum size in pages of the control block pool.

MAX-SLOT-PAGES = *UNCHANGED
You do not specify the maximum size of the control block pool.

MAX-SLOT-PAGES = *STD
The maximum size is to be changed to the default value (4608 pages).

MAX-SLOT-PAGES = <integer 2048 .. 65535>
Maximum size of the control block pool in pages.

MAX-DNS-ACC-ENTRIES=
You can define the number of entries for the management of the IP and IPv6 address ranges and for the processor's namespace.

MAX-DNS-ACC-ENTRIES = *unchanged
You leave the number of entries for the management of the IP and IPv6 address ranges and for the processor's namespace unchanged.
Default: 4096

MAX-DNS-ACC-ENTRIES=<integer 0 .. 32766>
Number of entries for the management of the IP and IPv6 address ranges and for the processor's namespace. The specification 0 causes the default value to be used.

MAX-VLAN-ASSIGNMENT-ENTRIES=...
You can define the number of entries for the management of the IP and IPv6 address ranges for assignment to a VLAN ID.

MAX-VLAN-ASSIGNMENT-ENTRIES = *unchanged
You leave the number of entries for the management of the IP and IPv6 address ranges for assignment to a VLAN ID unchanged.
Default: 1024

MAX-VLAN-ASSIGNMENT-ENTRIES=<integer 0 .. 32766>
Number of entries for the management of the IP and IPv6 address ranges for assignment to a VLAN ID. The specification 0 causes the default value to be used.

REASON=...
Specifies the reason for the error response defined in the ACTION operand.
The values can also be specified as a list (list-poss).

REASON= *none
No specification of the reason for the error response.

REASON=BS2-SS
The reason for the error response lies in the use of a BS2000 interface.

REASON=BOURSE-SS
The reason for the error response lies in the use of the BS2000 bourse interface.

REASON=TIMER-SS
The reason for the error response lies in the use of the BS2000 timer interface.

REASON=DEVICE-SS
The reason for the error response lies in the use of the BS2000 device interface.

REASON=SIGNAL-SS
The reason for the error response lies in the use of the BS2000 signal interface.

REASON=CONTINGENCY-SS
The reason for the error response lies in the use of the BS2000-CONTINGENCY interface.

REASON=SLOTPOOL-SS
The reason for the error response lies in the use of the BS2000 slotpool interface.

REASON=TASK-SS
The reason for the error response lies in the use of the BS2000 task interface.

REASON=USER-TIMEOUT
The reason for the error response is a timeout while waiting for the user call to be processed under BCAM task.

REASON=MEMORY-SS
The reason for the error response lies in the use of the BS2000 memory interface.

ACTION=...
Defines the action to be taken in response to the errors specified with REASON.
The values can also be specified as a list (list-poss).

ACTION= *none
No error response is switched on.

ACTION=DUMP
A dump is created (in the event of an error return code).

ACTION=MSG
Message BCA0777 is generated (even if the return code is ok).

REMOTE-IP-NSDU=...
Defines the NSDU length for IP routes, which operate via at least one router.

REMOTE-IP-NSDU=*UNCHANGED
The NSDU length for remote IP routes remains unchanged.

REMOTE-IP-NSDU=*STD
The NSDU length for remote IP routes is set to the default value (556 bytes) in accordance with RFC1122.

REMOTE-IP-NSDU=<integer 512..65530>
The NSDU length for remote IP routes is set to the specified value.

SOFTIME=...
Monitoring period for processing of the SOF in seconds.
1 ... 600 ...2147483

CMDFILE-CONTINUATION=...
CMDFILE-CONTINUATION is used to specify for which command processing results the SOF or BCAM command file is further processed.

CMDFILE-CONTINUATION= *unchanged
The current setting of the command processing results that determine when the SOF is further processed is not changed.
Default: POSITIVE-RESULTS

CMDFILE-CONTINUATION=ALL-RESULTS
The SOF is further processed, regardless of the command processing results.

CMDFILE-CONTINUATION=POSITIVE-RESULT
The SOF is further processed only for positive command processing results.

CMDFILE-CONTINUATION=NEGATIVE-RESULT
The SOF is further processed only for negative command processing results.

DCSTART: Start the data communication system in BS2000

You use the DCSTART command to start the data communication system in the BS2000 system. The definition stored in the RDF for the BS2000 system is transferred to the BCAM data structure. If a number of BS2000 systems exist in a network, the DCSTART command is entered for each of these systems.

First of all, the DCSTART command automatically initiates the opening of the following internal privileged applications of the BS2000 system:

- $BCAMNET (application for remote batch processing, if used)
- $CONSOLE (application for universal console)
- $BCADNS4 (application for LWRESD operation IP)
- $BCADNS6 (application for LWRESD operation IPv6)

The command sequence dcsof is then processed if it is specified in the DCSOF operand of the DCSTART command.

You can simultaneously enter and activate any group of systems.

You can control which messages are logged. The time required to start BCAM is reduced if only error messages are displayed.

With the DCSTART command, automatic monitoring of connection requests and warnings is initiated. In current operation

- connection requests are timed out after 30 seconds if they were not accepted or rejected beforehand. The time setting can be changed with the help of the CONN operand of the BCTIMES command.
- the activities defined with the BCEND or BCOUT commands are carried out 10 seconds after the commands have been entered. The time setting can be changed with the help of the WARN operand of the BCTIMES command.

Monitoring of incoming messages is not automatically initiated by the DCSTART command. If the incoming messages are to be deleted during operation after a specified number of seconds – provided they have not been collected already – you must issue the BCTIMES command and define the LETT operand accordingly.

Before the console message ’BCAM ACTIVE’ is displayed, the current values for MAXNPA, MAXNPT, MAXCNN, PAGMEM and RESMEM are output with message BCA08F8.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x				x

List of valid command sources

DCSTART

DCSOF = *none ,... / <filename 1..54>, ...

*none, ...

| **HOST** = <host-name 1 .. 8>

| ,**DCRDF** = *none, ... / <filename 1..54>

| ***NONE**,...

| | ,**MAXTSDU** = **4096** / <integer 4096 .. 65530>

<filename>, ...

| **HOST** = *none / <host-name 1 .. 8>

| ,**DCRDF** = *none / <filename 1..54> / ***NONE**,...

| ***NONE**,...

| | ,**MAXTSDU** = *none / <integer 4096 .. 65530>

,**LWRESD** = **YES** / **NO**

,**JV-READY** = *none / <filename 1..54>

,**JV-RDFNAME** = *none / <filename 1..54>

,**JV-BCAM-STATUS** = *none / <filename 1..54>

,**MAXNPA** = *none / <integer 1 .. 2147483647>

,**MAXNPT** = *none / <integer 1 .. 2147483647>

,**MAXCNN** = *none / <integer 1 .. 2147483647>

,**PAGMEM** = *none / <integer 1024 .. 1048576>

,**RESMEM** = *none / <integer 1024 .. 1048576>

,**SOKHOST** = *none / <text 1 .. 32> / <c-string 1 .. 32>

,**PRIVPORT#** = *none / <integer 1 .. 65535>

,**FREEPORT# =** *none / <integer 1 .. 65535>

,**MSG** = *unchanged / **ALL** / **NAK** / **ERROR-ONLY**

,**#BITMAP** = *none / <integer 1 .. 32>

,**START** = **NEW** / **RETRY**

,**RETRY** = *none / **ABNORMAL** / **NO**

, **INI** = *none / **ONLY** , ... / **LOCAL** , ... / **NODE** , ... / **ALL** , ...

ONLY , ...

| **ACT** = *none / **NO** / **YES** / **ONLY**

LOCAL , ...

| **ACT** = *none / **NO** / **YES** / **ONLY** / **LOCAL**

NODE , ...

| **ACT =** *none / **NO** / **YES** / **ONLY** / **LOCAL** / **NODE**

ALL , ...

| **ACT** = *none / **NO** / **YES** / **ONLY** / **LOCAL** / **NODE** / **ALL**

, **APPLICATION-TABLE** = *none / (...)

(...)

| **FILE** = *none / <filename 1..50>

, **SOCKETHOST-TABLE** = *none / (...)

(...)

| **FILE** = *none / <filename 1..50>

, **PROCESSOR-TABLE** = *none / (...)

(...)

| **FILE** = *none / <filename 1..50>

| , **ACCESS** = *none / **UPDATE** / **READ** / **ALLOW**

, **FQDN-TABLE** = *none / (...)

(...)

| **FILE** = *none / <filename 1..50>

, **SERVICES-TABLE** = *none / (...)

(...)

| **FILE** = *none / <filename 1..50>

, **MAX-ISAM-POOL-SIZE** = *unchanged / ***STD** / <integer 128 .. 32766>

, **MAX-SLOT-PAGES** = *unchanged / ***STD** / <integer 2048 .. 65535>

, **MAX-DNS-ACC-ENTRIES** = *unchanged / <integer 0 .. 32766>

, **MAX-VLAN-ASSIGNMENT-ENTRIES** = *unchanged / <integer 0 .. 32766>

, **REASON** = *none / list-poss (10): **BS2-SS** / **BOURSE-SS** / **TIMER-SS** / **DEVICE-SS** / **SIGNAL-SS** /
CONTINGENCY-SS / **SLOTPOOL-SS** / **TASK-SS** / **USER-TIMEOUT** / **MEMORY-SS**

, **ACTION** = *none / list-poss (2): **MSG** / **DUMP**

, **REMOTE-IP-NSDU =** *unchanged / ***STD** / <integer 512 .. 65530>

DCSOF=...
DCSOF defines whether startup of BCAM is to take place with the help of a command file (**S**tart **O**ption **F**ile).

> If the SOF is not cataloged under the TSOS ID, its fully qualified file name must be specified. The file name must always be cataloged in the home pubset, otherwise errors may occur in connection with files cataloged on data pubsets or shared pubsets.
> If the DCSOF operand is used, BCAM accesses the SOF. The SOF must have been created previously; it contains all commands for the (automatic) startup of the data communication system. The first command (DCOPT) of the SOF has, as its operands, the optional operands of the DCSTART command. If you also enter one or more of the optional operands with the DCSTART command, the value defined for startup is overwritten for this operand in the DCOPT command.

DCSOF= *none
The specification of the name of the SOF file is omitted (see metasyntax).

HOST=<host-name 1..8>
HOST is the name of the BS2000 system. HOST must be specified in the DCSTART or DCOPT command.

DCRDF=...
Refers to the name of the file which contains the network description (RDF).

DCRDF=<filename 1..54>
Name of the RDF.
The fully qualified file name is to be specified if the RDF is not under the TSOS user ID. The file name must always be cataloged in the home pubset, otherwise errors may occur in connection with files cataloged on data pubsets or shared pubsets.

DCRDF=*NONE,...
When *NONE is specified, startup occurs without an RDF.

MAXTSDU=...
This operand describes the maximum receive message length for the host.

MAXTSDU=<integer 4096..65530>
Specification of the maximum message length in bytes.
Default: 4096

DCSOF=<filename 1..54>
Name of the SOF with which the communication system is initialized. The first command of this SOF must be DCOPT.

HOST=...
HOST is the name of the BS2000 system for which BCAM was generated in the RDF. HOST must have been specified in the DCSTART or DCOPT command.

HOST= *none
The specification of the host name is omitted (see metasyntax).

HOST=<host-name 1..8>
Host name of the communication system.

DCRDF=...
Refers to the name of the file which contains the network description (RDF).

DCRDF= *none
The specification of the use of the RDF is omitted.
Default: $TSOS.DCRDF

DCRDF=<filename 1..54>
Name of the RDF.
The fully qualified file name is to be specified if the RDF is not under the TSOS user ID.

DCRDF=*NONE,...
When *NONE is specified, startup occurs without an RDF.

MAXTSDU=...
This operand describes the maximum receive message length for the host.

MAXTSDU= *none
No specification of the maximum message length.

MAXTSDU=<integer 4096..65530>
Specification of the maximum message length in bytes.
Default: 4096

LWRESD=...
With the LWRESD operand you specify whether LWRESD can be started automatically.

> ¡ In a BS2000 parameter file (parameter service) LWRESD=NO must be specified.

LWRESD=YES
LWRESD is started automatically.
Default: YES

LWRESD=NO
LWRESD is not started automatically. LWRESD may be started only after BCAM has been started.

JV-READY=...
Name of the job variable in which the BCAM operating mode is displayed. If the content of the job variable is "BCAM READY", the active state of BCAM is displayed. Any other content indicates that BCAM is not ready. The BCAM job variable is reset only if BCAM is terminated normally (message BCAM0716). If no job variable is available, no logging of the BCAM state by BCAM takes place.

> ¡ The JV-READY parameter cannot be used in a BS2000 parameter file (parameter service). The JV subsystem must be active by the time "BCAM READY" is displayed.

JV-READY= *none
The specification of the use of a job variable for monitoring the BCAM operating mode is omitted.

JV-READY=<filename 1..54>
Defines the name of the job variable which displays the BCAM operating mode. The job variable must always be cataloged in the home pubset, otherwise errors may occur in connection with JVs cataloged on data pubsets or shared pubsets.

JV-RDFNAME=...
Name of the job variable in which the name of the current RDF is stored – equivalent to entry in operand DCRDF. If the content of the job variable is "*NONE", this indicates that BCAM is being operated without RDF (RDF-less

operation).
The BCAM job variable is reset only if BCAM is terminated normally (message BCA0716); in all other cases, it must be reset manually by the system administrator. If no job variable is available, the current RDF name is not logged by BCAM.

> The JV-RDFNAME parameter cannot be used in a BS2000 parameter file (parameter service). The JV subsystem must be active by the time “BCAM READY” is displayed.

JV-RDFNAME= *none
The specification of the use of a job variable for monitoring the RDF name is omitted.

JV-RDFNAME=<filename>
Defines the name of the job variable in which the current RDF name is stored. The job variable must always be cataloged in the home pubset, otherwise errors may occur in connection with files cataloged on data pubsets or shared pubsets.

JV-BCAM-STATUS=...
Name of the job variables in which the current BCAM status is entered (see "Event monitoring using BCAM job variables"). The BCAM job variable is reset only if BCAM is terminated normally (message BCA0716); in all other cases, it must be reset by the system administrator manually. If no job variable is available, BCAM does not log the current BCAM state.

> The JV-BCAM-STATUS parameter cannot be used in a BS2000 parameter file (parameter service). The JV subsystem must be active by the time "BCAM READY" is displayed.

JV-BCAM-STATUS= *none
The specification of the use of a job variable for monitoring the BCAM status is omitted.

JV-BCAM-STATUS=<filename 1..54>
Defines the name of the job variable in which the current BCAM status is stored. The job variable must always be cataloged in the home pubset, otherwise errors may occur in connection with JVs cataloged on data pubsets or shared pubsets.

MAXNPA=...
Restricts the number of applications that are not predefined which may be opened simultaneously in the BS2000 system.

MAXNPA= *none
The specification of the number of applications that are not predefined is omitted.

MAXNPA=<integer 1..2147483647>
Number of applications that are not predefined which may be opened simultaneously in the BS2000 system.
Default: 20000

MAXNPT=...
Restricts the number of applications that are not predefined which may be opened simultaneously in the BS2000 system by a single TASK.

MAXNPT= *none
The specification of the number of applications that are not predefined is omitted.

MAXNPT=<integer 1..2147483647>
Number of applications that are not predefined which may be opened simultaneously in the BS2000 system by

a single TASK.
Default: 20000

MAXCNN=...
Restricts the number of connections which an application that is not predefined may simultaneously maintain.

MAXCNN= *none
The specification of the number of connections is omitted.

MAXCNN=<integer 1..2147483647>
Number of connections which an application that is not predefined may simultaneously maintain.
Default: 20000

PAGMEM=...
With this operand, the size of the pageable memory (backup storage, paging memory, paging area) which BCAM may use for data transfer is specified in Kbytes.

PAGMEM= *none
The specification of the size of the pageable memory is omitted.

PAGMEM=<integer 1024..1048576>
Size of the pageable memory in Kbytes.
Default: system-dependent; see also the following table for RESMEM=...

RESMEM=...
Defines the size in Kbytes of the resident memory (MEM-RES) that may be used by BCAM for data transfers.

Memory size in MB	RESMEM in Kbytes	PAGMEM in Kbytes
up to 50	5000	3000
50 to 100	10000	6000
100 to 200	20000	12000
200 to 500	40000	30000
500 to 1000	60000	60000
over 1000	100000	100000

RESMEM= *none
The default system-dependent value set by BCAM is unchanged.

RESMEM=<integer 1024..1048576>
The value for RESMEM is changed.

SOKHOST=...
Specifies the socket host name of the host.

SOKHOST= *none
The specification of the socket host name is omitted.
The host name is used as the socket host name; it is extended with blanks to the length of the socket host name.

SOKHOST=<text 1..32> / <c-string 1..32>
Socket host name of the host.

PRIVPORT#=...
With PRIVPORT#, the first socket port number which can be occupied by non-privileged applications is specified. Low socket port numbers (with the exception of port number 20) can only be occupied by privileged applications. Privileged applications are those which run under the TSOS or NET-ADMINISTRATION BS2000 system privileges.

PRIVPORT#= *none
The 2050 value set as the default by BCAM remains unchanged.

PRIVPORT#=<integer 1..65535>
Defines the first free port number which can be occupied by non-privileged applications. PRIVPORT# must always be less than or equal to FREEPORT#. If PRIVPORT# is larger than FREEPORT#, the value is set to the specification for FREEPORT#.

FREEPORT#=...
Specifies the first free port number which BCAM may occupy dynamically for an application. If SNMP-AGENTS is used on this computer, the port number 3161 is assigned for internal BCAM communication between master and subagents.

FREEPORT#= *none
The value 4096 set as the default by BCAM remains unchanged.

FREEPORT#=<integer 1..65535>
Defines the first free port number.
FREEPORT# must always be greater than or equal to PRIVPORT#. If FREEPORT# is smaller than PRIVPORT#, then PRIVPORT# is set to the specification of FREEPORT#.

MSG=...
Controls the extent of the message output.
The BCAM messages are described in chapter "Messages".

MSG=*unchanged
The value ALL set as the default by BCAM remains unchanged.

MSG=ALL
All messages are output.

MSG=NAK
Certain positive messages for processors are not output.
The message is always output for directly addressed systems (otherwise sequences may run incorrectly).
Positive messages are suppressed only for the subsequent systems.
The following positive messages are suppressed:
BCA0740
BCA0763 for the BCIN (format 1), BCACT, BCDAC and BCOUT commands
BCA082A
BCA083F
BCA0851 with reason 00/01/02
BCA0852
BCA0853
BCA0854 with reason 00/01/02
BCA0856

BCA085B with reason 00/01/02
BCA085F
BCA08D7
BCA08DB
BCA08DC
BCA08DD
BCA08DE
BCA08DF
BCA08E5

MSG=ERROR-ONLY
Only negative messages are output.
This setting makes it possible to start BCAM more quickly (Quick Startup).
All messages that have the Weight Code 50, 70 and 99 in the message file are output. This corresponds to filter level 3 or 4 and "not suppressible at the operator terminal".

> i You can modify this setting with /BCMOD MSG=ALL/NAK. You should change this setting after BCAM start if you want to resume the logging of all BCAM commands.

#BITMAP=...
Number of 256 byte-long bitmaps for administering each data slot pool. If this value is not specified, it is derived from the system memory MEMORY-SIZE as follows:

MEMORY-SIZE in Mbytes	Number of bitmaps
up to 50	2
50 to 100	4
100 to 200	6
200 to 500	8
500 to 1000	10
over 1000	16

#BITMAP restricts the size of the data slot pool. The maximum number of slots in a data slot pool is determined by multiplying #BITMAP by 2048.

#BITMAP= *none
No specifications for the number of bitmaps.

#BITMAP=<integer 1..32>
Number of bitmaps for administering each data slot pool.

START=...
START specifies the operands selected for BCAM startup.

START=NEW
The valid start operands result from the sum of the currently used DCSTART command with START=NEW and the DCOPT command from the command file specified in the DCSOF operand. They can be changed in a command file or manually by means of a BCMOD command.

START=RETRY
BCAM is started with the operands which were valid at the last session start.

Details of the settings after an IPL or a BCAM session start can be found in section "Operand settings".

RETRY=...
This operand controls the behavior for the abnormal termination of BCAM.

RETRY= *none
No specification is made on the behavior after abnormal BCAM termination.
Default: NO

RETRY=ABNORMAL
A retry is carried out in the event of abnormal termination of BCAM.

RETRY=NO
A restart is not carried out in the event of abnormal termination of BCAM.

INI=...
Specifies the initialized objects.
The INI operand only affects the objects defined in an RDF.

INI= *none
The specification of objects to be initialized is omitted (corresponds to INI=ONLY).

INI=ONLY
Only the host is initialized.

ACT=...
Specifies the activated objects.
The ACT operand only affects the objects defined in an RDF.

ACT= *none
The specification of objects to be activated is omitted (corresponds to ACT=YES).

ACT=NO
No objects are activated.

ACT=YES
Those objects which were initialized are also activated.

ACT=ONLY
Only the host is to be activated.

INI=LOCAL
All LAN nodes are activated.

ACT=...
Specifies the activated objects.
The ACT operand only affects the objects defined in an RDF.

ACT= *none
The specification of the objects to be activated is omitted (corresponds to ACT=YES).

ACT=NO
No objects are activated.

ACT=YES
Those objects which were initialized are also activated.

ACT=ONLY
Only the host is activated.

ACT=LOCAL
All LAN nodes are activated.

INI=NODE
All LAN nodes , as well as all processors directly connected to the LAN, are to be initialized.

ACT=...
Specifies the activated objects.
The ACT operand only affects the objects defined in an RDF.

ACT= *none
The specification of the objects to be activated is omitted (corresponds to ACT=YES).

ACT=NO
No objects are activated.

ACT=YES
Those objects which were initialized are also activated.

ACT=ONLY
Only the host is activated.

ACT=LOCAL
All LAN nodes are activated.

ACT=NODE
All LAN nodes , as well as all processors directly connected to the LAN, are activated.

INI=ALL
All LAN nodes , all processors directly connected to the LAN, as well as all processors which can be accessed via the above named processor, are initialized.

ACT=...
Specifies the activated objects.
The ACT operand only affects the objects defined in an RDF.

ACT= *none
The specification of the objects to be activated is omitted (corresponds to ACT=YES).

ACT=NO
No objects are activated.

ACT=YES
Those objects which were initialized are also activated.

ACT=ONLY
Only the host is activated.

ACT=LOCAL
All LAN nodes are activated.

ACT=NODE
All LAN nodes , as well as all processors directly connected to the LAN, are activated.

ACT=ALL
All LAN nodes , all processors directly connected to the LAN, as well as all processors which can be accessed via the above named processor, are activated.

APPLICATION-TABLE=...
Only relevant for applications which should not run on the standard host. APPLICATION-TABLE defines the SAM file (application file) which contains the assignment of applications to virtual hosts. The information from this file is transferred immediately to the ISAM file, but only takes effect for the individual application when the application is terminated and restarted.

APPLICATION-TABLE= *none
No specifications for using the application file.
The default name is used.

APPLICATION-TABLE=(...)
Specifications are made for using the application file.

FILE=...
Specifies the name of the application file. The file name must always be cataloged in the home pubset, otherwise errors can occur in connection with files cataloged on data pubsets or shared pubsets.

FILE= *none
No specifications for the name of the application file.
In this instance the default $TSOS.SYSDAT.BCAM.APPLICATIONS is used.

FILE=<filename 1..50>
Defines a local file name for the application file.
Please note that the file name of BCAM is extended by a four-character suffix.

SOCKETHOST-TABLE=...
Only relevant for automatic end system creation.
SOCKETHOST-TABLE defines the SAM file (socket host file) which contains the assignment of socket host names to IP addresses. The information from this file is transferred immediately to the associated ISAM file. ISOCKET calls, which request the conversion of socket host names to IP addresses and vice versa, access data in the corresponding ISAM file.

SOCKETHOST-TABLE= *none
No specifications for using the socket host file.

SOCKETHOST-TABLE=(...)
Specifications are made for using the socket host file.
The default name is used.

FILE=...
Specifies the file name of the socket host file. The file name must always be cataloged in the home pubset, otherwise errors can occur in connection with files cataloged on data pubsets or shared pubsets.

FILE= *none
No specifications for the name of the socket host file.
In this instance, the default name $TSOS.SYSDAT.BCAM.ETC.HOSTS is used.

FILE=<filename 1..50>
Defines a local file name of the socket host file.
Please note that the file name of BCAM is extended by a four-character suffix.

PROCESSOR-TABLE=...
Only relevant for automatic end system creation.
PROCESSOR-TABLE defines the SAM file (processor file) which contains the assignment of processor names to network addresses. ACCESS=UPDATE/READ/ALLOW is used to control automatic end system creation.

PROCESSOR-TABLE= *none
No specifications on using the processor file.
The default name is used.

PROCESSOR-TABLE=(...)
Specifications are made on using the processor file.

FILE=...
Specifies the name of the processor file. The file name must always be cataloged in the home pubset, otherwise errors may occur in connection with files cataloged on data pubsets or shared pubsets.

FILE= *none
No specifications for the name of the processor file.
In this instance, the default name $TSOS.SYSDAT.BCAM.PROCESSORS is used.

FILE=<filename 1..50>
Defines a local name for the processor file.
Please note that the file name of BCAM is extended by a four-character suffix.

ACCESS=...
Controls the scope of automatic end system creation. A detailed description of this operand is provided in the section "Processor file".

ACCESS= *unchanged
No specification is entered for controlling automatic end system creation.Default: UPDATE

ACCESS=UPDATE
Any partner end system may be created.

ACCESS=ALLOW
Any partner end system may be created, but not created in the files which are assigned to the processor file.

ACCESS=READ
The partner end systems which have the specified processor names and are described in the processor file may be created.

FQDN-TABLE=...
FQDN-TABLE defines the SAM file containing the assignment of FQDN to BCAM names and/or IP addresses. The information from this file (FQDN file) is transferred periodically to the BCAM tables.

FQDN-TABLE= *none
The use of FQDN-TABLE is not specified.
The default name is used.

FQDN-TABLE=(...)
Specifies how FQDN-TABLE is used.

FILE=...
Specifies the file name of FQDN-TABLE. The file name must be cataloged on the home pubset. Errors may occur in connection with files which are cataloged on data pubsets or shared pubsets.

FILE= *none
The file name of FQDN-TABLE is not specified.
In this case the default name $TSOS.SYSDAT.BCAM.FQDN is used.

FILE=<filename 1..50>
Defines an own file name for FQDN-TABLE.

¡ The file name of BCAM is supplemented by a four-character suffix.

SERVICES-TABLE=...
Only relevant for automatic end system creation.
Defines a new SAM file containing the assignment of services to port numbers. The information from this file (services file) is transferred periodically to the BCAM tables.

SERVICES-TABLE= *unchanged
SAM file containing the assignment of services to port numbers is not specified.

SERVICES-TABLE=(...)
SAM file containing the assignment of SERVICE to a port number.

FILE=...
Specifies the name of the SAM file containing the assignment of services to port numbers.
The file name must be cataloged on the home pubset. Errors may occur in connection with files which are cataloged on data pubsets or shared pubsets.
Default name: $TSOS.SYSDAT.BCAM.ETC.SERVICES
The file name is compared with the file names of other BCAM tables which have also been entered or are already available to prevent this file being assigned to more than one BCAM table.

FILE= *unchanged
The name of the SAM file containing the assignment of services to port numbers is not specified.

FILE=<filename 1..50>
Name of the SAM file containing the assignment of services to port numbers.

¡ The file name of BCAM is supplemented by a four-character suffix.

MAX-ISAM-POOL-SIZE=...
MAX-ISAM-POOL-SIZE defines the maximum size of the ISAM pool (specified in PAM pages) for the auxiliary ISAM files of the BCAM control files (application file, processor file, socket host file, FDQN file, and services file).

MAX-ISAM-POOL-SIZE= *unchanged
You do not specify the absolute size of the ISAM pool.

MAX-ISAM-POOL-SIZE=*STD
The size of the ISAM pool is set to the default value of 1536 PAM pages.

MAX-ISAM-POOL-SIZE=<integer 128..32766>
Maximum size of the ISAM pool (specified in PAM pages).

MAX-SLOT-PAGES =
MAX-SLOT-PAGES defines the maximum size in pages of the control block pool.

MAX-SLOT-PAGES = *unchanged
You do not specify the maximum size of the control block pool.

MAX-SLOT-PAGES = *STD
The maximum size is to be changed to the default value (4608 pages).

MAX-SLOT-PAGES = <integer 2048 .. 65535>
Maximum size of the control block pool in pages.

MAX-DNS-ACC-ENTRIES=
You can define the number of entries for the management of the IP and IPv6 address ranges and for the processor’s namespace.

MAX-DNS-ACC-ENTRIE = *unchanged
You leave the number of entries for the management of the IP and IPv6 address ranges and for the processor’s namespace unchanged.
Default: 4096

MAX-DNS-ACC-ENTRIES=<integer 0 .. 32766>
Number of entries for the management of the IP and IPv6 address ranges and for the processor’s namespace. The specification 0 causes the default value to be used.

MAX-VLAN-ASSIGNMENT-ENTRIES=...
You can define the number of entries for the management of the IP and IPv6 address ranges for assignment to a VLAN ID.

MAX-VLAN-ASSIGNMENT-ENTRIES = *unchanged
You leave the number of entries for the management of the IP and IPv6 address ranges for assignment to a VLAN ID unchanged.
Default: 1024

MAX-VLAN-ASSIGNMENT-ENTRIES=<integer 0 .. 32766>
Number of entries for the management of the IP and IPv6 address ranges for assignment to a VLAN ID. The specification 0 causes the default value to be used.

REASON=...
Specifies the reason for the error response defined in the ACTION operand.
The values can also be specified as a list (list-poss).

REASON= *none
No specification of the reason for the error response.

REASON=BS2-SS
The reason for the error response lies in the use of a BS2000 interface.

REASON=BOURSE-SS
The reason for the error response lies in the use of the BS2000 bourse interface.

REASON=TIMER-SS
The reason for the error response lies in the use of the BS2000 timer interface.

REASON=DEVICE-SS
The reason for the error response lies in the use of the BS2000 device interface.

REASON=SIGNAL-SS
The reason for the error response lies in the use of the BS2000 signal interface.

REASON=CONTINGENCY-SS
The reason for the error response lies in the use of the BS2000-CONTINGENCY interface.

REASON=SLOTPOOL-SS
The reason for the error response lies in the use of the BS2000 slotpool interface.

REASON=TASK-SS
The reason for the error response lies in the use of the BS2000 task interface.

REASON=USER-TIMEOUT
The reason for the error response is a timeout while waiting for the user call to be processed under BCAM task.

REASON=MEMORY-SS
The reason for the error response lies in the use of the BS2000 memory interface.

ACTION=...
Defines the action to be taken in response to the errors specified in REASON.
The values can also be specified as a list (list-poss).

ACTION= *none
No error response is to be switched on.

ACTION=DUMP
A dump is created (in the event of an error return code).

ACTION=MSG
Message BCA0777 is generated (even if the return code is ok).

REMOTE-IP-NSDU=...
Defines the NSDU length for IP routes, which operate via at least one router.

REMOTE-IP-NSDU= *unchanged
The NSDU length for remote IP routes remains unchanged.

REMOTE-IP-NSDU=*STD
The NSDU length for remote IP routes is set to the default value (556 bytes) in accordance with RFC1122.

REMOTE-IP-NSDU=<integer 512..65530>
The NSDU length for remote IP routes is set to the specified value.

Command logging

For reasons of compatibility, the processing acknowledgment is supplied in news BCA0763 if it is positive and in news BCA0762 if it is negative, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA0703, BCA0758 and BCA089F may also appear.
A description of the error messages that can be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
2	0	BCA0777	Acknowledgment of interface use
2	0	BCA0832	Packet length for link procedure or line too small, default used
2	0	BCA0893	SOF editing cancelled
0	1	BCA071B	DCOPT command not first command of the SOF
0	1	BCA071C	Host name neither in DCOPT or in DCSTART-command entered
0	1	BCA0768	Syntax error in command
0	1	BCA0810	BCAM already active
0	1	BCA0815	BCAM is being started up
0	1	BCA0825	Parameter HOST does not define a BCAM host
0	32	BCA0702	TRACE was not initialized
0	32	BCA089B	internal memory bottle-neck in establishing connection to $CONSOLE
0	32	BCA089C	A command could not be sent to $CONSOLE
0	64	BCA071F	BCAM version incompatible with BS2000 version
0	64	BCA076E	Start process cancelled at position.
0	64	BCA082B	RDF format wrong
0	64	BCA0891	Failure to establish connection to $CONSOLE
0	64	BCA0895	No DCOPT command
0	64	BCA089A	Connection to $CONSOLE returned
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0715	The application can not be opened
0	130	BCA0766	BCAM is not active

DEACTIVATE-LINE/ DVLN: Deactivate line

You use the DEACTIVATE-LINE command to deactivate a line.

The alias DVLN exists for DEACTIVATE-LINE to provide SNMP support.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

DEACTIVATE-LINE / **DVLN**
LINE-NAME = <composed-name 1..8> / <c-string 1 .. 8>

LINE-NAME=<composed-name 1..8> / **<c-string 1..8>**
Name of the line that is to be deactivated.

Command logging

Positive acknowledgments are supplied in news BCA0688, and negative acknowledgments in news BCA06D8 followed by the message NBR0740.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
2	0	BCA06D8	Line deactivation aborted
0	1	BCA0768	Syntax error in the command
0	64	BCA0767	A command is active for the line
0	64	BCA07A2	LINE-NAME not found
0	64	BCA0856	Not taken over
0	64	BCA08D0	Line already deactivated
0	128	BCA0767	A command is active for the line
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Example

Deactivate line:

```
/DEACTIVATE-LINE LINE-NAME=L#LAN#1
```

DEACTIVATE-LINK-AGGREGATION / DVLAG: Deactivate link aggregation

You use the DEACTIVATE-LINK-AGGREGATION command to deactivate a link aggregation.

The alias DVLAG exists for DEACTIVATE-LINK-AGGREGATION to provide SNMP support.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

DEACTIVATE-LINK-AGGREGATION / **DVLAG**
AGGREGATION-NAME = <composed-name 1..8>

AGGREGATION-NAME=<composed-name 1..8>
Name of the link aggregation to be deactivated.

Command logging

Positive acknowledgments are supplied in news BCA068F, and negative acknowledgments in news BCA06DF.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	1	BCA0768	Syntax error in command
0	64	BCA0770	Parameter invalid
0	64	BCA0773	Incorrect data type for aggregation name
0	64	BCA07A7	Link aggregation not found
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Example

Deactivate link aggregation:

```
/DEACTIVATE-LINK-AGGREGATION AGGREGATION-NAME=AGGRNA01
```

DEACTIVATE-OWN-ADDRESS / DVOAD: Deactivate own-address

DEACTIVATE-OWN-ADDRESS deactivates an own address for a (VLAN) line.

The alias name DVOAD exists for DEACTIVATE-OWN-ADDRESS to provide SNMP support.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

DEACTIVATE-OWN-ADDRESS / **DVOAD**

ADDRESS = ***IP**(...) / ***IPV6**(...)

***IP**(...)

| **IP-ADDRESS** = <text 7 .. 15>

***IPV6**(...)

| **IPV6-ADDRESS** = <text 9 .. 45**>**

ADDRESS=...
Specifies the own address which is to be deactivated.
Deactivation of the own address is logged with message BCA0574 for lines and with BCA0575 for VLAN lines.

> ¡ A deactivated own address can be reactivated only by means of the explicitly issued ACTIVATE-OWN-ADDRESS command. No implicit activation takes place.

ADDRESS=*IP(...)
own IP address which is to be deactivated.

IP-ADDRESS=<text 7..15> / **<x-string 7..8>**
In IP-ADDRESS you specify the own IP address which is to be deactivated.
Syntax of the own IP address: <IPv4-address>.

ADDRESS=*IPV6(...)
own IPv6 address which is to be deactivated.

IPV6-ADDRESS=<text 9..45> / **<c-string 9..45>**
In IPV6-ADDRESS you specify the own IPv6 address which is to be deactivated.
Syntax of the own IPv6 address: <IPv6-address>.

Command logging

Deactivation of an own address is reported with the message BCA0574 for lines and with BCA0575 for VLAN lines. If the address is already deactivated, deactivation of an own address is reorted with message BCA057C for lines and with BCA057D for VLAN lines.Positive acknowledgments are supplied in news BCA0680, and negative acknowledgments in news BCA06D0.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Bedeutung
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	1	BCA0768	Syntax error in the command
2	0	BCA06D0	Command aborted
0	64	BCA079F	Address not known
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

DEACTIVATE-VLAN-DEVICE/ DVVLDV: Deactivate VLAN device

You use the DEACTIVATE-VLAN-DEVICE command to deactivate a VLAN device.

The alias DVVLDV exists for DEACTIVATE-VLAN-DEVICE to provide SNMP support.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

DEACTIVATE-VLAN-DEVICE / **DVVLDV**
DEVICE-NAME = <composed-name 1..8>

DEVICE-NAME=<composed-name 1..8>
Name of the VLAN device that is to be deactivated.

Command logging

Positive acknowledgments are supplied in news BCA0689, and negative acknowledgments in news BCA06D9 followed by the message NBR0740.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
2	0	BCA06D9	VLAN device deactivation aborted
0	0	BCA0768	Syntax error in the command
0	64	BCA0767	A command is active for the device
0	64	BCA076F	Timeout for the command
0	64	BCA05DF	Device is already deactivated
0	64	BCA07A5	VLAN device not found
0	64	BCA0856	Not taken over
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Example

Deactivate VLAN device:

```
/DEACTIVATE-VLAN-DEVICE DEVICE-NAME=L#DEV#1
```

DEACTIVATE-VLAN-LINE/ DVVLLN: Deactivate VLAN line

You use the DEACTIVATE-VLAN-LINE command to deactivate a VLAN line.

The alias DVVLLN exists for DEACTIVATE-VLAN-LINE to provide SNMP support.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

DEACTIVATE-VLAN-LINE / **DVVLLN**
LINE-NAME = <composed-name 1..8>

LINE-NAME=<composed-name 1..8>
Name of the VLAN line that is to be deactivated.

Commando logging

Positive acknowledgments are supplied in news BCA068A, and negative acknowledgments in news BCA06DA followed by the message NBR0740.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
2	0	BCA06DA	VLAN line deactivation aborted
0	1	BCA0768	Syntax error in the command
0	64	BCA07AA	VLAN line name not found
0	128	BCA0767	A command is active for the line
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Example

Deactivate VLAN line:

```
/DEACTIVATE-VLAN-LINE LINE-NAME=L#VLAN#1
```

DELETE-PROCESSOR / DLPRR: Delete processor

You use the DELETE-PROCESSOR command to delete a (partner) processor.

The alias DLPRR exists for DELETE-PROCESSOR in order to provide SNMP support. The SDF alias is DLPRR.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

DELETE-PROCESSOR / **DLPRR** Delete (partner) processor
PROCESSOR-NAME = <composed-name 1..8> / <c-string 1 .. 8>

PROCESSOR-NAME=<composed-name 1..8> / **<c-string 1..8>**
Name of the (partner) processor that is to be deleted.

> ¡ A (partner) processor is only deleted if there are no routes leading to it.

Command logging

Positive acknowledgments are supplied in news BCA0682, and negative acknowledgments in news BCA06D2 followed by the message NBR0740.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	1	BCA0768	Syntax error in command
0	64	BCA07A0	PROCESSOR-NAME not found
0	64	BCA07EA	BCOUT command is being executed for the processor
0	64	BCA07EF	There are still routes to the processor
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Example

See the example in section "DELETE-ROUTE / DLRT: Delete route".

DELETE-ROUTE / DLRT: Delete route

You use the DELETE-ROUTE command to delete a route with the L3 profile IP, IPv6 or INTF and possibly the associated (partner) processor. Other L3 profiles are not permitted.

Only routes to end systems for which no further connections exist are deleted. Routes to router systems cannot be deleted.

The delayed release of system resources can require considerable command processing time.

The alias name DLRT exists for DELETE-ROUTE in order to provide SNMP support. The SDF alias is DLRT.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

DELETE-ROUTE / **DLRT** Delete route

ROUTE-NAME = <composed-name 1..8> / <c-string 1 .. 8> / ***IP**(...) / ***IPV6**(...) / ***ISO**(...)

***IP**(...)

| **IP-ADDRESS** = <composed-name 7 .. 15> / <x-string 7 .. 8>

***IPV6**(...)

| **IPV6-ADDRESS** = <text 9 .. 45> / <c-string 9 .. 45>

***ISO**(...)

| **ISO-ADDRESS** = <x-string 1 .. 40>

,**DELETE-PROCESSOR** = ***YES** / ***NO**

ROUTE-NAME=<composed-name 1..8> / **<c-string 1..8>**
Name of the route that is to be deleted.

ROUTE-NAME=*IP(...)
The routes defined by their partner IP address are deleted.

IP-ADDRESS=<composed-name 7..15> / **<x-string 7..8>**
Partner IP address of the routes that are deleted.

ROUTE-NAME=*IPV6(...)
The routes defined by their partner IPv6 address are deleted.

IPV6-ADDRESS=<text 9..45> / **<c-string 9..45>**
Partner IPv6 address of the routes that are deleted.

ROUTE-NAME=*ISO(...)
The routes defined by their partner ISO Internet address are deleted.

ISO-ADDRESS=<x-string 1..40>
Partner ISO Internet address of the routes that are deleted.

DELETE-PROCESSOR=...
This operand specifies whether the associated (partner) processor is also deleted.
The (partner) processor is only deleted if there are no further routes to it following deletion of the specified route

DELETE-PROCESSOR=*YES
The associated (partner) processor is also deleted

DELETE-PROCESSOR=*NO
The associated (partner) processor is not deleted.

Command logging

Positive acknowledgments are supplied in news BCA0686, and negative acknowledgments in news BCA06D7.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	1	BCA0768	Syntax error in command
0	64	BCA07A1	ROUTE-NAME not found
0	64	BCA07CA	No route found to delete
0	64	BCA07EA	BCOUT/DELETE-ROUTE command is being executed for the processor
0	64	BCA07EB	Route is in use
0	64	BCA07EC	Release not permitted
0	64	BCA07ED	Deletion of route of <type> is not permitted, not an IP, IPV6, INTF route
0	64	BCA07EE	BCOUT/DELETE-ROUTE command is being executed for the route
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Example

Command sequence for setting up and deleting a processor and the corresponding routes:

```
/CREATE-PROCESSOR PROCESSOR-NAME=PROCHUGO

/CREATE-ROUTE ROUTE-NAME=ROUTHUGO,PROCESSOR-NAME=PROCHUGO,     -
/             PATH=*VIA-ROUTER(ROUTER-ROUTE-NAME=ROUTER,       -
/             L3-PROTOCOL=*IP(IP-ADDRESS=1.2.3.4))
```

Delete the route with the command

```
/DELETE-ROUTE ROUTE-NAME=ROUTHUGO
```

or alternately with the command

```
/DELETE-ROUTE ROUTE-NAME=*IP(IP-ADDRESS=1.2.3.4),DELETE-PROCESSOR=*NO

/DELETE-PROCESSOR PROCESSOR-NAME=PROCHUGO
```

EDIT-BCAM-OBJECT / EDBCOB: Edit BCAM objects

The alias for EDIT-BCAM-OBJECT is EDBCOB.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
	x			

List of valid command sources

EDIT-BCAM-OBJECT / **EDBCOB**
OBJECT = ***HOST** / ***LINE** / ***LINK-AGGREGATION** / ***NODE** / ***VLAN-DEVICE** / ***VLAN-LINE** / **list-poss(**2**): *PROCESSOR** / ***ROUTE**
,**NAME** = <composed-name 1 .. 8>
,**CMD** = ***MODIFY** / ***ACTIVATE** / ***CREATE** / ***DEACTIVATE** / ***SHOW**

OBJECT=...
Specifies which BCAM object is to be edited.

OBJECT=*HOST
A host is to be edited.

OBJECT=*LINE
A line is to be edited.

OBJECT=*LINK-AGGREGATION
A link aggregation is to be edited.

OBJECT=*NODE
A node is to be edited.

OBJECT=*PROCESSOR
A processor is to be edited.

OBJECT=*ROUTE
A route is to be edited.

OBJECT=*VLAN-DEVICE
A VLAN device is to be edited.

OBJECT=*VLAN-LINE
A VLAN line is to be edited.

NAME=...
Specifies the name of the object which is to be edited.

NAME=<composed-name 1..8>
Name of the object.

CMD=...
Specifies which command is to be edited.

CMD=*MODIFY
A MODIFY command is to be edited.

CMD=*ACTIVATE
An ACTIVATE command is to be edited.

CMD=*CREATE
A CREATE command is to be edited.

CMD=*DEACTIVATE
A DEACTIVATE command is to be edited.

CMD=*SHOW
A SHOW command is to be edited.

Command logging

A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	NO ERROR
0	1	CMD0202	Error in command

When the command is processed, further command return codes which depend on the object and the command generated can occur because SDF-P is used.

EDIT-BCAM-OPTIONS / EDBCO: Edit BCAM options

The alias for EDIT-BCAM-OPTIONS is EDBCO.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

EDIT-BCAM-OPTIONS / **EDBCO**
OPTION = ***ALL** / ***AVAILABILITY** / ***CMDFILE-PROCESSING** / ***IP** / ***IPV6** / ***ISO** / ***SNMP** / ***DNS** / ***MISCELLANEOUS**

OPTION=...
Specifies which BCAM options are to be edited.

OPTION=*ALL
All BCAM options are to be edited.

OPTION=*AVAILABILITY
The BCAM options which are concerned with availability are to be edited.

OPTION=*CMDFILE-PROCESSING
The BCAM options which are concerned with handling command files are to be edited.

OPTION=*IP
The IP-specific BCAM options are to be edited.

OPTION=*IPV6
The IPv6-specific BCAM options are to be edited.

OPTION=*ISO
The ISO-specific BCAM options are to be edited.

OPTION=*SNMP
The SNMP-specific BCAM options are to be edited.

OPTION=*DNS
The DNS-specific BCAM options are to be edited.

OPTION=*MISCELLANEOUS
Miscellaneous BCAM options are to be edited.

Command logging

A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	NO ERROR
0	1	CMD0202	Error in command

When the command is processed, further command return codes can occur because SDF-P is used (see also section "SHOW-BCAM-OPTIONS / SHBCO: Show BCAM options information" and section "MODIFY-BCAM-OPTIONS / MDBCO: Modify BCAM options").

EDIT-HOST-ATTRIBUTES / EDHTA: Edit BCAM host attributes

The alias for EDIT-HOST-ATTRIBUTES is EDHTA.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

EDIT-HOST-ATTRIBUTES / **EDHTA**
HOST-NAME = <composed-name 1..8>

HOST-NAME=...
Specifies the name of the host whose attributes are to be edited.

HOST-NAME=<composed-name 1..8>
Name of the host.

Command logging

A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	NO ERROR
0	1	CMD0202	Error in command

When the command is processed, further command return codes can occur because SDF-P is used (see also section "SHOW-HOST-ATTRIBUTES / SHHTA: Show host attribute information" and section "MODIFY-HOST-ATTRIBUTES / MDHTA: Modify HOST attributes").

EDIT-LINE/ EDLN: Edit BCAM line

The alias for EDIT-LINE is EDLN.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

EDIT-LINE / **EDLN**
LINE-NAME = composed-name 1..8>

LINE-NAME=...
Specifies the name of the line whose attributes are to be edited.

> **LINE-NAME=<composed-name 1..8> / <c-string 1..8>**
> Name of the line.

Command logging

A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	NO ERROR
0	1	CMD0202	Error in command

When the command is processed, further command return codes can occur because SDF-P is used (see also section "SHOW-LINE-ATTRIBUTES / SHLNA: Show line information" and section "MODIFY-LINE / MDLN: Modify line").

EDIT-ROUTE-ATTRIBUTES / EDRTA: Edit BCAM route attributes

The alias for EDIT-ROUTE-ATTRIBUTES is EDRTA.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

EDIT-ROUTE-ATTRIBUTES / **EDRTA**
ROUTE-NAME = composed-name 1..8>

ROUTE-NAME=...
Specifies the name of the route whose attributes are to be edited.

ROUTE-NAME=<composed-name 1..8>
Name of the route.

Command logging

A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	NO ERROR
0	1	CMD0202	Error in command

When the command is processed, further command return codes can occur because SDF-P is used (see also section "SHOW-ROUTE-ATTRIBUTES / SHRTA: Show route attributes" and section "MODIFY-ROUTE-ATTRIBUTES / MDRTA: Modify route attributes").

EDIT-VLAN-DEVICE/ EDVLDV: Edit BCAM VLAN device

The alias for EDIT-VLAN-DEVICE is EDVLDV.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

EDIT-VLAN-DEVICE / **EDVLDV**
DEVICE-NAME = composed-name 1..8>

DEVICE-NAME=...
Specifies the name of the VLAN device whose settings are to be edited.

DEVICE-NAME=<composed-name 1..8>
Name of the VLAN device.

Command logging

A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	NO ERROR
0	1	CMD0202	Error in command

When the command is processed, further command return codes can occur because SDF-P is used (see also section "SHOW-VLAN-DEVICE-ATTRIBUTES / SHVLDVA: Show information on VLAN device" and section "MODIFY-VLAN-DEVICE / MDVLDV: Modify VLAN device").

EDIT-VLAN-LINE/ EDVLLN: Edit BCAM VLAN line

The alias for EDIT-VLAN-LINE is EDVLLN.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

EDIT-VLAN-LINE / **EDVLLN**
LINE-NAME = composed-name 1..8>

LINE-NAME=...
Specifies the name of the VLAN line whose attributes are to be edited.

LINE-NAME=<composed-name 1..8>
Name of the VLAN line.

Command logging

A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	NO ERROR
0	1	CMD0202	Error in command

When the command is processed, further command return codes can occur because SDF-P is used (see also section "SHOW-VLAN-LINE-ATTRIBUTES/ SHVLLNA: Show information on VLAN lines" and section "MODIFY-VLAN-LINE / MDVLLN: Modify VLAN line").

GENERATE-BCAM-CMD-FILE / GBCF: Output the BCAM configuration to a file

You use the GENERATE-BCAM-CMD-FILE command to output the BCAM configuration to an output file in the form of BCAM commands.

The alias name for GENERATE-BCAM-CMD-FILE is GBCF.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
	x			

List of valid command sources

GENERATE-BCAM-CMD-FILE / **GBCF**
FILE-NAME = <filename_1..54_without-generation-version> **,INFORMATION** = ***ALL** / ***ADDRESS-ASSIGN** / ***AEC-OPTIONS** / ***DNS** / ***HOST**/ ***IP-RANGE** / ***LINE** / ***LINK-AGGREGATION** / ***NODE** / ***OPTIONS** / ***OWN-ADDRESS** / ***PARAMETER** / ***PROCESSOR** / ***ROUTE** / ***SERVER-PORTS** / ***TIMER** / ***VLAN-ASSIGN** / ***VLAN-DEVICE** / ***VLAN-LINE** / ***MAPPING** **,EXPAND-OPERAND** = ***STD** / ***CHANGED-OPERAND**

FILE-NAME=...
Defines the name of the output file.

FILE-NAME=<filename_1..54_without-generation-version>
Output takes place to a file with the specified name.

INFORMATION=...
You use INFORMATION to specify which BCAM configuration data is to be saved to an output file in the form of BCAM commands.

INFORMATION=*ALL
Outputs all configuration data.

INFORMATION=*ADDRESS-ASSIGN
Outputs the configuration data of the defined BCAM gateway tables.

INFORMATION=*AEC-OPTIONS
Outputs the configuration data of the BCAM AEC settings (AEC stands for automatic end system creation).

INFORMATION=*DNS
Outputs the configuration data of the defined DNS entries.

INFORMATION=*HOST
Outputs the configuration data of the real and any virtual hosts.

INFORMATION=*IP-RANGE
Outputs the configuration data of the defined IP-RANGES.

INFORMATION=*LINE
Outputs the configuration data of the defined lines.

INFORMATION=*LINK-AGGREGATION
Outputs the configuration data of the defined line aggregation.

INFORMATION=*LINK-AGGREGATION
Outputs the configuration data of the defined link aggregations.

INFORMATION=*NODE
Outputs the configuration data of the defined nodes.

INFORMATION=*OPTIONS
Outputs the configuration data of the defined BCAM options.

INFORMATION=*OWN-ADDRESS
Outputs the configuration data of the local addresses defined by ADD-OWN-ADDRESS.

INFORMATION=*PARAMETERS
Outputs the configuration data of the defined BCAM parameters.

INFORMATION=*PROCESSOR
Outputs the configuration data of the defined processors.

INFORMATION=*ROUTE
Outputs the configuration data of the defined routes.

INFORMATION=*SERVER-PORTS
Outputs the configuration data of the defined SERVER-PORTS.

INFORMATION=*TIMER
Outputs the configuration data of the defined BCAM timers.

INFORMATION=*VLAN-ASSIGN
Outputs the configuration data of the defined VLAN assignments.

INFORMATION=*VLAN-DEVICE
Outputs the configuration data of the defined VLAN devices.

INFORMATION=*VLAN-LINE
Outputs the configuration data of the defined VLAN lines.

INFORMATION=*MAPPING
Outputs the configuration data of the defined mapping entries.

EXPAND-OPERAND=...
You use EXPAND-OPERAND to specify which operands are output. This operand is evaluated only if a value other than *ALL is specified in the INFORMATION operand. This corresponds to the behavior of previous versions.

EXPAND-OPERAND=*STD
Outputs all operands.

EXPAND-OPERAND=*CHANGED-OPERAND
Outputs the changed operands.

Command logging

Positive acknowledgments result in the required information being output.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	NO ERROR
0	1	CMD0202	Error in command

Examples

1. Output of the BCAM configuration to the ACTUAL.SOF file:

   ```
   /GENERATE-BCAM-CMD-FILE FILE-NAME=ACTUAL.SOF
   ```

2. Output of the BCAM hosts to the ACTUAL.HOST file:

   ```
   /GENERATE-BCAM-CMD-FILE INFORMATION=*HOST,COMMAND-FILE-NAME=ACTUAL.HOST
   ```

Note

The result of command file generation can be checked using the /CALL-BCAM-COMMANDS ..., SYNTAX-CHECK=*ON command or the SYSPRC.BCAM.<bcam-version>.RDFCHECK procedure.

GENERATE-BCMAP-FILE: Convert mapping save file to command file

You use the GENERATE-BCMAP-FILE command to initiate the conversion of the mapping save file into a readable format (command file).

For the syntax of the GENERATE-BCMAP-FILE command and associated examples, see section “GENERATE-BCMAP-FILE”.

MODIFY-ADDRESS-ASSIGNMENT / MDADA: Modify address assignment

You use the MODIFY-ADDRESS-ASSIGNMENT command to administer the networks or subnetworks behind the routers. Your specifications are host-specific or own-addressspecific: you must make the appropriate route definitions and network assignments for each host.

The alias name MDADA exists for the MODIFY-ADDRESS-ASSIGNMENT command in order to provide SNMP support. The SDF alias name is MDADA.

The MODIFY-ADDRESS-ASSIGNMENT command is a subfunction of the MODIFY-ROUTE command.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

MODIFY-ADDRESS-ASSIGNMENT / MDADA

ROUTE-NAME = <composed-name 1 .. 8>(...) / <c-string 1 .. 8>(...) / ***IP**(...) / ***ISO**(...) / ***IPV6**(...)

<composed-name 1 .. 8>(...) / <c-string 1 .. 8>(...)

| **REMOVE-IP-NET** = ***NONE** / ***UNKNOWN** / ***IP-RANGE**(...) / <composed-name 7 .. 15> /

| <x-string 7 .. 8>

| ***IP-RANGE**(...)

| | **FROM** = <composed-name 7 .. 15> / <x-string 7 .. 8>

| | ,**TO** = <composed-name 7 .. 15> / <x-string 7 .. 8>

| ,**ADD-IP-NET** = ***NONE** / ***UNKNOWN** / ***IP-RANGE**(...) / <composed-name 7 .. 15> / <x-string 7 .. 8>

| ***IP-RANGE**(...)

| | **FROM** = <composed-name 7 .. 15> / <x-string 7 .. 8>

| | ,**TO** = <composed-name 7 .. 15> / <x-string 7 .. 8>

| ,**REMOVE-IPV6-NET** = ***NONE** / ***UNKNOWN** / <text 9 .. 49>/ <c-string 9 .. 49>

| ,**ADD-IPV6-NET** = ***NONE** / ***UNKNOWN** / <text 9 .. 49> / <c-string 9 .. 49>

| ,**REMOVE-ISO-NET** = ***NONE** / ***UNKNOWN** / <x-string 1 .. 40>

| ,**ADD-ISO-NET** = ***NONE** / ***UNKNOWN** / <x-string 1 .. 40>

***IP**(...)

| **IP-ADDRESS** = <composed-name 7 .. 15> / <x-string 7 .. 8>

| ,**REMOVE-IP-NET** = ***NONE** / ***UNKNOWN** / ***IP-RANGE**(...) / <composed-name 7 .. 15> /

| <x-string 7 .. 8>

| *IP-RANGE(...)

| | FROM = <composed-name 7 .. 15> / <x-string 7 .. 8>

| | ,TO = <composed-name 7 .. 15> / <x-string 7 .. 8>

| ,ADD-IP-NET = *NONE / *UNKNOWN / *IP-RANGE(...) / <composed-name 7 .. 15> / <x-string 7 .. 8>

| *IP-RANGE(...)

| | FROM = <composed-name 7 .. 15> / <x-string 7 .. 8>

| | ,TO = <composed-name 7 .. 15> / <x-string 7 .. 8>

*IPV6(...)

| IPV6-ADDRESS = <text 9 .. 45> / <c-string 9 .. 45>

| ,REMOVE-IPV6-NET = *NONE / *UNKNOWN / <text 9 .. 49> / <c-string 9 .. 49>

| ,ADD-IPV6-NET = *NONE / *UNKNOWN / <text 9 .. 49> / <c-string 9 .. 49>

*ISO(...)

| ISO-ADDRESS = <x-string 1 .. 40>

| ,REMOVE-ISO-NET = *NONE / *UNKNOWN / <x-string 1 .. 40>

| ,ADD-ISO-NET = *NONE / *UNKNOWN / <x-string 1 .. 40>

The first REMOVE operation specified in the command is executed before the following ADD operation. For example, the operation ADD-IP-NET=*UNKNOWN identifies an IP router via which all the IP addresses are included that have not yet been rendered accessible by means of address ranges or individual addresses. This is an implicitly generated residual subset of the full range of possible addresses minus any definitions that have already been made.

The gateway tables for IPv4 and IPv6 are arranged on a host- and own-addressspecific basis. The SHOW-ADDRESS-ASSIGNMENT command also outputs them in this order.
A route - in particular the route of a router - is determined by the address pair (ownip-address, ip-address) and its implicit assignment of the local address to a host.Consequently one default router can be specified for each own-ip-address or ownipv6-address.

ROUTE-NAME=
Route whose address assignment is to be changed.

ROUTE-NAME=<composed-name 1..8>(...) / <c-string 1..8>(...)
Name of the route whose address assignment is to be changed.

REMOVE-IP-NET=
In REMOVE-IP-NET you specify which IP address or IP address range can no longer be accessed via this route.

This parameter can only be specified for routers that can be accessed locally via LAN using the Layer 3 protocol IP.

REMOVE-IP-NET=*NONE
The definition of the IP addresses that can be accessed via this route is not changed.

REMOVE-IP-NET=*UNKNOWN
No non-generated IP addresses can be accessed via this route.

REMOVE-IP-NET=<composed-name 7..15> / <x-string 7..8>
Specifies which IP addresses can no longer be accessed via this route.

REMOVE-IP-NET=*IP-RANGE(...)
Range of IP addresses that can no longer be accessed via this route.

FROM=<composed-name 7..15> / <x-string 7..8>
Lowest IP address of the range accessed via this route.

TO=<composed-name 7..15> / <x-string 7..8>
Highest IP address of the range accessed via this route.

ADD-IP-NET=
In ADD-IP-NET you specify which further IP address or which IP address range can be accessed via this route.

This parameter can only be specified for routers that can be accessed locally via LAN susing the Layer 3 protocol IP.

ADD-IP-NET=*NONE
The definition of the IP addresses that can be accessed via this route is not changed.

ADD-IP-NET=*UNKNOWN
All non-generated IP addresses can be accessed via this route.

ADD-IP-NET=<composed-name 7..15> / <x-string 7..8>
Specifies the IP address that can be accessed via this route. If this IP address is already assigned to another route then the command is not executed.

ADD-IP-NET=*IP-RANGE(...)
Range of IP addresses that are accessed via this route.

FROM=<composed-name 7..15> / <x-string 7..8>
Lowest IP address of the range accessed via this route.

TO=<composed-name 7..15> / <x-string 7..8>
Highest IP address of the range accessed via this route.

REMOVE-IPV6-NET=...
Uses the IPv6 prefix/length to specify which IPv6 addresses can no longer be accessed via this route.

> This parameter can only be specified for routers that can be accessed locally via LAN using the Layer 3 protocol IPv6.

REMOVE-IPV6-NET=*NONE
The setting specifying which IPv6 addresses can be accessed via this route remains unchanged.

REMOVE-IPV6-NET=*UNKNOWN
No non-generated IPv6 addresses can be accessed via this route.

REMOVE-IPV6-NET=<text 9..49> / <c-string 9..49>
Specifies which IPv6 addresses can no longer be accessed via this route.

ADD-IPV6-NET=...
Uses the IPv6 prefix/length to specify which IPv6 addresses can be accessed via this route.

> This parameter can only be specified for routers that can be accessed locally via LAN using the Layer 3 protocol IPv6.

ADD-IPV6-NET=*NONE
The setting specifying which IPv6 addresses can be accessed via this route remains unchanged.

ADD-IPV6-NET=*UNKNOWN
All non-generated IPv6 addresses can be accessed via this route.

ADD-IPV6-NET=<text 9..49> / <c-string 9..49>
Specifies which IPv6 addresses can be accessed via this route.
If another route is already assigned to these IPv6 addresses then the command is not executed.

REMOVE-ISO-NET=...
Specifies which ISO Internet addresses can no longer be accessed via this route.

> This parameter can only be specified for routers that can be accessed locally via LAN using the Layer 3 protocol INTF.

REMOVE-ISO-NET=*NONE
The setting specifying which ISO Internet addresses can be accessed via this route remains unchanged.

REMOVE-ISO-NET=*UNKNOWN
No non-generated ISO Internet addresses can be accessed via this route.

REMOVE-ISO-NET=<x-string 1..40>
Specifies which ISO Internet addresses can no longer be accessed via this route.

ADD-ISO-NET=...
Specifies which ISO Internet addresses can be accessed via this route.

> This parameter can only be specified for routers that can be accessed locally via LAN using the Layer 3 protocol INTF.

ADD-ISO-NET=*NONE
The setting specifying which ISO Internet addresses can be accessed via this route remains unchanged.

ADD-ISO-NET=*UNKNOWN
All non-generated ISO Internet addresses can be accessed via this route

ADD-ISO-NET=<x-string 1..40>
Specifies which ISO Internet addresses can be accessed via this route.
If another route is already assigned to these ISO Internet addresses then the command is not executed.

ROUTE-NAME=*IP(...)
IP address of the route whose address assignment is modified.

IP-ADDRESS=<composed-name 7..15> / <x-string 7..8>
IP address of the route whose address assignment is modified.

REMOVE-IP-NET=...
In REMOVE-IP-NET you specify the IP address or IP address range that can no longer be accessed via this route.

> This parameter can only be specified for routers that can be accessed locally via LAN using the Layer 3 protocol IP.

REMOVE-IP-NET=*NONE
The setting specifying which IP addresses can be accessed via this route remains unchanged.

REMOVE-IP-NET=*UNKNOWN
No non-generated IP addresses can be accessed via this route.

REMOVE-IP-NET=<composed-name 7..15> / <x-string 7..8>
Specifies which IP addresses can no longer be accessed via this route.

REMOVE-IP-NET=*IP-RANGE(...)
Range of IP addresses that can no longer be accessed via this route.

FROM=<composed-name 7..15> / <x-string 7..8>
Lowest IP address of the range to be accessed via this route.

TO=<composed-name 7..15> / <x-string 7..8>
Highest IP address of the range to be accessed via this route.

ADD-IP-NET=...
In ADD-IP-NET you specify which further IP address or which IP address range can be accessed via this route.

> This parameter can only be specified for routers that can be accessed locally via LAN using the Layer 3 protocol IP.

ADD-IP-NET=*NONE
The setting specifying which IP addresses can be accessed via this route remains unchanged.

ADD-IP-NET=*UNKNOWN
All non-generated IP addresses can be accessed via this route.

ADD-IP-NET=<composed-name 7..15> / <x-string 7..8>
Specifies which IP address can be accessed via this route. If another route is already assigned to this IP address then the command is not executed.

ADD-IP-NET=*IP-RANGE(...)
Range of IP addresses that can be accessed via this route.

FROM=<composed-name 7..15> / <x-string 7..8>
Lowest IP address of the range to be accessed via this route.

TO= <composed-name 7..15> / <x-string 7..8>
Highest IP address of the range to be accessed via this route.

ROUTE-NAME=*IPV6(...)
IPv6 address of the route whose address assignment is modified.

IPV6-ADDRESS=<text 9..45> / <c-string 9..45>
IPv6 address of the route whose address assignment is modified.

REMOVE-IPV6-NET=...
Uses the IPv6 prefix/length to specify which IPv6 addresses can no longer be accessed via this route.

> This parameter can only be specified for routers that can be accessed locally via LAN using the Layer 3 protocol IPv6

REMOVE-IPV6-NET=*NONE
The setting specifying which IPv6 addresses can be accessed via this route remains unchanged.

REMOVE-IPV6-NET=*UNKNOWN
No non-generated IPv6 addresses can be accessed via this route.

REMOVE-IPV6-NET=<text 9..49> / <c-string 9..49>
Specifies the IPv6 addresses that can no longer be accessed via this route.

ADD-IPV6-NET=...
Uses the IPv6 prefix/length to specify which IPv6 addresses can be accessed via this route.

> This parameter can only be specified for routers that can be accessed locally via LAN using the Layer 3 protocol IPv6.

ADD-IPV6-NET=*NONE
The setting specifying which IPv6 addresses can be accessed via this route remains unchanged.

ADD-IPV6-NET=*UNKNOWN
All non-generated IPv6 addresses can be accessed via this route.

ADD-IPV6-NET=<text 9..49> / <c-string 9..49>
Specifies which IPv6 addresses can be accessed via this route. If another route is already assigned to these IPv6 addresses then the command is not executed.

ROUTE-NAME=*ISO(...)
ISO Internet address of the route whose address assignment is modified.

ISO-ADDRESS=<x-string 1..40>
ISO Internet address of the route whose address assignment is modified.

REMOVE-ISO-NET=...
Specifies the ISO Internet address that can no longer be accessed via this route.

> This parameter can only be specified for routers that can be accessed locally via LAN using the Layer 3 protocol INTF.

REMOVE-ISO-NET=*NONE
The setting specifying which ISO Internet addresses can be accessed via this route remains unchanged.

REMOVE-ISO-NET=*UNKNOWN
All non-generated ISO Internet addresses can no longer be accessed via this route.

REMOVE-ISO-NET=<x-string 1..40>
Specifies which ISO Internet addresses can no longer be accessed via this route.

ADD-ISO-NET=...
Specifies which ISO Internet addresses can be accessed via this route.

> This parameter can only be specified for routers that can be accessed locally via LAN using the Layer 3 protocol INTF.

ADD-ISO-NET=*NONE
The setting specifying which ISO Internet addresses can be accessed via this route remains unchanged.

ADD-ISO-NET=*UNKNOWN
All non-generated ISO Internet addresses can be accessed via this route.

ADD-ISO-NET=<x-string 1..40>
Specifies which ISO Internet addresses can be accessed via this route.
If another route is already assigned to these ISO Internet addresses then the command is not executed.

Command logging

Positive acknowledgments are supplied in news BCA0667, and negative acknowledgments in news BCA06B7 followed by the message NBR0740. If processing is positive then message BCA07B0 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
2	0	BCA06B7	MODIFY-ADDRESS-ASSIGNMENT cancelled
2	0	BCA07B1	Route is no longer used as router
2	0	BCA07B4	Route is no longer used as IP router
2	0	BCA07B6	Route is no longer used as IPv6 router
2	0	BCA07C0	No route modified
0	1	BCA0768	Syntax error in command
0	1	BCA0770	Parameter incorrect
0	64	BCA07A1	Route unknown
0	64	BCA07EE	Command is being executed
0	64	BCA079F	Address unknown
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

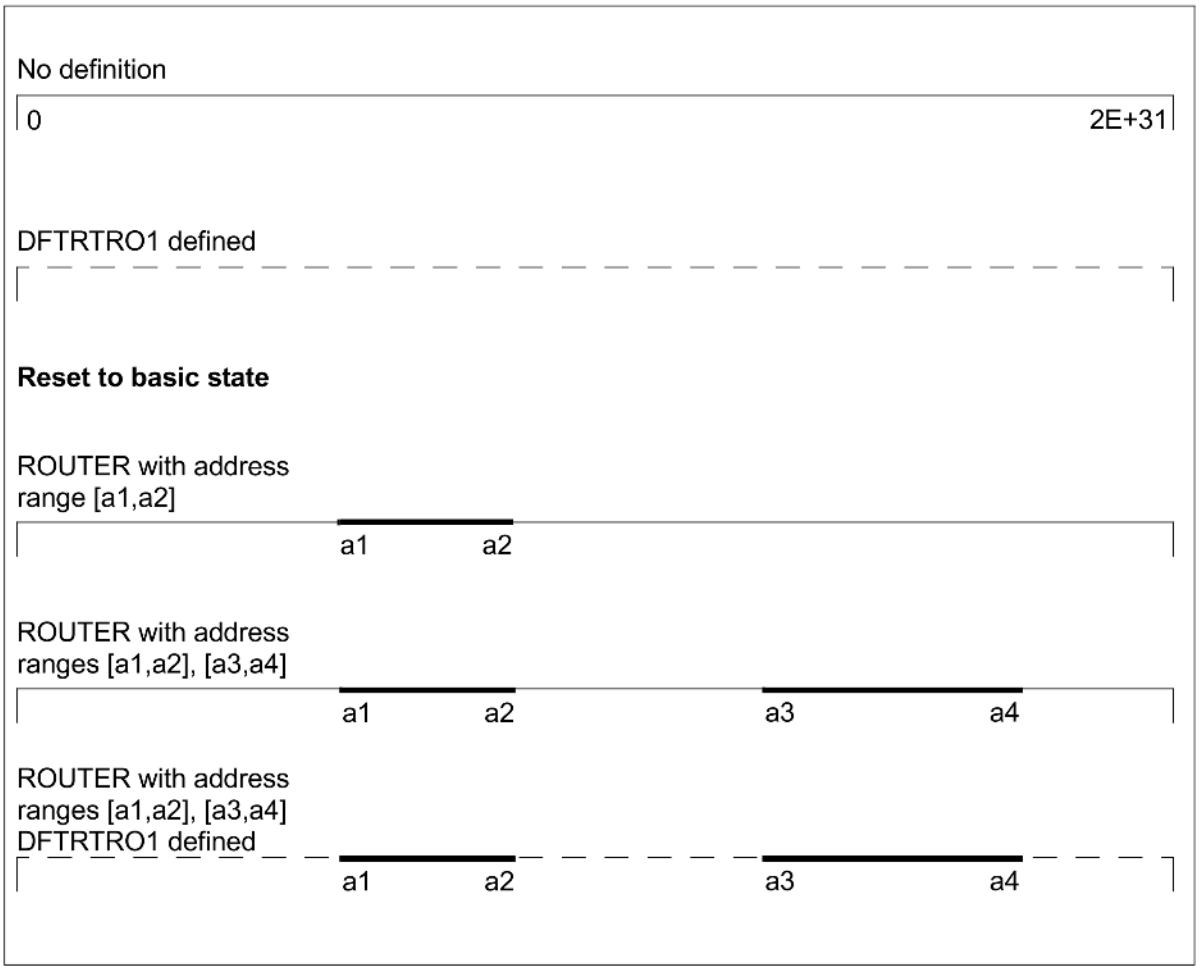
Principle of default router and address range definition

The IP addresses follow a natural sequence. They can be represented as discrete points – the natural numbers – over a restricted interval [2E+31]. Because of RFC-related limitations, not all the discrete points within the interval are permitted.

The following example demonstrates the functioning of the command:

No routes have so far been defined (basic state).

a1, a2, a3,...	IP addresses
ROUTER	Router
DFTRTROi	Default router to own-address-i, i=1,2



Example of the functioning of MODIFY-ADDRESS-ASSIGNMENT

Examples

1. Router definition for a default router to own-address-i with the name DFTRTOi, i=1,2:

```
/MODIFY-ADDRESS-ASSIGNMENT ROUTE-NAME=DFTRTRO1(ADD-IP-NET=*UNKNOWN)
/MODIFY-ADDRESS-ASSIGNMENT ROUTE-NAME=DFTRTRO2(ADD-IP-NET=*UNKNOWN)
```

   Comments:
   The definition of the default router is specified last and covers the intervals which have not yet been recorded. DFTRTR01 and DFTRTR02 are default routers for different addresses (see above). You cannot define two routes which have the same own IP address as the default router for *UNKNOWN. In this case the second definition would reset the first definition.

2. Router definition for the router with the name ROUTER for an undefined IP network 189.44.0.0

```
/MODIFY-ADDRESS-ASSIGNMENT ROUTE-NAME=ROUTER(ADD-IP-NET=189.44.0.0)
```

   or

```
/MODIFY-ADDRESS-ASSIGNMENT ROUTE-NAME=ROUTER(ADD-IP-NET=x'BD2C0000')
```

3. Withdrawal of router definition for a default-Router with the name DFRTRO1:

```
/MODIFY-ADDRESS-ASSIGNMENT ROUTE-NAME=DFTRTRO1(REM-IP-NET=*UNKNOWN)
```

4. Router definition for the IP address range intervals (173.15.10.1,173.15.10.20) (173.15.10.40,173.15.10.100) and subsequent deletion of the intervals

```
/MODIFY-ADDRESS-ASSIGNMENT ROUTE-NAME=                              -
/    ROUTER(ADD-IP-NET=*RANGE(FROM=173.15.10.1,TO=173.15.10.100))
/MODIFY-ADDRESS-ASSIGNMENT ROUTE-NAME=                              -
/    ROUTER(REMOVE-IP-NET=*RANGE(FROM=173.15.10.21,TO=173.15.10.39))
/MODIFY-ADDRESS-ASSIGNMENT ROUTE-NAME=                              -
/    ROUTER(REMOVE-IP-NET=*RANGE(FROM=173.15.10.1,TO=173.15.10.100))
```

MODIFY-BCAM-OPTIONS / MDBCO: Modify BCAM options

You use the MODIFY-BCAM-OPTIONS command to modify specific BCAM options.

The alias name MDBCO exists for MODIFY-BCAM-OPTIONS. The command is mapped on the MODIFY-BCAM-OPTIONS command (in ISP format).

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x	x	x		

List of valid command sources

MODIFY-BCAM-OPTIONS / MDBCO

AVAILABILITY-OPTIONS = ***UNCHANGED** / ***PARAMETERS(...)**

***PARAMETERS**(...)

| **ACKNOWLEDGE-MSG = *UNCHANGED** / ***NO(...)** / ***YES**(...)

| | **MSG-ID = *UNCHANGED** / ***ALL** / ***IO-ERROR** / list-poss(5): **BCA07B2** / **BCA0990** /

| | **BCA0991**/ **BCA0996** / **BCA0999**

| ,**ALT-ROUTER-SEARCH = *UNCHANGED** / ***OPEN-CONNECTION-ONLY** / ***ON** / ***OFF**

| ,**ARP-ROUTER-SWITCHING** = ***UNCHANGED** / ***OFF**/ ***ON**

| ,**AUTO-ROUTE-SWITCHING = *UNCHANGED** / ***ON** / ***OFF**

| ,**LINE-SUPERVISION = *UNCHANGED** / ***ON** / ***OFF**

| ,**LOCAL-ROUTER-CHECK = *UNCHANGED** / ***OFF** / ***ON**

| ,**MAX-NSDU-SIZE = *UNCHANGED** / ***RESET-AT-SWITCHING** / ***KEEP**

| ,**OSPF-USAGE = *UNCHANGED** / ***ON** / ***OFF**

| **,SECURE-CONNECTION = *UNCHANGED** / ***ON** / ***OFF**

,**IP-OPTIONS** = ***UNCHANGED** / ***PARAMETERS**(...)

***PARAMETERS**(...)

| **ARP = *UNCHANGED** / ***ON** / ***OFF**/ ***QUIET**

| ,**ARP-AT-ROUT-ACTIVATE = *UNCHANGED** / ***ALWAYS** / ***CONNECTION**

| ,**IP-ROUTING = *UNCHANGED** / ***NOT-ALLOWED** / ***ALLOWED**

| ,**MAX-ARP-REQUEST-NUM = *UNCHANGED** / <integer 1..65535>

| ,**MAX-TSDU-FOR-CREATE = *UNCHANGED** /<integer 4096..65535>

| ,**MULTICAST-GROUP-JOIN = *UNCHANGED** / ***ALLOWED** / ***NOT-ALLOWED**

| ,**NET-ROUTER-USAGE = *UNCHANGED** / ***OFF** / ***ON**

|

,**RARP-REPLIES =** ***UNCHANGED** / ***NOT-ALLOWED** / ***ALLOWED** ,**TCP-KEEP-ALIVE =** ***UN-**

CHANGED / ***OFF** / ***ON**(...)

| | ,**TIME =** ***STD** / ***MINIMUM** / ***MAXIMUM** / <integer 120..32767>

IPV6-OPTIONS = ***UNCHANGED** / *** PARAMETERS(...)**

***PARAMETERS**(...)

| **IPV6-AUTO-CONFIG =** ***UNCHANGED** / ***ON** / ***OFF**

| ,**IPV6-VLAN-AUTO-CONF =** ***UNCHANGED** / ***ON** / ***OFF**

| ,**IPV6-SUPPORT =** ***UNCHANGED** / ***ON** / ***OFF**

| ,**IPV6-PREFIX-LEN-CRTL =** ***UNCHANGED** / ***ON** / ***OFF**

,**ISO-OPTIONS** = ***UNCHANGED** / ***PARAMETERS(...)**

***PARAMETERS**(...)

| **ADD-CHECKSUM =** ***UNCHANGED** / ***NO** / ***YES**

| ,**CONFIG-HOLDING-TIME =** ***UNCHANGED** / ***EN41102-COMPLIANT** / ***SHORT**

| ,**INTF-ROUTING =** ***UNCHANGED** / ***NOT-ALLOWED** / ***ALLOWED**

| ,**ISO9542-USAGE =** ***UNCHANGED** / ***OFF** / ***ON**

| ,**REDIRECT-ON-QUERY =** ***UNCHANGED** / ***OFF** / ***ON**

| ,**SET-ERROR-FLAG =** ***UNCHANGED** / ***YES** / ***NO**

,**CMDFILE-PROCESSING** = ***UNCHANGED** / ***PARAMETERS(...)**

***PARAMETERS**(...)

| **CONTINUE-AFTER-ERROR =** ***UNCHANGED** / ***NO** / ***YES** / ***ONLY**

| ,**LINE-CONTINUATION =** ***UNCHANGED** / ***ON** / ***OFF**

,**SNMP-OPTIONS** = ***UNCHANGED** / ***PARAMETERS(...)**

***PARAMETERS**(...)

| **SNMP-WRITE-ACCESS** = ***UNCHANGED** / ***ALLOWED** / ***NOT-ALLOWED**

,**DNS-OPTIONS** = ***UNCHANGED** / ***PARAMETERS(...)**

***PARAMETERS**(...)

| **DNS-USAGE =** ***UNCHANGED** / ***OFF** / ***ON**

,**MISCELLANEOUS** = ***UNCHANGED** / ***PARAMETERS**(...)

***PARAMETERS**(...)

| **BROADCAST=** ***UNCHANGED** / ***OFF** / ***ON**

| ,**DEV-LPDU-SIZE-USAGE =** ***UNCHANGED** / ***OFF** / ***ON**

```
|       ,MULTICAST = *UNCHANGED / *ON / *OFF
|       ,PERIODIC-FILE-ACCESS = *UNCHANGED / *ON / *OFF
|       ,SLOW-POLL = *UNCHANGED / *OFF / *ON
|       ,EXIT-VERSION = *UNCHANGED / <integer 1..2>
```

AVAILABILITY-OPTIONS=*UNCHANGED
Options that affect the availability of LAN connections and routers – particularly in the event of an error – remain unchanged.

AVAILABILITY-OPTIONS=*PARAMETERS(...)
Options that affect the availability of LAN connections and routers – particularly in the event of an error.

ACKNOWLEDGE-MSG=
Defines whether or not BCA07B2 and BCA0999 messages are to be shown by /STA MSG and /SHOW-PENDING-MSG until they are explicitly acknowledged by the input of BCAM <number>.

ACKNOWLEDGE-MSG=*UNCHANGED
The previous setting remains unchanged.
Default: *NO

ACKNOWLEDGE-MSG=*NO(...)
BCA07B2, BCA0990, BCA0991, BCA0996 and BCA0999 messages are not shown by /STA MSG and /SHOW-PENDING-MSG.

MSG-ID=
BCA07B2 and BCA0999 messages are not shown by /STA MSG and /SHOW-PENDING-MSG.

MSG-ID=*UNCHANGED
The previous setting remains unchanged.

MSG-ID=*ALL
No message must be explicitly acknowledged.

MSG-ID=*IO-ERROR
No BCA099x messages must be explicitly acknowledged.

MSG-ID=list-poss(5): BCA07B2/ BCA0990/ BCA0991/ BCA0996 / BCA0999
The specified messages that do not have to be acknowledged can be set explicitly.

ACKNOWLEDGE-MSG=*YES(...)
Defines whether or not BCA07B2, BCA0990, BCA0991, BCA0996 and BCA0999 messages are to be shown by /STA MSG and /SHOW-PENDING-MSG until they are explicitly acknowledged by the input of BCAM <number>.

MSG-ID=
BCA07B2 and BCA099x messages are shown by /STA MSG and /SHOW-PENDING-MSG.

MSG-ID=*UNCHANGED
The previous setting remains unchanged.

MSG-ID=*ALL
All messages must be explicitly acknowledged.

MSG-ID=*IO-ERROR
All BCA099x messages must be explicitly acknowledged.

MSG-ID=list-poss(5): BCA07B2/ BCA0990/ BCA0991/ BCA0996 /BCA0999
The specified messages to be acknowledged can be set explicitly.

ALT-ROUTER-SEARCH=
Searches for alternative routers if transmission problems with TCP connections occur and, if necessary, performs rerouting.

ALT-ROUTER-SEARCH=*UNCHANGED
The previous option setting remains unchanged.
Default: *OPEN-CONNECTION-ONLY

ALT-ROUTER-SEARCH=*OPEN-CONNECTION-ONLY
The search for alternative routers is terminated when the TCP connection is shut down.

ALT-ROUTER-SEARCH=*ON
The search for alternative routers is permitted.

ALT-ROUTER-SEARCH=*OFF
The search for alternative routers is disabled.

ARP-ROUTER-SWITCHING=
Specifies whether or not a router from which no more ARP replies are being received is to be regarded as having failed and thus also whether all end systems which were reached via that router are assigned to an alternative router.

ARP-ROUTER-SWITCHING=*UNCHANGED
The previous setting remains unchanged.
Default: *OFF

ARP-ROUTER-SWITCHING=*OFF
If no more ARP replies are received, the end systems which were accessed via the router involved are not rerouted.

ARP-ROUTER-SWITCHING=*ON
If no more ARP replies are received, all end systems which were accessed via the router involved are assigned to an alternative router.

AUTO-ROUTE-SWITCHING=...
This operand specifies whether local routing information may be modified as a result of received IP, IPv6 or ISO9542 routing protocols.

AUTO-ROUTE-SWITCHING=*UNCHANGED
The previous setting remains unchanged.
Default: *ON

AUTO-ROUTE-SWITCHING=*ON
Local routing information may be modified as a result of received IP, IPv6 or ISO9542 routing protocols.

AUTO-ROUTE-SWITCHING=*OFF
Local routing information must *not* be modified as a result of received IP, IPv6 or ISO9542 routing protocols.

LINE-SUPERVISION=
Specifies whether the functionality of redundant line connections is checked by the sending of test messages.

LINE-SUPERVISION=*UNCHANGED
The setting of the option remains unchanged.
Default: *ON

LINE-SUPERVISION=*ON
The functionality of redundant line connections is checked.

LINE-SUPERVISION=*OFF
The functionality of redundant line connections is not checked.

LOCAL-ROUTER-CHECK=
Checks the functionality of the local router via ICMP-ECHO in the event of TCP transmission problems.

LOCAL-ROUTER-CHECK=*UNCHANGED
The option setting remains unchanged.
Default: *OFF

LOCAL-ROUTER-CHECK=*OFF
The functionality check of the local router via ICMP-ECHO is disabled.

LOCAL-ROUTER-CHECK=*ON
The functionality check of the local router via ICMP-ECHO is enabled.

MAX-NSDU-SIZE=
Specifies whether the maximum router NSDU sizes will be reset to the default value for internal switching operations.

MAX-NSDU-SIZE=*UNCHANGED
The option setting remains unchanged.
Default: *RESET-AT-SWITCHING.

MAX-NSDU-SIZE=*RESET-AT-SWITCHING
The maximum NSDU size is reset during switching.

MAX-NSDU-SIZE=*KEEP
The set-up maximum NSDU size remains unchanged during switching.Modifications can be made with BCMOD or MODIFY-ROUTE-ATTRIBUTES.

OSPF-USAGE=
Specifies whether the time monitoring of OSPF Hello messages can be used for router failure detection.

OSPF-USAGE=*UNCHANGED
The previous setting remains unchanged.
Default: *ON

OSPF-USAGE=*ON
The time monitoring of OSPF Hello messages can be used for router failure detection.

OSPF-USAGE=*OFF
The time monitoring of OSPF Hello messages *cannot* be used for router failure detection.

SECURE-CONNECTION=
Specifies whether NEA connection requests via RFC1006 should be checked using SYSDAT.BCAM.APPLICATIONS.

SECURE-CONNECTION=*UNCHANGED
The previous setting remains unchanged.
Default: *OFF

SECURE-CONNECTION=*ON
NEA connection requests via RFC1006 should be checked using entries in SYSDAT.BCAM.APPLICATIONS. For example, this includes connection requests to $DIALOG from the MT9750 terminal. $DIALOG connection requests via telnet client are not affected by this.

> Rejected connection requests can be traced in the SATLOG. To activate the SATLOG trace, the SAT audit attribute for the event BCN has to be set to either ON ALL or ON FAIL. Connection requests rejected because of SECURE-CONNECTION are written into the SATLOG with the return code 2C000024.

SECURE-CONNECTION=*OFF
NEA connection requests via RFC1006 should not be checked using SYSDAT.BCAM.APPLICATIONS.

IP-OPTIONS=*PARAMETERS(...)
Combines IP-specific options.

ARP=...
Specifies if and how the Address Resolution Protocol (ARP) is to be used.
If the execution of the function is to be route-specific, the MODIFY-ROUTE-ATTRIBUTES command must be used.

> The MODIFY-BCAM-OPTIONS ARP setting is specified implicitly via the BCOPTION AUTOMATIC-ES-CREATE setting for IP. This setting is a prerequisite for automatic end system creation. ARP=NO is thus converted to ARP=QUIET and, if BROADCAST=OFF was set, BROADCAST=ON is set.

ARP=*UNCHANGED
The previous setting remains unchanged.
Default: *OFF

ARP=*ON
ARP is used every 2 seconds when a route is used for the first time; APR requests are sent periodically every 300 seconds – set by BCTIMES.

ARP=*OFF
ARP is not used.

ARP=*QUIET
ARP is used every 2 seconds when a route is used for the first time. Every
300 seconds there is a check – set by BCTIMES – to determine whether data transmission has taken place within the time interval that has elapsed. If this is not the case, and communication associations exist via the route, an ARP request is sent.

ARP-AT-ROUT-ACTIVATE=
Specifies the circumstances under which ARP requests are sent during the activation of an IP route of type NODE.

ARP-AT-ROUT-ACTIVATE=*UNCHANGED
The previous setting remains unchanged.
Default: *ALWAYS

ARP-AT-ROUT-ACTIVATE=*ALWAYS
ARP requests are sent whenever an IP route of type NODE is activated.

ARP-AT-ROUT-ACTIVATE=*CONNECTION
ARP-REQUESTS are only sent, if connections for the type NODE IP route exist.

IP-ROUTING=
Specifies whether or not forward routing of IP elements is permitted.

IP-ROUTING=*UNCHANGED
The previous setting remains unchanged.
Default: *NOT-ALLOWED

IP-ROUTING=*NOT-ALLOWED
Routing forward of IP elements is not permitted.

IP-ROUTING=*ALLOWED
Routing forward of IP elements is permitted.

MAX-ARP-REQUEST-NUM=...
Defines how many ARP requests may be sent per second during the periodic ARP monitoring (ARP=ON or ARP=QUIET).

MAX-ARP-REQUEST-NUM=*UNCHANGED
The previous setting remains unchanged.
Default: 10

MAX-ARP-REQUEST-NUM=<integer 1..65535>
Number of ARP requests that may be sent per second during the periodic ARP monitoring (ARP=ON or ARP=QUIET).

MAX-TSDU-FOR-CREATE=...
Defines which TSDU length is used for end systems that were created with AUTOMATIC-ES-CREATE.

MAX-TSDU-FOR-CREATE=*UNCHANGED
The previous setting remains unchanged.
Default: 16384

MAX-TSDU-FOR-CREATE=<integer 4096..65535>
The TSDU length for end systems that were created with AUTOMATIC-ES-CREATE is set to the specified value.

MULTICAST-GROUP-JOIN=
Determines whether applications may join IGMP multicast groups.

MULTICAST-GROUP-JOIN=*UNCHANGED
The previous setting remains unchanged.
Default: *ALLOWED

MULTICAST-GROUP-JOIN=*ALLOWED
Applications may join IGMP multicast groups.

MULTICAST-GROUP-JOIN=*NOT-ALLOWED
Applications must *not* join IGMP multicast groups.

NET-ROUTER-USAGE=
Determines whether existing IP network router definitions are evaluated when IP subnet masks are used.

NET-ROUTER-USAGE=*UNCHANGED
The previous setting remains unchanged.
Default: *ON

NET-ROUTER-USAGE=*ON
Existing IP network router definitions are evaluated when IP subnet masks are used.

NET-ROUTER-USAGE=*OFF
Existing IP network router definitions are not evaluated when IP subnet masks are used.

RARP-REPLIES=
Specifies whether RARP requests from outside may be answered.
If you want to use the function in a route-specific way, you should use the MODIFY-ROUTE-ATTRIBUTES command.

RARP-REPLIES=*UNCHANGED
The previous setting remains unchanged.
Default: *NOT-ALLOWED

RARP-REPLIES=*NOT-ALLOWED
RARP requests from outside must *not* be answered.

RARP-REPLIES=*ALLOWED
RARP requests from outside may be answered.

TCP-KEEP-ALIVE=...
Specifies whether TCP alive monitoring is to be performed. When alive monitoring is enabled, an attempt is made to force a response by the partner by sending appropriate TCP segments on the TCP connections on which no segments have been received or transmitted for a specified time. If the partner does not respond, the connection is aborted. The functionality set is provided for all connections, including existing connections.

TCP-KEEP-ALIVE= *UNCHANGED
The current setting is not changed.
Default: *OFF.

TCP-KEEP-ALIVE=*ON(...)
TCP alive monitoring is performed.

TIME=<integer 120..32767>
The interval for alive monitoring is set to the value specified (in seconds). Values outside the permissible range are mapped to the default value of two hours,

TIME=*STD
The interval for alive monitoring is set to the default value of two hours (which corresponds to 120 minutes or 7200 seconds).

TIME=*MINIMUM
The interval for alive monitoring is set to the minimum value of 120 seconds.

TIME=*MAXIMUM
The interval for alive monitoring is set to the maximum value of 32767 seconds.

TCP-KEEP-ALIVE=*OFF
TCP alive monitoring is not performed.

IPV6-OPTIONS=*UNCHANGED
IPv6-specific options remain unchanged.

IPV6-OPTIONS=*PARAMETERS(...)
Combines IPv6-specific options.

IPV6-AUTO-CONFIG=
Specifies whether or not LAN connections to which no IPv6 addresses have as yet been assigned are assigned their own IPv6 addresses when activated.

> This option is not supported for VLAN connections.

IPV6-AUTO-CONFIG=*UNCHANGED
The previous setting remains unchanged.
Default: *OFF

IPV6-AUTO-CONFIG=*ON
Generation of own IPv6 addresses is permitted.

IPV6-AUTO-CONFIG=*OFF
Generation of own IPv6 addresses is not permitted.

IPV6-VLAN-AUTO-CONF=
Specifies whether or not VLAN line ports to which no IPv6 addresses have as yet been assigned are assigned their own IPv6 addresses when activated.

IPV6-VLAN-AUTO-CONFIG=*UNCHANGED
The previous setting remains unchanged.
Default: *OFF

IPV6-VLAN-AUTO-CONFIG=*ON
Generation of own IPv6 addresses is permitted.

IPV6-VLAN-AUTO-CONFIG=*OFF
Generation of own IPv6 addresses is not permitted.

IPV6-SUPPORT=
Specifies whether Layer 3 protocol IPv6 (and ICMPv6) is supported.

IPV6-SUPPORT=*UNCHANGED
The previous setting remains unchanged.
Default: *ON

IPV6-SUPPORT=*ON
The IPv6 protocol family is supported.

IPV6-SUPPORT=*OFF
The IPv6 protocol family is *not* supported.

IPV6-PREFIX-LEN-CTRL=...
Specifies whether the IPv6 prefix length is to be handled in accordance with the specifications of RFC 4291, starting on page 7, for all unicast addresses.

IPV6-PREFIX-LEN-CTRL= *unchanged
The existing setting remains unchanged.
Default: *ON

IPV6-PREFIX-LEN-CTRL=*ON
The IPv6 prefix length is to be handled in accordance with the specifications of RFC 4291.

IPV6-PREFIX-LEN-CTRL=*OFF
The IPv6 prefix length is to be handled differently from the specifications of RFC 4291.

ISO-OPTIONS=*UNCHANGED
ISOspecific options remain unchanged.

ISO-OPTIONS=*PARAMETERS(...)
Combines ISO-specific options.

ADD-CHECKSUM=
Specifies whether the checksum is added to the ISO8473 data protocol elements to be sent.

ADD-CHECKSUM=*UNCHANGED
The option setting remains unchanged.
Default: *NO

ADD-CHECKSUM=*NO
The checksum is *not* added.

ADD-CHECKSUM=*YES
The checksum is added.

CONFIG-HOLDING-TIME=
Specifies whether a time interval as stipulated in EN41102 or a shorter time interval (14 or 30 seconds) is applicable for the ISO9542 configuration and ISO9542 holding time.monitoring.

CONFIG-HOLDING-TIME=*UNCHANGED
The option setting remains unchanged.
Default: *EN41102-COMPLIANT

CONFIG-HOLDING-TIME=*EN41102-COMPLIANT
A time interval as stipulated in EN41102 is set.

CONFIG-HOLDING-TIME=*SHORT
A shorter time interval is set.

INTF-ROUTING=
Specifies whether or not routing forward of INTF elements (ISO8348/ISO8473) is permitted.

INTF-ROUTING=*UNCHANGED
The option setting remains unchanged.
Default: *NOT-ALLOWED

INTF-ROUTING=*NOT-ALLOWED
The routing forward of INTF elements is not permitted.

INTF-ROUTING=*ALLOWED
The routing forward of INTF elements is permitted.

ISO9542-USAGE=
Specifies whether the ISO9542 add-on protocol is used to exchange routing information.

ISO9542-USAGE=*UNCHANGED
The option setting remains unchanged.
Default: *OFF

ISO9542-USAGE=*OFF
The add-on protocol is *not* used.

ISO9542-USAGE=*ON
The add-on protocol is used.

REDIRECT-ON-QUERY=
Evaluates incoming ISO9542 redirect messages for ISO8473 query configuration requests.

REDIRECT-ON-QUERY=*UNCHANGED
The option setting remains unchanged.
Default: *OFF

REDIRECT-ON-QUERY=*OFF
Incoming redirect messages are *not* evaluated.

REDIRECT-ON-QUERY=*ON
Incoming redirect messages are evaluated.

SET-ERROR-FLAG=
Determines whether the error flag (ER-FLAG) is set in the ISO8473 data protocol elements to be sent.

SET-ERROR-FLAG=*UNCHANGED
The option setting remains unchanged.
Default: *YES

SET-ERROR-FLAG=*YES
The error flag is set.

SET-ERROR-FLAG=*NO
The error flag is *not* set.

CMDFILE-PROCESSING=*PARAMETERS(...)
Combines Cmdfile-specific options.

CONTINUE-AFTER-ERROR=
Specifies whether the processing of command files should be continued after an error.

CONTINUE-AFTER-ERROR=*UNCHANGED
The previous setting remains unchanged.
Default: *NO

CONTINUE-AFTER-ERROR=*YES
Processing continues after an error.

CONTINUE-AFTER-ERROR=*ONLY
Processing is only continued upon positive command acknowledgment.

CONTINUE-AFTER-ERROR=*NO
Processing is *not* continued after an error.

LINE-CONTINUATION=...
Defines how the character "-" in column 72 of SOF and command files is to be interpreted.
"-" as the last character in a row in a column other than 72 is always interpreted as a continuation character.

LINE-CONTINUATION=*UNCHANGED
The previous setting remains unchanged.
Default: *ON

LINE-CONTINUATION=*ON
The "-" character in column 72 is interpreted as a continuation character if it is the last character in the row, otherwise it is recognized as a data character.

LINE-CONTINUATION=*OFF
The "-" character in column 72 is interpreted as a continuation character. The rest of the row in ignored.

SNMP-OPTIONS=*UNCHANGED
SNMP-specific options remain unchanged.

SNMP-OPTIONS=*UNCHANGED / *PARAMETERS(...)
Combines SNMP-specific options.

SNMP-WRITE-ACCESS=
Specifies whether SNMP write access is permitted to objects and object attributes in BCAM according to RFC 1213.

SNMP-WRITE-ACCESS=*UNCHANGED
The option setting remains unchanged.
Default: *ALLOWED

SNMP-WRITE-ACCESS=*ALLOWED
SNMP write access is permitted.

SNMP-WRITE-ACCESS=*NOT-ALLOWED
SNMP write access is not permitted.

DNS-OPTIONS=*UNCHANGED
DNS-specific options remain unchanged.

DNS-OPTIONS=*PARAMETERS(...)
DNS-specific options are grouped together here.

DNS-USAGE=
Specifies whether access to DNS data is permitted in BCAM.

DNS-USAGE=*UNCHANGED
The setting for the option remains unchanged.
Default: *OFF

DNS-USAGE=*OFF
DNS access is not permitted.

DNS-USAGE=*ON
DNS access is permitted.

MISCELLANEOUS=*UNCHANGED
Options that cannot be grouped explicitly remain unchanged.

MISCELLANEOUS=*PARAMETERS(...)
Combines options that cannot be grouped explicitly.

BROADCAST=...
Specifies handling of the “broadcast” mode option; determines whether Ethernet broadcast messages are received on the defined lines.

> The MODIFY-BCAM-OPTIONS BROADCAST setting is specified implicitly via the BCOPTION AUTOMATIC-ES-CREATE setting for IP. This setting is a prerequisite for automatic end system creation. ARP=NO is thus converted to ARP=QUIET and, if BROADCAST=OFF was set, BROADCAST=ON is set.

BROADCAST=*UNCHANGED
The previous setting remains unchanged.
Default: *OFF

BROADCAST=*OFF
Ethernet broadcast messages are *not* received on the defined lines.

BROADCAST=*ON
Ethernet broadcast messages are received and answered, if necessary, on all lines.

DEV-LPDU-SIZE-USAGE=...
Specifies whether the LPDU-SIZE, returned by the device, can be used.

DEV-LPDU-SIZE-USAGE =*UNCHANGED
The previous setting remains unchanged.
Default: *OFF

DEV-LPDU-SIZE-USAGE = *ON
The LPDU-SIZE, returned by the device, can be used.

DEV-LPDU-SIZE-USAGE = *OFF
The LPDU-SIZE, returned by the device, must *not* be used.

MULTICAST=...
Sets Ethernet multicast messages to be received on the specified lines.

MULTICAST=*UNCHANGED
The previous setting remains unchanged.
Default: *ON

MULTICAST=*ON
Ethernet multicast messages can be received on all lines.

MULTICAST=*OFF
Ethernet multicast messages must *not* be received on all lines.

PERIODIC-FILE-ACCESS=...
Specifies whether the BCAM control files (application file, socket host file, processor file, FDQN file, and services file) are read periodically by the BCAF task. The time interval cannot be set explicitly.

PERIODIC-FILE-ACCESS=*UNCHANGED
The previous setting remains unchanged.
Default: *ON

PERIODIC-FILE-ACCESS=*ON
Periodic processing of the files by the BCAF task is enabled.

PERIODIC-FILE-ACCESS=*OFF
Periodic processing of the files by the BCAF task is disabled.

SLOW-POLL=...
Defines whether automatic reactivation is attempted for the specified lines following a line failure.

SLOW-POLL=*UNCHANGED
The previous setting remains unchanged.
Default: *OFF

SLOW-POLL=*ON
Automatic reactivation is attempted for all lines following a line failure.

SLOW-POLL=*OFF
No automatic reactivation is attempted for the lines following a line failure.

EXIT-VERSION=
Adapts the layout of the data to the BCAM-Exit version. Currently two BCAM-Exit versions are supported. BCAM-Exit version 1 is available for reasons of compatibility. BCAM-Exit version 2 displays an extended set of BCAM events at the BCAM-Exit side (see section "BCAM-Exit (36)").

EXIT-VERSION=*UNCHANGED
The previous setting is not changed.
Default: 1

EXIT-VERSION=<integer 1..2>
Specify the version number of your BCAM-Exit version together with the selected system exit function 01 or 02.

> If you want to use system exit function 02 during BCAM startup, then you must first enter a corresponding MODIFY-BCAM-OPTIONS command in SOF processing.

Command logging

A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
2	0	BCA0611	No options were changed
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Example

Modify BCAM options:

```
/MODIFY-BCAM-OPTIONS IP-OPTIONS=*PARAMETER(ARP=*QUIET)
/MODIFY-BCAM-OPTIONS SNMP-OPTIONS=*PARAMETER(SNMP-WRITE-ACCESS=*ALLOWED)
/MODIFY-BCAM-OPTIONS DNS-OPTIONS=*PARAMETER(DNS-USAGE=*ON)
```

MODIFY-DNS-ACCESS / MDDNA: Modify DNS access in BCAM

You use the MODIFY-DNS-ACCESS command to specify:

- which DNS Resolver accesses the DNA data.
- for which IP and IPv6 addresses and which processors access to DNS data is permitted in BCAM, i.e. for which addresses and names queries are sent to DNS. The replies supplied by DNS are not checked against the specified restrictions.

The SDF alias name for MODIFY-DNS-ACCESS is MDDNA.

The MODIFY-DNS-ACCESS command is a subfunction of DNS support in BCAM.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

MODIFY-DNS-ACCESS / **MDDNA**

DNS-RESOLVER = ***UNCHANGED** / ***PARAMETERS**(**...**)

***PARAMETERS**(...)

| **PORT-NUMBER** = ***UNCHANGED** / ***STD** / <integer 1 .. 65535>

| **,IP-ADDRESS** = ***UNCHANGED** / ***STD** / <composed-name 7 .. 15>

| **,IPV6-ADDRESS** = ***UNCHANGED** / ***STD** / <text 3 .. 45>

,**IP-ADDRESS-RANGE** = ***UNCHANGED** / ***ALL** / ***NONE** / ***ADD**(**...**) / ***REMOVE**(**...**)

***ADD**(...)

| **FROM** = <composed-name 7 .. 15>

| ,**TO** = <composed-name 7 .. 15>

***REMOVE**(...)

| **FROM** = <composed-name 7 .. 15>

| ,**TO** = <composed-name 7 .. 15>

,**IPV6-ADDRESS-RANGE** = ***UNCHANGED** / ***ALL** / ***NONE** / ***ADD**(**...**) / ***REMOVE**(**...**)

***ADD**(...)

| **IPV6-PREFIX** = <text 9 .. 49>

***REMOVE**(...)

| **IPV6-PREFIX** = <text 9 .. 49>

,**NAMES** = ***UNCHANGED** / ***ALL** / ***NONE** / ***ADD**(**...**) / ***REMOVE**(**...**)

***ADD**(...)

| **PROCESSOR-NAME** = <composed-name 1..8 with_wildcard>

***REMOVE**(...)

| **PROCESSOR-NAME** = <composed-name 1..8 with_wildcard>

DNS-RESOLVER=
Specifies which DNS Resolver is used by BCAM and Sockets.

DNS-RESOLVER=*UNCHANGED
The setting defining which DNS Resolver is addressed remains unchanged.

DNS-RESOLVER=*PARAMETERS(...)
The DNS Resolver is defined via the port number used by the DNS Resolver or via the IP address of the DNS Resolver's IPv6 address.

PORT-NUMBER=*UNCHANGED
The setting for the port number remains unchanged.

PORT-NUMBER=*STD
The DNS Resolver with the default port number is addressed.
Default: 921.

PORT-NUMBER= <integer 1..65535> / <x-string 3..4>
Port number of the DNS Resolver.

IP-ADDRESS= *UNCHANGED
The IP address setting remains unchanged.

IP-ADDRESS= *STD
The DNS Resolver with the default IP address is addressed.
The default IP address is the LOOPBACK address.
Default: 127.0.0.1.

IP-ADDRESS= <composed-name 7..15> / <x-string 7..8>
IP address of the DNS Resolver.

IPV6-ADDRESS= *UNCHANGED
The IPv6 address setting remains unchanged.
Note:
The operand is evaluated only if IP-ADDRESS is not specified.

IPV6-ADDRESS= *STD
The DNS Resolver with the default IPv6 address is addressed.
The default IPv6 address is the LOOPBACK address.
Default: ::1.

IPV6-ADDRESS= <text 3..45> / <c-string 3..45>
IPv6 address of the DNS Resolver.

IP-ADDRESS-RANGE=
Sets an IP-specific restriction to access to DNS data in BCAM.

IP-ADDRESS-RANGE=*UNCHANGED
Access to DNS data for processors within the specified address range remains unchanged.

IP-ADDRESS-RANGE=*ALL
Access to DNS data is permitted for all processors whatever the IP address.

IP-ADDRESS-RANGE=*NONE
Access to DNS data to determine a processor name via reverse lookup is prohibited for processors with an IP address.

IP-ADDRESS-RANGE=*ADD(...)
Access to DNS data is permitted for all processors with an IP address in the specified IP address range. The maximum number of definable address ranges is specified using the MAX-DNS-ACC-ENTRIES operand in DCSTART/DCOPT.
Default: 4096

FROM=<composed-name 7..15>
Smallest IP address in the IP address range that is to be specified.

TO=<composed-name 7..15>
Largest IP address in the IP address range that is to be specified.

IP-ADDRESS-RANGE=*REMOVE(...)
Removes an IP address range. Access to DNS data is prohibited for processors with IP addresses in this range.

FROM=<composed-name 7..15>
Smallest IP address in the IP address range that is to be specified.

TO=<composed-name 7..15>
Largest IP address in the IP address range that is to be specified.

IPV6-ADDRESS-RANGE=
Sets an IPv6-specific restriction for access to DNS data in BCAM.

IPV6-ADDRESS-RANGE=*UNCHANGED
Access to DNS data for processors with an IPv6 address remains unchanged.

IPV6-ADDRESS-RANGE=*ALL
Access to DNS data is permitted for processors with any IPv6 address.

IPV6-ADDRESS-RANGE=*NONE
Access to DNS data to determine a processor name via reverse lookup is prohibited for processors with an IPv6 address.

IPV6-ADDRESS-RANGE=*ADD(...)
Access to DNS data is permitted for all processors with an IPv6 address and this IPv6 prefix. The maximum number of definable IPv6- prefixes is specified with the MAX-DNS-ACC-ENTRIES operand in DCSTART /DCOPT.
Default: 4096

> Syntax of IPv6 prefixes: <IPv6-address>/<IPv6-prefix-length>
> For more details, see section "IPv4 addresses".

In terms of characters, the shortest description of an IPv6 prefix has a length of 9 bytes. It should be noted that an IPv6 prefix is not complete unless the prefix length is also specified. If the IPv6 prefix length is not specified then the prefix length 0 is entered; when a check is performed, this corresponds to a prefix length of 128 bits.

IPV6-PREFIX=<text 9..49>
IPv6 prefix of IPv6 addresses. Access to DNS data is permitted for all processors with an IPv6 address and this IPv6 prefix.

Examples

8765::0/8 Prefix of minimum length with single-digit prefix length

FE80::0/10 link of local prefix

FC80::0/10 site of local prefix

IPV6-ADDRESS-RANGE=*REMOVE(...)
Removes IPv6 addresses. Access to DNS data is no longer permitted for processors with an IPv6 address and this IPv6 prefix.

IPV6-PREFIX=<text 9..49>
Access to DNS data is no longer permitted for processors with an IPv6 address and this IPv6 prefix.

NAMES=
Sets a name-specific restriction for access to DNS data in BCAM.
This setting relates exclusively to the use of names when establishing a NEA connection from the BCAM HOST to a remote PROCESSOR.

NAMES=*UNCHANGED
Access to DNS data for processors in the specified namespace remains unchanged

NAMES=*ALL
Access to DNS data is permitted for processors with any name.

NAMES=*NONE
Access to DNS data is prohibited for all processors regardless of name.

NAMES=*ADD(...)
Access to DNS data is permitted for all processors with a name from the specified namespace. The maximum number of definable (partially qualified) processor names is specified in the MAX-DNS-ACC-ENTRIES operand in DCSTART/ DCOPT.
Default: 4096

PROCESSOR-NAME=<composed-name 1..8 with_wildcard>
Processor name or, in the case of a partially qualified specification, namespace.

NAMES=*REMOVE(...)
Removes a namespace. Access to DNS data is prohibited for processors with a name in the specified namespace.

PROCESSOR-NAME=<composed-name 1..8 with_wildcard>
Processor name or, in the case of a partially qualified specification, namespace.

Command logging

Positive acknowledgements are sent in message BCA0614 and negative acknowledgments in BCA0615.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command processed successfully
0	1	CMD0202	Error in command (due to SDF)
2	0	BCA0615	No changes made by MODIFY-DNS-ACCESS
0	1	BCA0768	Error in command (due to command processing)
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Examples

1. Access to DNS data is permitted for any IP address belonging to any processor

   ```
   /MODIFY-DNS-ACCESS IP-ADDRESS-RANGE=*ALL
   ```

2. Access to DNS data is prohibited for all IPv6 addresses:

   ```
   /MODIFY-DNS-ACCESS IPV6-ADDRESS-RANGE=*NONE
   ```

3. Access to DNS data is permitted for all IPv6 addresses whose first n bits correspond to the specified IPv6 prefix-length>, where n=<IPv6-prefix-length> and n<=128.

   The following example refers to section "IPv6 address prefixes" (IPv6 addresses):
   IPv6 prefix length: 60
   IPv6- address: 12AB::CD30:123:4567:89AB:CBEF
   IPv6 prefix: 12AB::CD30:123:4567:89AB:CBEF/60
   The first 60 bits are valid.

   Since 60 can be divided by 4, the IPv6 prefix here can be written as follows: 12AB000000000CD3
   However, this procedure does not work for other IPv6 prefixes such as 10 or 58. Consequently, the more complex formulation of IPv6 set out above has to be used.

   ```
   /MODIFY-DNS-ACCESS IPV6-ADDRESS-RANGE= -
   *ADD(IPV6-PREFIX=12AB::CD30:123:4567:89AB:CDEF/60)
   ```

MODIFY-HOST-ATTRIBUTES / MDHTA: Modify HOST attributes

You use the MODIFY-HOST-ATTRIBUTES command to modify the specific attributes of a host.

The alias name MDHTA exists for MODIFY-HOST-ATTRIBUTES.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

MODIFY-HOST-ATTRIBUTES / **MDHTA**
HOST-NAME = ***STD** / <composed-name 1..8>
,**SOCKETHOST-NAME** = ***UNCHANGED** / ***HOST-NAME** / <composed-name 1..32>
,**STATUS-JV** = ***UNCHANGED** / ***NONE** / <filename 1..54>

HOST-NAME=...
Specifies the name of the host to be modified.

HOST-NAME=*STD
The standard host is to be modified.

HOST-NAME=<composed-name 1..8>
Name of the host to be modified.

SOCKETHOST-NAME=...
Specifies the socket host name.

SOCKETHOST-NAME=*UNCHANGED
The socket host name remains unchanged.

SOCKETHOST-NAME=*HOST-NAME
The socket host name corresponds to the host name.

SOCKETHOST-NAME=<composed-name 1..32>
Specifies the socket host name.

STATUS-JV=...
Specifies the STATUS-JV name.

STATUS-JV=*UNCHANGED
The STATUS-JV name remains unchanged.

STATUS-JV=*NONE
STATUS-JV is not to be defined.

STATUS-JV=<filename 1..54>
STATUS-JV name specified as a file name.

Command logging

A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
1	0	CMD0202	Operand error
0	32	CMD0221	System error
0	64	CMD0216	Privilege not sufficient
0	64	BCA0203	Interface (&00) returns RC (&01)
0	64	BCA0232	Host entry not found
0	64	BCA0234	Host entry not modified
0	64	BCA0236	JV <> cannot be used because of <>

Examples

1. Modify standard host entry:

```
/MODIFY-HOST-ATTRIBUTES HOST-NAME=*STD,SOCKETHOST-NAME=SOCKETHOST#STD
```

2. Modify virtual host entry, enter socket host name, status JV:

```
/MODIFY-HOST-ATTRIBUTES HOST-NAME=VHOST,SOCKETHOST-NAME=SOCKETHOST#VHOST
/MODIFY-HOST-ATTRIBUTES HOST-NAME=VHOST,STATUS-JV=$TSOS.STA-JV.VHOST
```

MODIFY-LINE / MDLN: Modify line

You use the MODIFY-LINE command for the dynamic modification of line-specific options and/or attributes.

The alias name MDLN exists for MODIFY-LINE in order to provide SNMP support.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

MODIFY-LINE / **MDLN**

LINE-NAME = <composed-name 1 .. 8> / <c-string 1 .. 8>

,**NEW-LINE-NAME** = ***SAME** / <composed-name 1 .. 8>

,**WRITE-DEVICE** = ***UNCHANGED** / <alphanum-name 2 .. 2> / <x-text 4 .. 4> / <alphanum-name 4 .. 4> / <x-text 8 .. 8>

,**READ-DEVICE** = ***UNCHANGED** / <alphanum-name 2 .. 2> / <x-text 4 .. 4> / <alphanum-name 4 .. 4> / <x-text 8 .. 8>

,**SLOW-POLL** = ***UNCHANGED** / ***ON** / ***OFF**

,**BROADCAST** = ***UNCHANGED** / ***ON** / ***OFF**

,**MULTICAST** = ***UNCHANGED** / ***ON** / ***OFF**

,**AUTO-ROUTE-SWITCHING** = ***UNCHANGED** / ***ON** / ***OFF**

,**ROUTE-RESWITCHING** = ***UNCHANGED** / ***ON** / ***OFF**

,**IPV6-AUTO-CONFIG** = ***UNCHANGED** / ***ON** / ***OFF**

,**DUP-ADDR-DETECTION** = ***UNCHANGED** / ***ON (...)** / ***OFF** / ***STD**

***ON**(...)

| **TRANSMIT-NUMBER** = ***STD** / **<integer 1..10>**

,**CHECKSUM** = ***UNCHANGED** / ***BY-BCAM** / ***BY-DEVICE**

,**ADDR-CONFLICT-DETECT** = ***UNCHANGED** / ***ON (...)** / ***OFF** / ***STD**

***ON**(...)

| **TRANSMIT-NUMBER** = ***STD** / <integer 1..10>

,**TIMEOUT-PROCESSING** = ***UNCHANGED** / ***DEACTIVATE-LINE** / ***KEEP-LINE**

,**MAX-LPDU-SIZE** = ***UNCHANGED** / ***STD** / ***ETHERNET-STD** / ***BY-DEVICE** / <integer 1514 .. 65535>

LINE-NAME=<composed-name 1..8> / **<c-string 1..8>**
Previous name of the line that is to be modified.

NEW-LINE-NAME=...
New name of the line.

> The line-name can only be changed if the line is deactivated.

NEW-LINE-NAME=*SAME
The name of the line is unchanged.

NEW-LINE-NAME=<composed-name 1..8>
New name of the line.

WRITE-DEVICE=...
Changes the device definition for the line's write device.

> The device definition can only be changed if the line is deactivated.

WRITE-DEVICE=*UNCHANGED
The device definition for the line's write device is unchanged.

WRITE-DEVICE=<alphanum-name 2..2> / <x-text 4..4> / <alphanum-name 4..4> / <x-text 8..8>
Mnemonic device name for the line's write device.

READ-DEVICE=...
Changes the device definition for the line's read device.

> The device definition can only be changed if the line is deactivated.

READ-DEVICE=*UNCHANGED
The device definition for the line's read device is unchanged.

READ-DEVICE=<alphanum-name 2..2> / <x-text 4..4> / <alphanum-name 4..4> / <x-text 8..8>
Mnemonic device name for the line's read device.

SLOW-POLL=...
Changes the SLOW-POLL option.
This option cannot be changed unless a LAN protocol (CSMACD) is used on the line.

SLOW-POLL=*UNCHANGED
The setting of the SLOW-POLL option is unchanged.

SLOW-POLL=*ON
The SLOW-POLL option is activated.

SLOW-POLL=*OFF
The SLOW-POLL option is deactivated.

BROADCAST=...
Changes the BROADCAST option.
This option cannot be changed unless a LAN protocol (CSMACD) is used on the line.

BROADCAST=*UNCHANGED
The setting of the BROADCAST option is unchanged.

BROADCAST=*ON
The BROADCAST option is activated.

BROADCAST=*OFF
The BROADCAST option is deactivated.

MULTICAST=...
Changes the MULTICAST option.
This option cannot be changed unless a LAN protocol (CSMACD) is used on the line.

MULTICAST=*UNCHANGED
The setting of the MULTICAST option is unchanged.

MULTICAST=*ON
The MULTICAST option is activated.

MULTICAST=*OFF
The MULTICAST option is deactivated.

AUTO-ROUTE-SWITCHING=...
Changes the AUTO-ROUTE-SWITCHING option.
This option cannot be changed unless a LAN protocol (CSMACD) is used on the line.

AUTO-ROUTE-SWITCHING=*UNCHANGED
The setting of the AUTO-ROUTE-SWITCHING option is unchanged

AUTO-ROUTE-SWITCHING=*ON
The AUTO-ROUTE-SWITCHING option is activated.

AUTO-ROUTE-SWITCHING=*OFF
The AUTO-ROUTE-SWITCHING option is deactivated.

ROUTE-RESWITCHING=...
Changes the ROUTE-RESWITCHING option.
This option cannot be changed unless a LAN protocol (CSMACD) is used on the line.

ROUTE-RESWITCHING=*UNCHANGED
The setting of the ROUTE-RESWITCHING option remains unchanged.

ROUTE-RESWITCHING=*ON
The ROUTE-RESWITCHING option is activated.

ROUTE-RESWITCHING=*OFF
The ROUTE-RESWITCHING option is deactivated.

IPV6-AUTO-CONFIG=...
Changes the IPV6-AUTO-CONFIG option.
This option cannot be changed unless a LAN protocol (CSMACD) is used on the line.

IPV6-AUTO-CONFIG=*UNCHANGED
The setting of the IPV6-AUTO-CONFIG option remains unchanged.

IPV6-AUTO-CONFIG=*ON
The IPV6-AUTO-CONFIG is activated.

IPV6-AUTO-CONFIG=*OFF
The IPV6-AUTO-CONFIG is deactivated.

DUP-ADDR-DETECTION=...
This parameter is used to set Duplicate Address Detection on a line-specific basis.Comment:
If this line is in a redundant relationship with other lines, the settings for Duplicate Address Detection for IPv6 are also adjusted accordingly for these lines.

DUP-ADDR-DETECTION= * UNCHANGED
The previous setting remains unchanged.
Default: Duplicate Address Detection is performed, and the Transmit number is 3.

DUP-ADDR-DETECTION=*ON(...)
Duplicate Address Detection is performed.

TRANSMIT-NUMBER=<integer 1..10>
The number of Transmits is set.

TRANSMIT-NUMBER=*STD
The number of Transmits is set to the default value 3.

DUP-ADDR-DETECTION=*OFF
Duplicate Address Detection is not performed.

DUP-ADDR-DETECTION=*STD
Duplicate Address Detection is performed using the default setting.

ADDR-CONFLICT-DETECT=...
This parameter is used to set IP Address Conflict Detection on a line-specific basis.

> If this line is in a redundant relationship with other lines, the settings for Duplicate Address Detection for IP are also adjusted accordingly for these lines.

ADDR-CONFLICT-DETECT= * UNCHANGED
The current setting is not changed.
Default: IP Address Conflict Detection is performed and the transmit number is 1.

ADDR-CONFLICT-DETECT=*ON(...)
IP Address Conflict Detection is performed.

TRANSMIT-NUMBER=<integer 1..10>
The number of transmits is set.

TRANSMIT-NUMBER=*STD
The number of transmits is set to the default value 1.

ADDR-CONFLICT-DETECT=*OFF
IP Address Conflict Detection is not performed.

ADDR-CONFLICT-DETECT=*STD
IP Address Conflict Detection is performed with the default setting.

CHECKSUM=...
The setting for calculating the CHECKSUM option is changed.
A prerequisite is that the device supports the TCP/IP checksum calculation.

CHECKSUM=*UNCHANGED
The setting for the CHECKSUM option remains unchanged.

CHECKSUM=*BY-BCAM
The CHECKSUM calculation is performed in BCAM.

CHECKSUM=*BY-DEVICE
The CHECKSUM calculation is performed in the device.

TIMEOUT-PROCESSING=...
Specifies whether a line is maintained or deactivated following a timeout on this line when line supervision is active (LINE-SUPERVISION in the BCOPTION/ MODIFY-BCAM-OPTIONS command).
You cannot change this option unless a LAN protocol (CSMACD) is running on the line.

TIMEOUT-PROCESSING=*UNCHANGED
The setting of the TIMEOUT-PROCESSING option remains unchanged.
Default: *KEEP-LINE

TIMEOUT-PROCESSING=*KEEP-LINE
The line is maintained on a timeout if line supervision is set.

TIMEOUT-PROCESSING=*DEACTIVATE-LINE
The line is deactivated on a timeout if line supervision is set.

MAX-LPDU-SIZE=...
Changes the MAX-LPDU-SIZE attribute.
Modifying the MAX-LPDU-SIZE attribute prerequisites that you use the L2 profile ETHERNET on the line.

> The device definition can only be changed if the line is deactivated.

MAX-LPDU-SIZE=*UNCHANGED
The MAX-LPDU-SIZE attribute is unchanged.

MAX-LPDU-SIZE=*ETHERNET-STD
The LPDU length is changed to the ETHERNET value (1514 bytes).

MAX-LPDU-SIZE=*BY-DEVICE
The LPDU length is changed to the value read by the device.

MAX-LPDU-SIZE=*STD
The LPDU length is changed to the default value for the defined LAN line.

MAX-LPDU-SIZE=<integer 1514..65535>
The LPDU length is changed to the specified value (in bytes).

Command logging

Positive acknowledgments are supplied in news BCA0663, and negative acknowledgments in news BCA06B3 followed by the message NBR0740. If processing is positive then the messages BCA07D0, BCA07D1, BCA07D6 and BCA07D7 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	1	BCA0768	Syntax error in command
2	0	BCA06B4	MODIFY-LINE command cancelled
2	0	BCA07D5	Line not deactivated
0	64	BCA07A2	LINE-NAME not found
0	64	BCA07D5	Line not deactivated
0	64	BCA07D9	Invalid BS2000 version
0	64	BCA07E2	NEW-LINE-NAME already exists
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Examples

1. Change line option

   ```
   /MODIFY-LINE LINE-NAME=LAN1#6,SLOW-POLL=*ON
   ```

2. Change device definition for a line

   ```
   /MODIFY-LINE LINE-NAME=LAN1#6,WRITE-DEVICE=W6,READ-DEVICE=R6
   ```

MODIFY-OWN-ADDRESS / MDOAD: Reassign own address

You use the MODIFY-OWN-ADDRESS command to assign an own address to another line or to a VLAN.

The alias name MDOAD exists for MODIFY-OWN-ADDRESS to provide SNMP support.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

MODIFY-OWN-ADDRESS / MDOAD

ADDRESS = ***IP**(...) / ***IPV6**(...)

***IP**(...)

| **IP-ADDRESS** = <composed-name 7 .. 15> / <x-string 7 .. 8>

***IPV6**(...)

| **IPV6-ADDRESS** = <text 9 .. 45> / <c-string 9 .. 45>

,**LINE-NAME** = <composed-name 1..8>

ADDRESS=...
Specifies the own address which is to be reassigned.
Reassignment of the own address is logged with message BCA0570 for lines and with BCA0571 for VLAN lines.

ADDRESS=*IP(...)

IP-ADDRESS=<composed-name 7..15> / <x-string 7..8>
own IP address of a line or VLAN line which is to be reassigned.

ADDRESS=*IPV6(...)

IPV6-ADDRESS=<text 9..45> / <c-string 9..45>
own IPv6 address of a line or VLAN line which is to be reassigned.

LINE-NAME=
Name of the line or VLAN line to which an own address is to be assigned.

LINE-NAME=<composed-name 1..8>
Name of the line or VLAN line.

Command logging

The reassignment of an own address is reported with the message BCA0570 for lines and with BCA0571 for VLAN lines.
Positive acknowledgments are supplied in news BCA066A, and negative acknowledgments in news BCA06BA.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
2	0	BCA06BA	Command aborted
0	1	BCA0768	Syntax error in command
0	64	BCA079F	Address not known
0	64	BCA07A2	LINE-NAME not known
0	64	BCA07AD	Line does not lead to a LAN node
0	64	BCA0606	own address has greater LPDU-SIZE than the line
0	64	BCA060E	own address has greater LPDU-SIZE than the VLAN line
0	64	BCA0605	own address does not have the same redundancy as the line
0	64	BCA060D	own address does not have the same redundancy as the VLAN line
0	64	BCA0604	own address does not have the same node as the line
0	64	BCA060C	own address does not have the same node as the VLAN line
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

MODIFY-ROUTE / MDROUTE: Modify routes

You use the MODIFY-ROUTE command for the dynamic modification of the route-specific options. In addition, targeted route switching can be carried out with MODIFY-ROUTE. You can also perform route definitions for the automatic end system creation. The respective router definitions are host-specific in accordance with the route definition: the corresponding route definitions and network assignments must be made for each host.

In order to support SNMP management, MODIFY-ROUTE has the alias MDROUTE.

> The values that can be set with MODIFY-ROUTE are partly protocol timers. The setting of these protocol timers must be uniform throughout the network and requires a sound knowledge of the relevant standards and networks.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
x		x	x	

List of valid command sources

MODIFY-ROUTE / **MDROUTE** Changing route characteristics

ROUTES =***ALL**, ... / ***NAME**(...), ... / ***ADDRESS**(...), ...

***ALL**, ...

| **TIMER** = ***UNCHANGED** / ***PERIODS**(...)

| **PERIODS**(...)

| | **WINDOW** = ***UNCHANGED** / ***STD** / <integer 2 .. 180 seconds>

| | ,**RETRANSMISSION** = ***UNCHANGED** / ***STD** / <integer 2 .. 36 seconds>

| ,**OPTIONS** = ***UNCHANGED** / ***ROUTING**(...)

| **ROUTING**(...)

| | **ARP** = ***UNCHANGED** / ***QUIET** / ***ON** / ***OFF**

| | ,**RARP** = ***UNCHANGED** / ***ON** / ***OFF**

| ,**NSDU-LENGTH-MAXIMUM = *UNCHANGED** / <integer 512 .. 65530>

| ,**AUTO-ROUTE-SWITCHING = *UNCHANGED** / ***ON** / ***OFF**

| ,**CHECKSUM = *UNCHANGED** / ***ON** / ***OFF**

***NAME**(...), ...

| (...)

| | **ROUTE-NAME** = <rout-name 1 .. 8>

| | ,**PROCESSOR-NAME** = <processor-name 1 .. 8>

***ADDRESS**(...), ...

```
|       (...)
|           |       IP-ADDRESS = *RANGE(...) / <composed-name 7..15> / <x-string 1 .. 8> /
|           |                                       list-poss (4): <integer 0 .. 255>
|           |           *RANGE(...)
|           |               |       FROM = <composed-name 7..15> / <x-string 1 .. 8> / list-poss (4): <integer 0
|           |               |              .. 255>
|           |               |       ,TO = <composed-name 7..15> / <x-string 1 .. 8> / list-poss (4): <integer 0 ..
|           |               |              255>
|           |       ,LAN-ADDRESS = <x-string 1 .. 12>
|           |       ,ISO-ADDRESS = <x-string 1 .. 40>
|           |       ,I6-ADDRESS = <c-string 1 .. 45>
*NAME(...), ... / *ADDRESS(...), ...
|   TIMER = *UNCHANGED / *PERIODS(...)
|       *PERIODS(...)
|           |       WINDOW = *UNCHANGED / *STD / <integer 2 .. 180 seconds>
|           |       ,RETRANSMISSION = *UNCHANGED / *STD / <integer 2 .. 36 seconds>
|   ,OPTIONS = *UNCHANGED / *ROUTING(...)
|       *ROUTING(...)
|           |       ARP = *UNCHANGED / *QUIET / *ON / *OFF
|           |       ,RARP = *UNCHANGED / *ON / *OFF
|   ,NSDU-LENGTH-MAXIMUM = *UNCHANGED / <integer 512 .. 65530>
|   ,AUTO-ROUTE-SWITCHING = *UNCHANGED / *ON / *OFF
|   ,CHECKSUM = *UNCHANGED / *ON / *OFF
|   ,ADD-IP-NET = *UNCHANGED / *UNKNOWN / *RANGE(...) / <composed-name 7..15> /
|                       <x-string 1 .. 8> / list-poss (4): <integer 0 .. 255>
|       *RANGE(...)
|           |       FROM = <composed-name 7..15> / <x-string 1 .. 8> / list-poss (4): <integer 0 .. 255>
|           |       ,TO = <composed-name 7..15> / <x-string 1 .. 8> / list-poss (4): <integer 0 .. 255>
|   ,REMOVE-IP-NET = *UNCHANGED / *UNKNOWN / *RANGE(...) / <composed-name 7..15> /
|                       <x-string 1 .. 8> list-poss (4): <integer 0 .. 255>
|       *RANGE(...)
|           |       FROM = <composed-name 7..15> / <x-string 1 .. 8> / list-poss (4): <integer 0 .. 255>
```

| | | ,**TO** = <composed-name 7..15> / <x-string 1 .. 8> / list-poss (4): <integer 0 .. 255>

| ,**ADD-ISO-NET** = ***UNCHANGED** / ***UNKNOWN** / <x-string 1 .. 40>

| ,**REMOVE-ISO-NET** = ***UNCHANGED** / ***UNKNOWN** / <x-string 1 .. 40>

| ,**ADD-IPV6-NET** = ***UNCHANGED** / ***UNKNOWN** / <c-string 1 .. 49>

| ,**REMOVE-IPV6-NET** = ***UNCHANGED** / ***UNKNOWN** / <c-string 1 .. 49>

The ADD and REMOVE operations cannot be specified in one command simultaneously.
For example, the operation ADD-IP-NET=*UNKNOWN identifies an IP router via which all the IP addresses are included that have not yet been rendered accessible by means of address ranges or individual addresses. This is an implicitly generated residual subset of the full range of possible addresses minus any definitions that have already been made.

ROUTES=...
Routes to be changed.

ROUTES=*ALL
All routes are changed. The actual number of routes changed is logged in the message BCA07C1.

TIMER=...
Timers that are changed.

TIMER=*UNCHANGED
The values for the timers remain unchanged.

TIMER=PERIODS(...)
Timer time intervals are changed.

WINDOW=...
The time interval of the window timer is changed.
If nothing was sent on a connection during the time interval, an acknowledgment element (AK-TPDU) is sent.
The value is rounded up to a multiple of 2 seconds. The timer has a precision of 2 seconds. Values which are greater than 180 are changed to 180.
If the value for WINDOW is changed, the maximum for the RETRANSMISSION value (one fifth of the WINDOW value) is also changed.

WINDOW=*UNCHANGED
The time interval of the window timer remains unchanged.

WINDOW=*STD
The time interval of the window timer is changed to the default value (60 seconds).

WINDOW=<integer 2..180>
The time interval of the window timer is changed to the specified value (in seconds).

RETRANSMISSION=...
The time interval of the retransmission timer is changed.
A protocol element which must be acknowledged is retransmitted if it was not acknowledged by the partner transport control during the time interval.
The value is rounded up to a multiple of 2 seconds. The timer has a precision of 2 seconds.

> The retransmission timer is only to be changed where absolutely essential.The timer has major effects on the loading of the system and the LAN. It should be noted that changes to WINDOW values also affect RETRANSMISSION.
> For WINDOW=*STD, the RETRANSMISSION value is 10.

RETRANSMISSION=*UNCHANGED
The time interval of the retransmission timer remains unchanged.

RETRANSMISSION=*STD
The time interval of the retransmission timer is changed to the default value (10 seconds).

RETRANSMISSION=<integer 2..36>
The time interval of the retransmission timer is changed to the specified value (in seconds).

OPTIONS=...
Options to be changed.

OPTIONS=*UNCHANGED
No options are changed.

OPTIONS=ROUTING(...)
Routing options are changed.

ARP=...
Specifies if, and how, ARP is used.
The basic preferences are set under BCOPTION / MODIFY-BCAM-OPTIONS.

ARP=*UNCHANGED
The use of ARP is not changed.

ARP=QUIET
ARP is used every 2 seconds when a route is used for the first time. Every 300 seconds, there is a check – set via BCTIMES – to determine whether data transmission has taken place within the elapsed time interval. If this is not the case, and if communication associations exist over the route, an ARP request is sent.

ARP=ON
ARP is to be used during route activation (every 2 seconds), and ARP requests – set via BCTIMES – are to be sent periodically (every 300 seconds).

ARP=OFF
ARP is not used.

RARP=...
Specifies whether RARP is used passively.

RARP=*UNCHANGED
The passive use of RARP is not changed.

RARP=ON
RARP is used passively.

RARP=OFF
RARP is not used passively.

NSDU-LENGTH-MAXIMUM=...
Changes the maximum NSDU length.
For changes to the NSDU length, the route must be in the “EXCLUDED” status.
To do this you may need to use BCOUT to shut the route down.

NSDU-LENGTH-MAXIMUM=*UNCHANGED
The maximum NSDU length is not changed.

NSDU-LENGTH-MAXIMUM=<integer 512..65530>
The maximum NSDU length is changed to the specified value (in bytes)

AUTO-ROUTE-SWITCHING=...
This operand sets the option "Routing change due to routing protocols for IP".

AUTO-ROUTE-SWITCHING=*UNCHANGED
The previous setting is retained.

AUTO-ROUTE-SWITCHING=*ON
Routing changes due to routing protocols for IP are performed.

AUTO-ROUTE-SWITCHING=*OFF
No routing changes due to routing protocols for IP are performed.AUTO-ROUTE-SWITCHING prevents an IP route switched using MODIFY-ROUTE from being switched to a router other than the one specified by the IP routing protocol functions. The same functionality is provided by BCOPTION / MODIFY-BCAM-OPTIONS AUTO-ROUTE-SWITCHING=OFF. However, in this case the setting applies to all the IP routes.

CHECKSUM=...
Specifies whether or not checksum verification is performed for the route when a segment is received. The checksum for the segments for transmission is always calculated and entered in the protocol. This option can be used to improve reception performances.

> This specification only applies to routes with the transport profile TCP.
> This option should only be used on routes on which there is no risk of data corruption.
> The machine-internal connection between BS2000 guest machines on a VM2000 system, for example, is suitable for this.

CHECKSUM=*UNCHANGED
The previous setting is unchanged.

CHECKSUM=*ON
Checksum verification is performed.

CHECKSUM=*OFF
Checksum verification is not performed.

ROUTES=NAME(...)
Routes defined by their names are changed. Modification of each individual route is logged with the message BCA07C2. If several routes lead to the specified processor, the number of routes changed is logged with the message BCA07C1. In this case only the operands TIMER and OPTIONS are permitted.

ROUTE-NAME=<rout-name 1..8>
Name of the route for modification.

PROCESSOR-NAME=<processor-name 1..8>
Name of the processor whose routes are changed.

ROUTES=ADDRESS(...)
Routes defined by their addresses are changed. Modification of each individual route is logged with the message BCA07C2. If several routes lead to the specified processor, the number of routes changed is logged with the message BCA07C1. In this case only the operands TIMER and OPTIONS are permitted.

IP-ADDRESS=
Specifies the IP address of the route or the IP address range of the routes for modification.

IP-ADDRESS=<composed-name 7..15> / <x-string 1..8> / list-poss (4): <integer 0..255>
IP address of the route for modification

IP-ADDRESS=*RANGE(...)
IP address range of the routes for modification. Specification of *RANGE is only useful in conjunction with PATH since it serves to switch the IP address range defined with *RANGE to the router specified with PATH.

FROM=<composed-name 7..15> / <x-string 1..8> / list-poss (4): <integer 0..255>
Lowest IP address of the range to be changed.

TO=<composed-name 7..15> / <x-string 1..8> / list-poss (4): <integer 0..255>
Highest IP address of the range to be changed.

LAN-ADDRESS=<x-string 1..12>
LAN address of the INT0 route for modification

ISO-ADDRESS=<x-string 1..40>
ISO Internet address of the route for modification

I6-ADDRESS=<c-string 1..45>
IPv6 of the route for modification.

TIMER=...
Timers changed for the route named using ROUTE-NAME or IP-ADDRESS.

TIMER=*UNCHANGED
The value for the timers remain unchanged.

TIMER=*PERIODS(...)
Timer time intervals are changed.

WINDOW=...
The time interval of the window timer is changed.
If nothing was sent on a connection during the time interval, an acknowledgment element (AK-TPDU) is sent.
The value is rounded up to a multiple of 2 seconds. The timer has a precision of 2 seconds. Values which are greater than 180 are changed to 180.
If the value for WINDOW is changed, the maximum for the RETRANSMISSION value (one fifth of the WINDOW value) is also changed.

WINDOW=*UNCHANGED
The time interval of the window timer remains unchanged.

WINDOW=*STD
The time interval of the window timer is changed to the default value (60 seconds).

WINDOW=<integer 2..180>
The time interval of the window timer is changed to the specified value (in seconds).

RETRANSMISSION=...
The time interval of the retransmission timer is changed.
A protocol element which must be acknowledged is retransmitted if it was not acknowledged by the partner transport control during the time interval.
The value is rounded up to a multiple of 2 seconds. The timer has a precision of 2 seconds.

> The retransmission timer is only to be changed where absolutely essential. The timer has major effects on the loading of the system and the LAN. It should be noted that changes to WINDOW values also affect RETRANSMISSION.
> For WINDOW=*STD, the RETRANSMISSION value is 10.

RETRANSMISSION=*UNCHANGED
The time interval of the retransmission timer remains unchanged.

RETRANSMISSION=*STD
The time interval of the retransmission timer is changed to the default value (10 seconds).

RETRANSMISSION=<integer 2..36>
The time interval of the retransmission timer is changed to the specified value (in seconds).

OPTIONS=...
Options for modification.

OPTIONS=*UNCHANGED
No options are changed.

OPTIONS=ROUTING(...)
Routing options are changed.

ARP=...
Specifies if, and how, ARP is used.

ARP=*UNCHANGED
The use of ARP is not changed.

ARP=QUIET
ARP is used every 2 seconds when a route is used for the first time.
Every 300 seconds, there is a check – set via BCTIMES -to determine whether data transmission has taken place within the elapsed time interval. If this is not the case, and if communication associations exist via the route, an ARP request is sent.

ARP=ON
ARP is used during route activation (every 2 seconds), and ARP requests – set via BCTIMES – are to be sent periodically (every 300 seconds).

ARP=OFF
ARP is not used.

RARP=...
Specifies whether RARP is used passively.

RARP= *UNCHANGED
The passive use of RARP is not changed.

RARP=ON
RARP is used passively.

RARP=OFF
RARP is not used passively.

NSDU-LENGTH-MAXIMUM=...
The maximum NSDU length is changed.

NSDU-LENGTH-MAXIMUM=*UNCHANGED
The maximum NSDU length is not changed.

NSDU-LENGTH-MAXIMUM=<integer 512..65530>
The maximum NSDU length is changed to the specified value (in bytes).

AUTO-ROUTE-SWITCHING=...
This operand sets the option "Routing change due to routing protocols for IP".

AUTO-ROUTE-SWITCHING=*UNCHANGED
The previous setting is retained.

AUTO-ROUTE-SWITCHING=*ON
Routing changes due to routing protocols for IP are performed.

AUTO-ROUTE-SWITCHING=*OFF
No routing changes due to routing protocols for IP are performed.AUTO-ROUTE-SWITCHING prevents an IP route switched using MODIFY-ROUTE from being switched to a router other than the one specified by the IP routing protocol functions. The same functionality is provided by BCOPTION / MODIFY-BCAM-OPTIONS AUTO-ROUTE-SWITCHING=OFF. However, in this case the setting applies to all the IP routes.

CHECKSUM=...
Specifies whether or not checksum verification is performed for the route when a segment is received. The checksum for the segments for transmission is always calculated and entered in the protocol. This option can sometimes be used to improve reception performances.

i This specification only applies to routes with the transport profile TCP.
This option should only be used on routes on which there is no risk of data corruption.
The machine-internal connection between BS2000 guest machines on a VM2000 system, for example, is suitable for this.

CHECKSUM=*UNCHANGED
The previous setting is unchanged.

CHECKSUM=*ON
Checksum verification is performed.

CHECKSUM=*OFF
Checksum verification is not performed.

ADD-IP-NET=...
With ADD-IP-NET, you specify which additional IP address or which additional range of IP addresses can be accessed via the route specified in the ROUTES operand No IP address range may be specified in the ROUTES operand.

> ¡ This parameter can only be specified locally via LAN.

ADD-IP-NET=*UNCHANGED
The definition indicating which IP addresses can be accessed via this route is not changed.

ADD-IP-NET=*UNKNOWN
All non-generated IP addresses are accessed via this route.

ADD-IP-NET=<composed-name 7..15> /x-string 1..8> / list-poss (4): <integer 1..255>
Specifies which IP addresses are accessed via this route. If another route is already assigned to these addresses, the command is not carried out.

ADD-IP-NET=*RANGE(...)
Range of IP addresses accessed via this route.

FROM=<composed-name 7..15> / <x-string 1..8> / list-poss (4): <integer 0..255>
Lowest IP address of the range which can be accessed via this route.

TO=<composed-name 7..15> / <x-string 1..8> / list-poss (4): <integer 0..255>
Highest IP address of the range which can be accessed via this route.

REMOVE-IP-NET=...
Specifies which IP address or range of IP addresses can no longer be accessed via the route specified in the ROUTES operand. No IP address range may be specified in the ROUTES operand.

REMOVE-IP-NET=*UNCHANGED
The definition indicating which IP addresses are accessed via this route is not changed.

REMOVE-IP-NET=*UNKNOWN
All non-generated IP addresses are no longer accessed via this route.

REMOVE-IP-NET=<composed-name 7..15> / <x-string 1..8> / list-poss (4): <integer 0..255>
Specifies which IP addresses are no longer accessed via this route.

REMOVE-IP-NET=*RANGE(...)
Range of IP addresses which is no longer accessed via this route.

FROM=<composed-name 7..15> / <x-string 1..8> / list-poss (4): <integer 0..255>
Lowest IP address of the range which is no longer to be accessed via this route.

TO=<composed-name 7..15> / <x-string 1..8> / list-poss (4): <integer 0..255>
Highest IP address of the range which is no longer to be accessed via this route.

ADD-ISO-NET=...
Specifies which Internet addresses are accessible via the route specified in the ROUTES operand. It is not possible to specify a range of IP addresses in the ROUTES operand.

> ¡ This parameter can only be specified locally via LAN.

ADD-ISO-NET=*UNCHANGED
The definition indicating which Internet addresses are accessed via this route is not changed.

ADD-ISO-NET=*UNKNOWN
All non-generated Internet addresses are accessed via this route.

ADD-ISO-NET=<x-string 1..40>
Specifies which Internet address is accessed via this route. If another route is already assigned to this Internet address, the command is not carried out.

REMOVE-ISO-NET=...
Specifies which Internet addresses are no longer accessed via the route specified in the ROUTES operand. It is not possible to specify a range of IP addresses in the ROUTES operand.

REMOVE-ISO-NET=*UNCHANGED
The definition indicating which Internet addresses are accessed via this route is not changed.

REMOVE-ISO-NET=*UNKNOWN
All non-generated Internet addresses are no longer accessed via this route.

REMOVE-ISO-NET=<x-string 1..40>
Specifies which Internet address is no longer accessed via this route.

ADD-IPV6-NET=...
Uses the IPv6 prefix/length to specify which IPv6 addresses can be accessed via this route.

> This parameter can only be specified locally via LAN.

ADD-IPV6-NET=*UNCHANGED
The definition of the IPv6 addresses that can be accessed via this route is not changed.

ADD-IPV6-NET=*UNKNOWN
All non-generated IPv6 addresses can be accessed via this route.

ADD-IPV6-NET=<c-string 1..49>
Specifies which IPv6 addresses can be accessed via this route. If another route is already assigned to these IPv6- addresses then the command is not executed.

REMOVE-IPV6-NET=...
Uses the IPv6 prefix/length to specify which IPv6 addresses can no longer be accessed via this route.

REMOVE-IPV6-NET=*UNCHANGED
The definition of the IPv6 addresses that can be accessed via this route is not changed.

REMOVE-IPV6-NET=*UNKNOWN
All non-generated IPv6 addresses can no longer be accessed via this route.

REMOVE-IPV6-NET=<c-string 1..49>
Specifies which IPv6 addresses can no longer be accessed via this route.

The principle for defining default routers and address ranges is illustrated in the section "Principle of default router and address range definition" (MODIFY-ADDRESS-ASSIGNMENT / MDADA: Modify address assignment) with an example.

MODIFY-ROUTE / **MDROUTE** Modify route path

ROUTES = ***NAME**(...), ... / ***ADDRESS**(...), ...

***NAME**(...), ...

| (...)

| | **ROUTE-NAME** = <rout-name 1 .. 8>

| | ,**PROCESSOR-NAME** = <processor-name 1 .. 8>

***ADDRESS**(...), ...

| (...)

| | **IP-ADDRESS** = ***RANGE**(...) / <composed-name 7..15> / <x-string 1 .. 8> /

| | list-poss (4): <integer 0 .. 255>

| | ***RANGE**(...)

| | | **FROM** = <composed-name 7..15> / <x-string 1 .. 8> /

| | | list-poss (4): <integer 0 .. 255>

| | | **,TO** = <composed-name 7..15> / <x-string 1 .. 8> / list-poss (4): <integer 0 .. 255>

***NAME**(...), .../ ***ADDRESS**(...), ...

| ,**PATH** = ***UNCHANGED** / ***VIA-ROUTE**(...)

| ***VIA-ROUTE**(...)

| | **ROUTE-NAME** = <rout-name 1 .. 8>

| | **,IP-ADDRESS** = <composed-name 7..15> / <x-string 1 .. 8> / list-poss (4): <integer 0 .. 255>

ROUTES=NAME(...)
Routes defined by their names are changed. Modification of each individual route is logged with the message BCA07C2. If several routes lead to the specified processor, the number of routes changed is logged with the message BCA07C1.

ROUTE-NAME=<rout-name 1..8>
Name of the route which is changed.

PROCESSOR-NAME=<processor-name 1..8>
Name of the processor whose routes are changed.

ROUTES=ADDRESS(...)
Routes defined by their addresses are changed. Modification of each individual route is logged with the message

BCA07C2. If several routes lead to the specified processor, the number of routes changed is logged with the message BCA07C1.

IP-ADDRESS=
Specifies the IP address of the route or the IP address range of the routes for modification.

IP-ADDRESS=<composed-name 7..15> / <x-string 1..8> / list-poss (4): <integer 0..255>
IP address of the route to be changed.

IP-ADDRESS=*RANGE(...)
IP address range of the routes for modification. Specification of *RANGE is only useful in conjunction with PATH since it serves to switch the IP address range defined with *RANGE to the router specified with PATH.

FROM=<composed-name 7..15> / <x-string 1..8> / list-poss (4): <integer 0..255>
Lowest IP address of the range to be changed.

TO=<composed-name 7..15> / <x-string 1..8> / list-poss (4): <integer 0..255>
Highest IP address of the range to be changed.

PATH=...
Specifies the path change of the route. This specification is only possible in the LAN for routes defined with the Layer 3 profile IP.

When PATH is used, no other operands may be specified.

PATH=*UNCHANGED
The path of the route is not changed.

PATH=*VIA-ROUTE(...)
The route is operated via a router.

ROUTE-NAME = <rout-name 1..8>
Name of the route to the router, which acts as the first segment of the new path of the route.

IP-ADDRESS=<composed-name 7..15> / <x-string 1..8> / list-poss (4): <integer 0..255>
IP address of the route to which the route defined with ADDRESS or NAME is switched.

Command logging

For reasons of compatibility, the processing acknowledgment is supplied in news BCA0763 if it is positive and in news BCA0762 if it is negative.
In addition, for positive acknowledgments, the messages BCA07B0, BCA07C1, BCA07C2, and BCA07C3 may also appear. For positive and negative acknowledgments, the message BCA07C4 may appear.
A description of the error messages that can be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	BCA0768	Syntax error in command
0	1	BCA0770	Parameter incorrect
2	0	BCA07B1	Route is no longer used as router
2	0	BCA07B4	Route is no longer used as IP router
2	0	BCA07B6	Route is no longer used as IPv6 router
2	0	BCA07C0	No route changed
0	64	BCA07A0	Processor is unknown
0	64	BCA07A1	Route is unknown
0	64	BCA07A9	Route is not excluded
0	64	BCA07EE	Command is being executed
0	64	BCA079F	Address not known
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Examples

1. Modification of a route's attributes

```
/MODIFY-ROUTE ROUTES=*NAME(ROUTE-NAME=ROUTOTTO),              -
/       OPTIONS=*ROUTING(ARP=*QUIET)
/MODIFY-ROUTE ROUTES=*NAME(ROUTE-NAME=ROUTOTTO),              -
/       CHECKSUM=*ON
```

2. Router definition for a non-defined IP network 189.44.00.00.

```
/MODIFY-ROUTE ROUTES=*NAME(ROUTE-NAME=RO70#2),                -
/       ADD-IP-NET=(189,44,0,0)
```

   or

```
/MODIFY-ROUTE ROUTES=*NAME(ROUTE-NAME=RO70#2),                -
/       ADD-IP-NET=x'BD2C0000'
```

3. Router definition for a default router

```
/MODIFY-ROUTE ROUTES=*NAME(ROUTE-NAME=RO75#1),                -
/       ADD-IP-NET=*UNKNOWN
```

4. Router definition for the IP address range intervals (0.0.0.1,0.0.0.20) (0.0.0.40,0.0.0.10) with subsequent deletion of intervals.

```
/MOD-ROUTE ROUTE=NAME(ROUTE-NAME=ROUTER),                     -
/       ADD-IP-NET=*RANGE(FROM=0.0.0.1,TO=0.0.0.100)
/MOD-ROUTE ROUTE=NAME(ROUTE-NAME=ROUTER),                     -
/       REMOVE-IP-NET=*RANGE(FROM=0.0.0.21,TO=0.0.0.39)
/MOD-ROUTE ROUTE=NAME(ROUTE-NAME=ROUTER),                     -
/       REMOVE-IP-NET=*RANGE(FROM=0.0.0.1,TO=0.0.0.100)
```

MODIFY-ROUTE-ATTRIBUTES / MDRTA: Modify route attributes

You use the MODIFY-ROUTE-ATTRIBUTES command to modify route-specific attributes.

The values that can be set with MODIFY-ROUTE-ATTRIBUTES are partly protocol timers. The setting of these protocol timers must be uniform throughout the network and requires a sound knowledge of the relevant standards and networks.

The alias MDRTA exists for MODIFY-ROUTE-ATTRIBUTES in order to support SNMP management. The SDF alias is MDRTA.

The command offers some of the functionality of the MODIFY-ROUTE command.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

MODIFY-ROUTE-ATTRIBUTES / **MDRTA** Modify route attributes

ROUTE-NAME = <composed-name 1 .. 8> / <c-string 1 .. 8> / ***PROCESSOR**(...) / ***IP**(...) /
***ISO**(...) / ***LAN**(...) / ***IPV6**(...) / ***ALL**

***PROCESSOR**(...)

| **PROCESSOR-NAME** = <composed-name 1 .. 8> / <c-string 1 .. 8>

***IP**(...)

| **IP-ADDRESS** = <composed-name 7 .. 15> / <x-string 7 .. 8>

***ISO**(...)

| **ISO-ADDRESS** = <x-string 1 .. 40>

***LAN**(...)

| **LAN-ADDRESS** = <x-string 1 .. 12>

***IPV6**(...)

| **IPV6-ADDRESS** = <text 9 .. 45> / <c-string 9 .. 45>

,**TIMER** = ***UNCHANGED** / ***PERIODS**(...)

***PERIODS**(...)

| **WINDOW** = ***UNCHANGED** / ***STD** / <integer 2 .. 190>

| ,**RETRANSMISSION** = ***UNCHANGED** / ***STD** / <integer 2 .. 36>

,**OPTIONS** = ***UNCHANGED** / ***ROUTING**(...)

***ROUTING**(...)

| **ARP** = ***UNCHANGED** / ***QUIET** / ***ON** / ***OFF**

```
        |       ,RARP-REPLIES = *UNCHANGED / *ALLOWED / *NOT-ALLOWED
        |       ,AUTO-ROUTE-SWITCHING = *UNCHANGED / *ON / *OFF
        |       ,ROUTE-RESWITCHING = *UNCHANGED / *ON / *OFF
        |       ,TRANSON-USAGE = *UNCHANGED / *ON / *OFF
        |       ,ECN = *UNCHANGED / *ON / *OFF
        |       ,HIGHSPEED-TCP = *UNCHANGED / *ON / *OFF
        |       ,DRS-INBOUND = *UNCHANGED / *ON / *OFF
        |       ,DRS-OUTBOUND = *UNCHANGED / *ON / *OFF
,MAX-NSDU-SIZE = *UNCHANGED / <integer 512 .. 65530>
,CHECKSUM = *UNCHANGED / *ON / *OFF
```

ROUTE-NAME=...
Name of the route for modification.
The modification of each individual route is logged with message BCA07C2.
If multiple routes are modified then the number of modified routes is logged with message BCA07C1.

ROUTE-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the route for modification.

ROUTE-NAME=*PROCESSOR(...)
All the routes to a processor are modified.

PROCESSOR-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the processor to which the routes lead.

ROUTE-NAME=*IP(...)
The routes defined by the partner IP address are modified.

IP-ADDRESS= <composed-name 7..15> / <x-string 7..8>
Partner IP address of the routes for modification.

ROUTE-NAME=*ISO(...)
The routes defined by the partner ISO Internet address are modified.

ISO-ADDRESS=<x-string1..40>
Partner ISO Internet address of the routes for modification.

ROUTE-NAME=*LAN(...)
The routes defined by the partner LAN address are modified.

LAN-ADDRESS=<x-string 1..12>
Partner LAN address of the routes for modification.

ROUTE-NAME=*IPV6(...)
The routes defined by the partner IPv6 address are modified.

IPV6-ADDRESS=<text 9..45> / <c-string 9..45>
Partner IPv6 address of the routes for modification.

ROUTE-NAME=*ALL
All routes are modified.
The number of routes actually modified is logged in message BCA07C1.

TIMER=...
Timers that are changed.

TIMER=*UNCHANGED
The values for the timers remain unchanged.

TIMER=*PERIODS(...)
Timer time intervals are changed.

WINDOW=...
The time interval of the window timer is changed.
If nothing was sent on a connection during the time interval, an acknowledgment element (AK-TPDU) is sent.
The value is rounded up to a multiple of 2 seconds. The timer has a precision of 2 seconds.
Values which are greater than 180 are changed to 180.
If the value for WINDOW is changed, the maximum for the RETRANSMISSION value (one fifth of the WINDOW value) is also changed.

WINDOW=*UNCHANGED
The time interval of the window timer remains unchanged.

WINDOW=*STD
The time interval of the window timer is changed to the default value (60 seconds).

WINDOW=<integer 2..190>
The time interval of the window timer is changed to the specified value (in seconds).

RETRANSMISSION=...
The time interval of the retransmission timer is changed.
A protocol element which must be acknowledged is retransmitted if it was not acknowledged by the partner transport control during the time interval.
The value is rounded up to a multiple of 2 seconds. The timer has a precision of 2 seconds.

> The retransmission timer is only to be changed where absolutely essential.The timer has major effects on the loading of the system and the LAN. It should be noted that changes to WINDOW values also affect RETRANSMISSION!
> For WINDOW=*STD, the RETRANSMISSION value is 10.

RETRANSMISSION=*UNCHANGED
The time interval of the retransmission timer remains unchanged.

RETRANSMISSION=*STD
The time interval of the retransmission timer is changed to the default value (10 seconds).

RETRANSMISSION=<integer 2..36>
The time interval of the retransmission timer is changed to the specified value (in seconds).

OPTIONS=...
Options to be changed.

OPTIONS=*UNCHANGED
No options are changed.

OPTIONS=*ROUTING(...)
Routing options are changed.

ARP=...
Specifies if, and how, ARP is used.

ARP=*UNCHANGED
The use of ARP is not changed.

ARP=*QUIET
ARP is used every 2 seconds when a route is used for the first time.
Every 300 seconds, there is a check to determine whether data transmission has taken place within the elapsed time interval. If this is not the case, and if communication associations exist over the route, an ARP request is sent.

ARP=*ON
ARP is used during route activation (every 2 seconds), and ARP requests are sent periodically (every 300 seconds).

ARP=*OFF
ARP is not used.

RARP-REPLIES=...
Specifies whether RARP is supported, i.e. whether incoming RARP requests can be responded to with the corresponding RARP replies.

RARP-REPLIES=*UNCHANGED
Passive RARP support is not changed.

RARP-REPLIES=*ALLOWED
RARP is passively supported.

RARP-REPLIES=*NOT-ALLOWED
RARP is not passively supported.

AUTO-ROUTE-SWITCHING=...
Defines the AUTO-ROUTE-SWITCHING option.
The AUTO-ROUTE-SWITCHING option specifies whether the route’s path definitions can be changed as a result of routing protocol functions.

AUTO-ROUTE-SWITCHING=*UNCHANGED
The AUTO-ROUTE-SWITCHING setting is unchanged.

AUTO-ROUTE-SWITCHING=*ON
The AUTO-ROUTE-SWITCHING option is activated: the route can be modified.

AUTO-ROUTE-SWITCHING=*OFF
The AUTO-ROUTE-SWITCHING option is deactivated: the route cannot be modified.

ROUTE-RESWITCHING=...
Defines the ROUTE-RESWITCHING option.
The ROUTE-RESWITCHING option specifies whether the route can be switched back to the original path definition in the event of reactivation.

ROUTE-RESWITCHING=*UNCHANGED
The ROUTE-RESWITCHING setting is unchanged.

ROUTE-RESWITCHING=*OFF
The ROUTE-RESWITCHING option is deactivated.

ROUTE-RESWITCHING=*ON
The ROUTE-RESWITCHING option is activated.

TRANSON-USAGE=...
Changes the TRANSON-USAGE option.
The TRANSON-USAGE option specifies whether the route is used to access a TranSON server..

TRANSON-USAGE=*UNCHANGED
The TRANSON-USAGE setting is unchanged.

TRANSON-USAGE=*OFF
The TRANSON-USAGE option is deactivated.

TRANSON-USAGE=*ON
The TRANSON-USAGE option is activated.
This function should only be used for individual routes.

ECN=...
Specifies whether or not the Explicit Congestion Notification (ECN) mechanism is supported for the route. ECN is realized through the interaction of IP and TCP protocols. End systems that support this mechanism can be slowed down in heavyload situations by network components, usually routers, to prevent the loss of packets. ECN considerably improves the stability of a network topology and is one of the required standards of the Internet. ECN is defined in RFC 3168. The specification only applies to routes with transport profile TCP/IP. Although the BCAM transport system has implemented the recovery mechanism described in RFC 3168, it may be necessary to disable ECN support to enable interworking.

ECN=*UNCHANGED
The previous setting remains unchanged.
Default: *ON (after BCAM has started)

ECN=*ON
Explicit Congestion Notification is supported for the specified route.
The ROUTE-NAME=*ALL specification means that Explicit Congestion Notification is supported for all IP routes. This also applies to all IP routes, created as of this point in time.

ECN=*OFF
Explicit Congestion Notification is *not* supported for the specified route.

The ROUTE-NAME=*ALL specification means that Explicit Congestion Notification is *not* supported for all IP routes. This also applies to all IP routes, created as of this point in time.

HIGHSPEED-TCP=...
Specifies whether the high-speed TCP functions are supported for the route.
The high-speed TCP mechanisms (Limited Slow-Start, Large Congestion Windows) can be deactivated.

> HIGHSPEED-TCP only achieves optimum results if used in conjunction with DRS-OUTBOUND.

HIGHSPEED-TCP=*UNCHANGED
The previous setting is retained.
Default: *ON (after BCAM has been started)

HIGHSPEED-TCP=*ON
The high-speed TCP mechanisms are supported for the specified route.
The specification ROUTE-NAME=*ALL causes the high-speed TCP mechanisms to be supported for all IP routes. This also applies to IP routes generated as of this time.

HIGHSPEED-TCP=*OFF
The high-speed TCP mechanisms are not supported for the specified route. The specification ROUTE-NAME=*ALL causes the it is not supported for any IP routes. This also applies to IP routes generated as of this time.

DRS-INBOUND=...
Specifies whether inbound dynamic right-sizing is supported on the route (inbound).

> The size of the occupied BCAM storage may be considerably greater than in the predecessor version.

DRS-INBOUND=*UNCHANGED
The previous setting is retained.
Default: *ON (after BCAM has been started)

DRS-INBOUND=*ON
Inbound dynamic right-sizing is supported for the specified route. The specification ROUTE-NAME=*ALL means that inbound dynamic right-sizing is supported for all IP routes. This also applies for routes that are created as of this time.

DRS-INBOUND=*OFF
Inbound dynamic right-sizing is not supported for the specified route. The specification ROUTE-NAME=*ALL means that inbound dynamic right-sizing is not supported for all IP routes. This also applies for routes that are created as of this time.

DRS-OUTBOUND=...
Specifies whether outbound dynamic right-sizing is to be supported for the route.

> The size of the occupied BCAM storage may be considerably greater than in the predecessor version.
> DRS-OUTBOUND only achieves optimum results if used in conjunction with HIGHSPEED-TCP.

DRS-OUTBOUND=*UNCHANGED
The previous setting is retained.
Default: *ON (after BCAM has been started)

DRS-OUTBOUND=*ON
Outbound dynamic right-sizing is supported for the specified route
The specification ROUTE-NAME=*ALL means that outbound dynamic rightsizing is supported for all IP routes. This also applies for routes that are created as of this time.

DRS-OUTBOUND=*OFF
Outbound dynamic right-sizing is not supported for the specified route. The specification ROUTE-NAME=*ALL means that outbound dynamic right-sizing is not supported for all IP routes. This also applies for routes that are created as of this time.

MAX-NSDU-SIZE=...
Changes the maximum NSDU length.

MAX-NSDU-SIZE=*UNCHANGED
The setting for the maximum NSDU length is not changed.

MAX-NSDU-SIZE=<integer 512..65530>
The maximum NSDU length is changed to the specified value (in bytes).

CHECKSUM=...
Specifies whether or not checksum verification is performed for the route when a segment is received. The checksum for the segments for transmission is always calculated and entered in the protocol. This option can be used to improve reception performances.

> This specification only applies to routes with the transport profile TCP.
> This option should only be used on routes on which there is no risk of data corruption.
> The machine-internal connection between BS2000 guest machines on a VM2000 system, for example, is suitable for this.

CHECKSUM=*UNCHANGED
The previous setting is unchanged.

CHECKSUM=*ON
Checksum verification is performed.

CHECKSUM=*OFF
Checksum verification is not performed.

Command logging

Positive acknowledgments are supplied in news BCA0663, and negative acknowledgments in news BCA06B3. If processing is positive the messages BCA07B0, BCA07C1, BCA07C2, and BCA07C3 may also appear. For positive and negative acknowledgments, the message BCA07C4 may appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
2	0	BCA06B3	MODIFY-ROUTES-ATTRIBUTES cancelled
2	0	BCA07C0	No route modified
0	1	BCA0768	Syntax error in command
0	64	BCA07A0	Processor is unknow
0	64	BCA07A1	Route is unknown
0	64	BCA07A9	Route is not excluded
0	64	BCA07EE	Command is being executed
0	64	BCA079F	Address is unknown
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Examples

Modify route attributes of the route ROUTOTTO:

```
/MODIFY-ROUTE-ATTRIBUTES ROUTE-NAME=ROUTOTTO,                -
/ OPTIONS=*ROUTING(ARP=*QUIET)
/MODIFY-ROUTE-ATTRIBUTES ROUTE-NAME=ROUTOTTO,CHECKSUM=*ON
```

MODIFY-ROUTE-PATH / MDRTP: Modify route path

You use the MODIFY-ROUTE-PATH command to switch specific routes.

The alias name MDRTP exists for MODIFY-ROUTE-PATH in order to provide SNMP support.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

MODIFY-ROUTE-PATH / **MDRTP** Modify route path

ROUTE-NAME = <composed-name 1..8> / <c-string 1..8> / ***IP**(...) / ***IP-RANGE**(...)

***IP**(...)

| **IP-ADDRESS** = <composed-name 7 .. 15> / <x-string 7 .. 8>

***IP-RANGE**(...)

| **FROM** = <composed-name 7 ..15> / <x-string 7 .. 8>

| ,**TO** = <composed-name 7 ..15> / <x-string 7 .. 8>

***ISO**(…)

| **ISO-ADDRESS** = <x-string 1 .. 40>

,**PATH** = ***VIA-ROUTER**(...) / ***VIA-LINE**(...) / ***VIA-IP**(...)

***VIA-ROUTER**(...)

| **ROUTER-ROUTE-NAME** = <composed-name 1 .. 8> / <c-string 1 .. 8>

***VIA-LINE**(...)

| **LINE-NAME** = <composed-name 1 .. 8> / <c-string 1 .. 8>

***VIA-IP**(...)

| **IP-ADDRESS** = <composed-name 7 ..15> / <x-string 7 .. 8>

ROUTE-NAME=...
Defines the routes for modification.
The following routes can be modified:

in a LAN : Routes with Layer 3 protocol IP

The modification of each individual route is logged with the message BCA07C2 .
If multiple routes are modified then the number of modified routes is logged with the message BCA07C1.

ROUTE-NAME=<composed-name 1..8> / **<c-string 1..8>**
Name of the route for modification.

ROUTE-NAME=*IP(...)
The routes defined by the partner IP address are modified.

IP-ADDRESS=<composed-name 7..15> / <x-string 7..8>
Partner IP address of the routes which are modified.

ROUTE-NAME=*IP-RANGE(...)
Range of IP addresses of the routes which are modified.

FROM=<composed-name 7..15> / <x-string 7..8>
Lowest IP address of the range for modification.

TO=<composed-name 7..15> / <x-string 7..8>
Highest IP address of the range for modification.

ROUTE-NAME=*ISO(...)
The routes defined by the partner ISO internet address are modified.

IP-ADDRESS=<x-string 1..40>
Partner ISO internet address of the routes which are modified.

PATH=...
Specifies the path change for the route.

PATH=*VIA-ROUTER(...)
The route operates via a router.

ROUTER-ROUTE-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the router route via which the route operates.

PATH=*VIA-LINE(...)
The route is direct, i.e. it does not pass via a router.
This operand is permissible only for remote IP routes via LAN.

LINE-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the line via which the route operates.

PATH=*VIA-IP(...)
The route operates via a router

IP-ADDRESS=<composed-name 7..15> / <x-string 7..8>
IP address of the route to which the route(s) is (are) switched.
This option should only be used when only one route with this partner address exists, otherwise PATH=*VIA-ROUTER should be used.

Command logging

Positive acknowledgments are supplied in news BCA0663, and negative acknowledgments in news BCA06B3 followed by the message NBR0740.
If processing is positive the messages BCA07B0, BCA07C1 and BCA07C2 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	1	BCA0768	Syntax error in command
0	1	BCA0770	Parameter incorrect
2	0	BCA07C0	No route modified
0	64	BCA07A1	Route unknown
0	64	BCA07A2	Line unknown
0	64	BCA07EE	Command is being executed
0	64	BCA079F	Address unknown
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

MODIFY-VLAN-ASSIGNMENT / MDVLA: Modify VLAN assignment

You use the MODIFY-VLAN-ASSIGNMENT command to define the IP address or the IP address ranges and IPv6 addresses (with the same IPv6 prefix) for which an unambiguous assignment to a VLAN is to be made by assigning a VLAN ID. If existing assignments are to be canceled it is sufficient if you just refer to the IP address, the IP address range or the IPv6 addresses (using the same IPv6 prefix) without explicitly knowing the VLAN IDs linked to the range.

The alias name MDVLA exists for MODIFY-VLAN-ASSIGNMENT.

The MODIFY-VLAN-ASSIGNMENT command is a subfunction of VLAN support in BCAM and is used to permit unambiguous VLAN assignment for local processor from the inside. This ensures that these processors are addressed using the VLAN protocol. In the event of automatic end system creation (AEC), the command must be specified for the local processors on the node.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
x	x	x		

List of valid command sources

MODIFY-VLAN-ASSIGNMENT / **MDVLA**

IP-ADDRESS-RANGE = ***UNCHANGED** / ***ADD-TO-VLAN**(...) / ***REMOVE-FROM-VLAN**(...) /
***REMOVE-ALL-FROM-VLAN**

***ADD-TO-VLAN**(...)

| **FROM** = <composed-name 7 .. 15>

| ,**TO** = <composed-name 7 .. 15>

| ,**VLAN-ID** = <integer 2 .. 4094>

***REMOVE-FROM-VLAN**(...)

| **FROM** = <composed-name 7 .. 15>

| ,**TO** = <composed-name 7 .. 15> -

IPV6-ADDRESS-RANGE = ***UNCHANGED** / ***ADD-TO-VLAN**(...) / ***REMOVE-FROM-VLAN**(...) /
***REMOVE-ALL-FROM-VLAN**

***ADD-TO-VLAN**(...)

| **IPV6-PREFIX** = <text 9 .. 49>

| ,**VLAN-ID** = <integer 2 .. 4094>

***REMOVE-FROM-VLAN**(...)

| **IPV6-PREFIX** = <text 9 .. 49>

IP-ADDRESS-RANGE=
The assignment of an IP address range to a VLAN is defined.

IP-ADDRESS-RANGE=*UNCHANGED
The assignments of an IP address or IP address ranges to a VLAN remain unchanged.

IP-ADDRESS-RANGE=*ADD-TO-VLAN(...)
The assignment of an IP address or IP address range to a VLAN via a VLAN ID is defined for a processor. The maximum number of definable IP address ranges is defined in DCSTART/DCOPT using the MAX-VLAN-ASSIGNMENT-ENTRIES operand.
Default: 1024

FROM=<composed-name 7..15>
Lowest IP address of the IP address range that is to be specified.

TO=<composed-name 7..15>
Highest IP address of the IP address range that is to be specified.

VLAN-ID=<integer 2..4094>
VLAN ID of the VLAN for which the assignment is defined.

IP-ADDRESS-RANGE=*REMOVE-FROM-VLAN(...)
Removes an IP address or IP address range and thus the assignment to a VLAN.

FROM=<composed-name 7..15>
Lowest IP address of the IP address range that is to be specified.

TO=<composed-name 7..15>
Highest IP address of the IP address range that is to be specified.

IP-ADDRESS-RANGE=*REMOVE-ALL-FROM-VLAN
All assignments of all previously assigned IP addresses or IP address ranges for a VLAN are canceled.

IPV6-ADDRESS-RANGE=
The assignment of IPv6 addresses to a VLAN is defined.

IPV6-ADDRESS-RANGE=*UNCHANGED
The assignments of IPv6 addresses to a VLAN remain unchanged.

IPV6-ADDRESS-RANGE=*ADD-TO-VLAN(...)
The assignments of IPv6 addresses to a VLAN via a VLAN ID is defined. The maximum number of definable IPv6 prefixes is defined in DCSTART/DCOPT using the MAX-VLAN-ASSIGNMENT-ENTRIES operand in DCSTART/DCOPT.
Default: 1024

> Syntax of the IPv6 prefixes: <IPv6-address>/<IPv6-prefix-length>
> For further details see the section "IPv6 addresses".
> Expressed in characters, the shortest definition of an IPv6 prefix is 9 bytes long. Here you must bear in mind that an IPv6 prefix is only complete when the prefix length is specified. Omitting the IPv6 prefix length results in the prefix length 0 being entered, which for a check corresponds to a prefix length of 128 bits.

IPV6-PREFIX=<text 9..49>
The assignment of IPv6 addresses with the specified IPv6 prefix is defined for a VLAN for a processor via the VLAN ID.

Examples

8765::0/8 Minimum length of prefix with one-character prefix

FE80::0/10 Link-local prefix

FC80::0/10 Site-local prefix

VLAN-ID=<interger 2..4094>
VLAN ID of the VLAN for which the assignment is set up.

IPV6-ADDRESS=*REMOVE-FROM-VLAN(...)
Removes IPv6 addresses. The assignment of IPv6 addresses with the specified IPv6 prefix for a VLAN for a processor is canceled.

IPV6-PREFIX=<text 9..49>
The assignment to a VLAN for a processor with an IPv6 address and this IPv6 prefix is canceled.

IPV6-ADDRESS-RANGE=*REMOVE-ALL-FROM-VLAN
All assignments of all previously assigned IPv6 addresses to any VLAN are canceled.

Command logging

If processing is successful the message BCA0616 appears, if it is negative the message BCA0617.
A desription of the possible error messages is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command (through SDF)
2	0	BCA0617	No modifications made by MODIFY-VLAN-ASSIGNMENT
0	1	BCA0768	Error in command (through command processing)
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Examples

1. Assignment to a VLAN via the VLAN ID is permitted for IP addresses within an IP address range:

```
/MODIFY-VLAN-ASSIGNMENT IP-ADDRESS-RANGE=   -
/*ADD-TO-VLAN(FROM=153.10.1.10,TO=153.10.1.20,VLAN-ID=1066)
```

2. Assignment to a VLAN via the VLAN ID is canceled for all IPv6 addresses:

```
/MODIFY-VLAN-ASSIGNMENT IPV6-ADDRESS-RANGE=*REMOVE-ALL-FROM-VLAN
```

MODIFY-VLAN-DEVICE / MDVLDV: Modify VLAN device

You use the MODIFY-VLAN-DEVICE command to modify the VLAN device settings dynamically.

The alias name MDVLDV exists for the MODIFY-VLAN-DEVICE command in order to provide SNMP support.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
x	x	x		

List of valid command sources

MODIFY-VLAN-DEVICE / **MDVLDV**
DEVICE-NAME = <composed-name 1 .. 8> ,**WRITE-DEVICE** = ***UNCHANGED** / <alphanum-name 2 .. 2> / <x-text 4 .. 4> / <alphanum-name 4 .. 4> / <x-text 8 .. 8> , **READ-DEVICE** = ***UNCHANGED** / <alphanum-name 2 .. 2> / <x-text 4 .. 4> / <alphanum-name 4 .. 4> / <x-text 8 .. 8> ,**SLOW-POLL** = ***UNCHANGED** / ***ON** / ***OFF** ,**CHECKSUM** = ***UNCHANGED** / ***BY-BCAM** / ***BY-DEVICE** ,**MAX-LPDU-SIZE** = ***UNCHANGED** / ***STD** / ***BY-DEVICE**

DEVICE-NAME=<composed-name 1..8>
Current name of the VLAN device that is to be modified.

WRITE-DEVICE=...
The device definition for the VLAN write device is modified.

> The device definition can be modified only when the device is deactivated.

WRITE-DEVICE=*UNCHANGED
The device definition for the VLAN write device remains unchanged.

WRITE-DEVICE=<alphanum-name 2..2> / <x-text 4..4> / <alphanum-name 4..4> / <x-text 8..8>
Mnemonic device name for the VLAN write device.

READ-DEVICE=...
The device definition for the VLAN write device is modified.

> The device definition can be modified only when the device is deactivated.

READ-DEVICE=*UNCHANGED
The device definition for the VLAN read device remains unchanged.

READ-DEVICE=<alphanum-name 2..2> / <x-text 4..4> / <alphanum-name 4..4> / <x-text 8..8>
Mnemonic device name for the VLAN read device.

SLOW-POLL=...
The SLOW-POLL option is modified.

SLOW-POLL=*UNCHANGED
The setting for the SLOW-POLL option remains unchanged.

SLOW-POLL=*ON
The SLOW-POLL option is activated.

SLOW-POLL=*OFF
The SLOW-POLL option is deactivated.

MAX-LPDU-SIZE=...
The MAX-LPDU-SIZE attribute is modified.
A prerequisite for modifying MAX-LPDU-SIZE is that the L2 profile ETHERNET is used on the line.

> The MAX-LPDU-SIZE can be modified only when the line is deactivated.

MAX-LPDU-SIZE=*UNCHANGED
The MAX-LPDU-SIZE attribute remains unchanged.

MAX-LPDU-SIZE=*STD
The LPDU length is modified to the ETHERNET value (1514 bytes).

MAX-LPDU-SIZE=*BY-DEVICE
The LPDU length is modified to the value read by the device.

CHECKSUM=...
The setting for calculating the CHECKSUM option is changed.
A prerequisite is that the device supports the TCP/IP checksum calculation.

CHECKSUM=*UNCHANGED
The setting for the CHECKSUM option remains unchanged.

CHECKSUM=*BY-BCAM
The CHECKSUM calculation is performed in BCAM.

CHECKSUM=*BY-DEVICE
The CHECKSUM calculation is performed in the device.

Command logging

If processing is successful the message BCA0668 appears, if it is negative the message BCA06B8. If processing is positive the messages BCA05D0, BCA05D1, BCA05D6 and BCA05D7 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
2	0	BCA05D5	VLAN device not deactivated
2	0	BCA06B8	MODIFY-VLAN-DEVICE command aborted
0	1	BCA0768	Syntax error in command
0	64	BCA07A5	VLAN device not found
0	64	BCA05D5	VLAN device not deactivated
0	64	BCA07E5	NEW-DEVICE-NAME already exists
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Examples

1. Modify VLAN device setting

   ```
   /MODIFY-VLAN-DEVICE DEVICE-NAME=L#DEV#1,SLOW-POLL=*ON
   ```

2. Modify device definition of a VLAN device

   ```
   /MODIFY-VLAN-DEVICE DEVICE-NAME=L#DEV#1,WRITE-DEVICE=W6,READ-DEVICE=R6
   ```

MODIFY-VLAN-LINE / MDVLLN: Modify VLAN line

You use the MODIFY-VLAN-LINE command to modify options and/or attributes of a VLAN line dynamically.

The alias name MDVLLN exists for the MODIFY-VLAN-LINE command in order to provide SNMP support.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
x	x	x		

List of valid command sources

MODIFY-VLAN-LINE / **MDVLLN**

LINE-NAME = <composed-name 1 .. 8>

,**NEW-LINE-NAME** = ***SAME** / <composed-name 1 .. 8>

,**SLOW-POLL** = ***UNCHANGED** / ***ON** / ***OFF**

,**BROADCAST** = ***UNCHANGED** / ***ON** / ***OFF**

,**MULTICAST** = ***UNCHANGED** / ***ON** / ***OFF**

,**AUTO-ROUTE-SWITCHING** = ***UNCHANGED** / ***ON** / ***OFF**

,**ROUTE-RESWITCHING** = ***UNCHANGED** / ***ON** / ***OFF**

,**IPV6-VLAN-AUTO-CONF** = ***UNCHANGED** / ***ON** / ***OFF**

,**DUP-ADDR-DETECTION** = ***UNCHANGED** / ***ON (...)** / ***OFF** / ***STD**

***ON**(...)

| **TRANSMIT-NUMBER** = ***STD** / <integer 1..10>

,**ADDR-CONFLICT-DETECT** = ***UNCHANGED** / ***ON (...)** / ***OFF** / ***STD**

***ON**(...)

| **TRANSMIT-NUMBER** = ***STD** / <integer 1..10>

,**TIMEOUT-PROCESSING** = ***UNCHANGED** / ***DEACTIVATE-LINE** / ***KEEP-LINE**

,**MAX-LPDU-SIZE** = ***UNCHANGED** / ***STD** / ***BY-DEVICE** / <integer 1514 .. 65535>

LINE-NAME=<composed-name 1..8>
Current name of the line that is to be modified.

NEW-LINE-NAME=...
New name of the VLAN line.

> The line-name can only be changed if the line is deactivated.

NEW-LINE-NAME=*SAME
The name of the VLAN line remains unchanged.

NEW-LINE-NAME=<composed-name 1..8>
New name of the VLAN line.

SLOW-POLL=...
The SLOW-POLL option is modified.
You cannot change this option unless the LAN protocol CSMACD is running on the line.

SLOW-POLL=*UNCHANGED
The setting for the SLOW-POLL option remains unchanged.

SLOW-POLL=*ON
The SLOW-POLL option is activated.

SLOW-POLL=*OFF
The SLOW-POLL option is deactivated.

BROADCAST=...
The BROADCAST option is modified.
You cannot change this option unless the LAN protocol CSMACD is running on the line.

BROADCAST=*UNCHANGED
The setting for the BROADCAST option remains unchanged.

BROADCAST=*ON
The BROADCAST option is activated.

BROADCAST=*OFF
The BROADCAST option is deactivated.

MULTICAST=...
The MULTICAST option is modified.
You cannot change this option unless the LAN protocol CSMACD is running on the line.

MULTICAST=*UNCHANGED
The setting for the MULTICAST option remains unchanged.

MULTICAST=*ON
The MULTICAST option is activated.

MULTICAST=*OFF
The MULTICAST option is deactivated.

AUTO-ROUTE-SWITCHING=...
The AUTO-ROUTE-SWITCHING option is modified.
You cannot change this option unless the LAN protocol CSMACD is running on the line.

AUTO-ROUTE-SWITCHING=*UNCHANGED
The setting for the AUTO-ROUTE-SWITCHING option remains unchanged.

AUTO-ROUTE-SWITCHING=*ON
The AUTO-ROUTE-SWITCHING option is activated.

AUTO-ROUTE-SWITCHING=*OFF
The AUTO-ROUTE-SWITCHING option is deactivated.

ROUTE-RESWITCHING=...
The ROUTE-RESWITCHING option is modified.
You cannot change this option unless the LAN protocol CSMACD is running on the line.

ROUTE-RESWITCHING=*UNCHANGED
The setting for the ROUTE-RESWITCHING option remains unchanged.

ROUTE-RESWITCHING=*ON
The ROUTE-RESWITCHING option is activated.

ROUTE-RESWITCHING=*OFF
The ROUTE-RESWITCHING option is deactivated.

IPV6-VLAN-AUTO-CONF=...
The IPV6-VLAN-AUTO-CONF option is modified.
You cannot change this option unless the LAN protocol CSMACD is running on the line.

IPV6-VLAN-AUTO-CONF=*UNCHANGED
The setting for the IPV6-VLAN-AUTO-CONF option remains unchanged.

IPV6-VLAN-AUTO-CONF=*ON
The IPV6-VLAN-AUTO-CONF option is activated.

IPV6-VLAN-AUTO-CONF=*OFF
The IPV6-VLAN-AUTO-CONF option is deactivated.

DUP-ADDR-DETECTION=...
This parameter is used to set Duplicate Address Detection on a line-specific basis.Comment:
If the VLAN line is in a redundant relationship with other VLAN lines, the settings for Duplicate Address Detection for IPv6 are also adjusted accordingly for these VLAN lines.

DUP-ADDR-DETECTION= * UNCHANGED
The previous setting remains unchanged.
Default: Duplicate Address Detection is performed, and the Transmit number is set to 1.

DUP-ADDR-DETECTION=*ON(...)
Duplicate Address Detection is performed.

TRANSMIT-NUMBER=<integer 1..10>
The number of Transmits is set.

TRANSMIT-NUMBER=*STD
The number of Transmits is set to the default value 1.

DUP-ADDR-DETECTION=*OFF
Duplicate Address Detection is not performed.

DUP-ADDR-DETECTION=*STD
Duplicate Address Detection is performed using the default setting.

ADDR-CONFLICT-DETECT=...
This parameter is used to set IP Address Conflict Detection on a line-specific basis.Comment:
If the VLAN line is in a redundant relationship with other VLAN lines, the settings for Duplicate Address Detection for IP are also adjusted accordingly for these VLAN lines.

ADDR-CONFLICT-DETECT= * UNCHANGED
The current setting is not changed.
Default: IP Address Conflict Detection is performed and the transmit number is 3.

ADDR-CONFLICT-DETECT=*ON(...)
IP Address Conflict Detection is performed.

TRANSMIT-NUMBER=<integer 1..10>
The number of transmits is set.

TRANSMIT-NUMBER=*STD
The number of transmits is set to the default value 3.

ADDR-CONFLICT-DETECT=*OFF
IP Address Conflict Detection is not performed.

ADDR-CONFLICT-DETECT=*STD
IP Address Conflict Detection is performed with the default setting.

TIMEOUT-PROCESSING=...
Specifies whether a VLAN line is maintained or deactivated following a timeout on this line when line supervision is active (LINE-SUPERVISION in the BCOPTION / MODIFY-BCAM-OPTIONS command).
You cannot change this option unless the LAN protocol CSMACD is running on the line.

TIMEOUT-PROCESSING=*UNCHANGED
The setting for the TIMEOUT-PROCESSING option remains unchanged.
Default: *KEEP-LINE

TIMEOUT-PROCESSING=*KEEP-LINE
The VLAN line is maintained in the event of a timeout if line supervision is set.

TIMEOUT-PROCESSING=*DEACTIVATE-LINE
The VLAN line is deactivated in the event of a timeout if line supervision is set.

MAX-LPDU-SIZE=...
The MAX-LPDU-SIZE attribute is modified.

A prerequisite for modifying MAX-LPDU-SIZE is that the L2 profile ETHERNET is used on the line. The MAX-LPDU-SIZE value is limited by the maximum size specified by the VLAN device.

> The MAX-LPDU-SIZE can be modified only when the VLAN line is deactivated.

MAX-LPDU-SIZE=*UNCHANGED
The MAX-LPDU-SIZE attribute remains unchanged.

MAX-LPDU-SIZE=*STD
The LPDU length is modified to the ETHERNET value (1514 bytes).

MAX-LPDU-SIZE=*BY-DEVICE
The LPDU length is modified to the value read by the device.

MAX-LPDU-SIZE=<integer 1514..65535>
The LPDU length is modified to the value specified (in bytes).

Command logging

If processing is successful the message BCA0669 appears, if it is negative the message BCA06B9. If processing is positive the messages BCA07D0, BCA07D1, BCA07D6 and BCA07D7 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	1	BCA0768	Syntax error in command
2	0	BCA05E5	VLAN line not deactivated
2	0	BCA06B9	MODIFY-VLAN-LINE command aborted
0	64	BCA07AA	VLAN line name not found
0	64	BCA07E2	NEW-LINE-NAME already exists
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Example

Modify VLAN line option

```
/MODIFY-VLAN-LINE LINE-NAME=L#VLAN#1,SLOW-POLL=*ON
```

PICK-BCAM-INFO / PKBCI: Finding information in the output

With the PICK-BCAM-INFO command you can filter the SYSOUT output of BCAM-SHOW commands and BCAM tools for a specific string. Only the relevant elements will be output.

You can apply PICK-BCAM-INFO to the following commands and tools:

- BCSHOW
- All BCAM SHOW-xxx commands
- The tools NETSTAT, NSLOOKUP, PING4 and PING6

This command is based on existing openNet Server functions.

PICK-BCAM-INFO can only be used in dialogue and is used for diagnostics.

This command can be run with every account.

The alias name for PICK-BCAM-INFO is PKBCI.

BS2000 console	BS2000-SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

PICK-BCAM-INFO / **PKBCI**
CMD=<text 0..1800 case sensitive> / <c-string 0..1800>
,SEARCH = ***NONE** / <text 0..1800 case sensitive>
,OUTPUT = ***SYSOUT** / <filename_1..54>

CMD=<text 0..1800 case sensitive> / <c-string 0..1800>
specifies the command or tool, in whose output a string should be searched.

OUTPUT=...
Specifies the output medium.

OUTPUT=*SYSOUT
The output is sent to SYSOUT.

OUTPUT=<filename_1..54>
Output takes place to a file with the specified name. The specified file is overwritten, if it already exists.

SEARCH=...
specifies the search string that is to be searched for in the output information. Wildcards are supported.

SEARCH=*NONE
There is no search string specified, i.e. the complete command or tool output is shown in SYSOUT format.

SEARCH=<text 0..1800 case sensitive>
String to be searched for. Only (logical) rows that contain the specified string are shown.

Command logging

Usually, an output is created for the requested information.
For the description of the possible error messages during command processing, please see the following table.

Command return codes

(SC2)	SC1	Maincode	Bedeutung
0	0	CMD0001	No error
0	1	CMD0202	Syntax error

Note

Due to procedural command processing, there are no detailed command return codes. An output will always be created, unless a syntax error was found in the command.

Example

Information output on the netstat tool:

```
/PICK-BCAM-INFO CMD=netstat,SEARCH=L#LAN
```

PREP-BCAM-INFO-MSG / PPBCIM: Find information in prepared BCAM notification output

With the PREP-BCAM-INFO-MSG command you can filter the output of notification based BCAM-SHOW commands for a specific string. The output is adjusted according to the notification inserts and is therefore easy to read.

Only the notifications that contain the specified string are displayed.

PREP-BCAM-INFO-MSG can only be used in dialogue and is used for diagnostics.

The alias name for PREP-BCAM-INFO-MSG is PPBCIM.

BS2000 console	BS2000-SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

PREP-BCAM-INFO-MSG / **PPBCIM**
CMD=<text 0..1800 case sensitive> / <c-string 0..1800>
,SEARCH = ***NONE** / <text 0..1800 case sensitive>
,OUTPUT = *SYSOUT / <filename_1..54>

CMD=<text 0..1800 case sensitive> / <c-string 0..1800>
specifies the command, in whose output a string should be searched.

OUTPUT=...
Specifies the output medium.

> **OUTPUT=*SYSOUT**
> The output is sent to SYSOUT.
>
> **OUTPUT=<filename_1..54>**
> Output takes place to a file with the specified name. The specified file is overwritten, if it already exists.

SEARCH=...
specifies the search string that is to be searched for in the output information.

> **SEARCH=*NONE**
> There is no search string specified, i.e. the complete command output is shown in prepared SYSOUT format.
>
> **SEARCH=<text 0..1800 case sensitive>**
> String to be searched for. Only the notifications that contain the specified string are prepared and displayed.

Command logging

Usually, an output is created for the requested information.
For the description of the possible error messages during command processing, please see the following table.

Command return codes

(SC2)	SC1	Maincode	Bedeutung
0	0	CMD0001	No error
0	1	CMD0202	Syntax error

Note

Due to procedural command processing, there are no detailed command return codes. An output will always be created, unless a syntax error was found in the command.

Example

Output of the prepared connectivity information:

```
/PREP-BCAM-INFO-MSG CMD=SHOW-CONN,SEARCH=MCH
```

SET-COMMUNICATION-TRACE: Control DCM-DIAG

You use the SET-COMMUNICATION-TRACE command to control the diagnostic tool DCM-DIAG, provided the DCM-DIAG subsystem has already been successfully started.

For more information on the DCM-DIAG diagnostic tool and trace file, see "The DCM-DIAG diagnostic tool" and "The DCM-DIAG diagnostic tool".

SET-COMMUNICATION-TRACE is not a console command.

SET-COMMUNICATION-TRACE Controlling DCM-DIAG

SELECT = ***TSN**(...) / ***UID**(...)

***TSN**(...)

| **TSN = *OWN** / ***ALL** / <alphanum-name 1 .. 4>

***UID**(...)

| **UID = *OWN** / <alphanum-name 1 .. 8>

,**CMX = *UNCHANGED** / ***NONE** / ***ALL** / list-poss(6): ***ATTACH-DETACH** / ***NAME-ADDRESS** / ***CONNECT** /

***TRANSPORT** / ***OTHERS** / ***INTERN**

,**EXTERNAL-USER = *NONE** / ***USER-ATTRIBUTES**(...)

***USER-ATTRIBUTES**(...)

| **NAME-OF-USER =** <alphanum-name 1 .. 8>

| ,**TRACE-INFORMATION =** <c-string 1 .. 30> / <x-string 1 .. 60>

SELECT=*TSN(...) / *UID(...)
Specifies the selection criterion

***TSN(TSN=...)**
The selection criterion is the TSN. Users only have access to their own TSNs. The administrator may access a foreign (or external) TSN, provided he or she has TSOS or NET-ADMINISTRATION privileges.

TSN=*OWN
*OWN means that the trace is performed for the user s own task (default value).

TSN=*ALL
*ALL is primarily intended for system administrators. It selects all TSN's and the event is distributed to all BCAM users.

TSN=<alphanum-name 1..4>
Specifies the TSN of the task for which the trace criteria of one or more communication components are modified.

***UID(UID=...)**
The selection criterion is the User ID. Users may only specify their own User IDs.

***UID=*OWN**
The trace criteria for one or more communication components running under the own user ID are modified.

UID=<alphanum-name 1..8>
The trace criteria for one or more communication components running under the specified user ID are modified. If the specified user ID is a foreign user ID, TSOS or NET-ADMINISTRATION privileges are required.

CMX=...
Defines the trace criteria for the CMX component.
Changes in the trace setting only take effect after the next action of the corresponding applications.

CMX=*UNCHANGED
The trace settings are not changed (default value).

CMX=*NONE
No further trace records are output; the trace file is closed.

CMX=*ALL
All traces are generated.

CMX=*ATTACH-DETACH
Functions related to attaching/detaching CMX.

CMX=*NAME-ADDRESS
Calls to name and address management.

CMX=*CONNECT
Functions that set up, clear, or redirect connections.

CMX=*TRANSPORT
Calls to send and receive normal and priority data.

CMX=*OTHERS
Functions not belonging to one of the above groups.

CMX=*INTERN
The calls to BS2000 functions are output with the passed parameters and return code as trace records.

EXTERNAL-USER=...
Settings of the trace information for external users.

EXTERNAL-USER=*NONE
No trace settings for external users are specified.

EXTERNAL-USER=*USER-ATTRIBUTES (...)
Trace settings for external users are specified.

NAME-OF-USER=<alphanum-name 1..8>
In this field, the external user specifies a name comprising up to 8 alphanumeric characters. This name is used to construct the file name for the trace file. It is also used as the TRACE name for TEDDY (LIST / TRACE). In addition, the name specified here is used to verify whether the component involved was actually intended.

TRACE-INFORMATION=<c-string 1..30> / <x-string 1..60>
In this 30-character area, the external user enters his or her trace information. Any arbitrary information can be entered by the user here, since the /SET-COMMUNICATION-TRACE command only forwards the information without evaluating it.

List of messages

```
YDT0000  SET-COMM-TRACE EXECUTED SUCCESSFULLY FOR (&&00)
YDT0001  SET-COMM-TRACE HAS NO EFFECT
YDT0002  TRACE CRITERIA FOR COMPONENT (&&00) MODIFIED
YDT0003  TRACE CRITERIA FOR EXTERNAL USER (&&00) MODIFIED
YDT1001  BCAM ERROR: (&&00) ON T-DIAGDATA-SEND
YDT1002  ERROR ON PARAMETER (&&00)
YDT1003  IT IS NOT POSSIBLE TO SPECIFY A FOREIGN TSN ((&&00))
YDT1004  IT IS NOT POSSIBLE TO SPECIFY A FOREIGN UID ((&&00))
YDT1005  ONLY KEYWORD (&&00) IS ALLOWED
YDT1006  NO EVENT GROUP FOR (&&00) FOUND
YDT1007  NO TASK FOR TSN (&&00) FOUND
YDT1008  USERID (&&00) DOES NOT EXIST
```

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	NO ERROR
0	1	CMD0202	Error in command
0	32	YDT1001	See message YDT1001
0	1	YDT1002	See message YDT1002
0	64	YDT1003	See message YDT1003
0	64	YDT1004	See message YDT1004
0	1	YDT1005	See message YDT1005
0	1	YDT1006	See message YDT1006
0	1	YDT1007	See message YDT1007
0	1	YDT1008	See message YDT1008

SHOW-ADDRESS-ASSIGNMENT / SHADA: Show information about BCAM gateway tables

You use the SHOW-ADDRESS-ASSIGNMENT command to output information about the defined BCAM gateways tables.

The alias name SHADA exists as an SDF alias for SHOW-ADDRESS-ASSIGNMENT.

This command can be executed with the STD-PROCESSING privilege.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-ADDRESS-ASSIGNMENT / **SHADA**
HOST-NAME = ***STD** / ***ALL** / <composed-name 1 .. 8>
,**INFORMATION** = ***ALL** / list-poss (3): ***IP** / ***IPV6** / ***ISO**
,**OUTPUT** = ***SYSOUT** / ***SYSLST**
,**OUTPUT-FORMAT** = ***STD** / ***GENERATING-CMD**

HOST-NAME=...
Defines the host.

HOST-NAME=*STD
Output takes place for the real host.

HOST-NAME=*ALL
Output takes place for all hosts.

HOST-NAME=<composed-name 1..8>
Output takes place for the specified host.

INFORMATION=...
Selects which gateway tables are to be output.

INFORMATION=*ALL
Displays all permitted BCAM gateway tables.

INFORMATION=*IP
Displays the IP gateway table.

INFORMATION=*IPV6
Displays the IPV6 gateway table.

INFORMATION=*ISO
Displays the INTF gateway table.

OUTPUT=...
Defines the output medium.

OUTPUT=*SYSOUT
Output takes place to SYSOUT.

OUTPUT=*SYSLST
Output takes place to SYSLST.

OUTPUT-FORMAT=...
Defines the output format.

OUTPUT-FORMAT=*STD
Standard output format.

OUTPUT-FORMAT=*GENERATING-CMD
The output format corresponds to the generating commands.

Command logging

A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Operand error
0	32	CMD0221	System error
0	64	CMD0216	Privilege not sufficient
0	64	BCA0203	Interface (&00) returns RC (&01)
0	64	BCA0291	Gateway table not found

Examples

Show the gateway tables in BCAM for the standard host (real host):

```
/SHOW-ADDRESS-ASSIGNMENT INFORMATION=*ALL
/SHOW-ADDRESS-ASSIGNMENT INFORMATION=*IP
/SHOW-ADDRESS-ASSIGNMENT INFORMATION=*IP,OUTPUT=*SYSLST
```

S variables

The command's INFORMATION operand defines the S variables to which values are assigned. Possible values for **INF**ORMATION are ***ALL**, ***IP**, ***IPV6** and ***ISO**.

Output information	Name of the S variable	Data type	Content	Condition
Route name of the IP router route	var(*LIST).IP.RTR-ROUT-NAME	string	<c-string 1..8>	INF=*ALL/*IP O-F=*STD
IP address of the router route	var(*LIST).IP.RTR-IP-ADDR	string	<c-string 7..15>	INF=*ALL/*IP O-F=*STD
Local IP address of the router route	var(*LIST).IP.RTR-OWN-IP-ADDR	string	<c-string 7..18>	INF=*ALL/*IP O-F=*STD
Host name to which the IP router route was assigned	var(*LIST).IP.HOST-NAME	string	<c-string 1..8>	INF=*ALL/*IP O-F=*STD
IP-NET indicator	var(*LIST).IP.INDICATOR	string	*UNKNOWN/ *ADDR/ *IP-RANGE	INF=*ALL/*IP O-F=*STD
Start of the permitted range of IP addresses	var(*LIST).IP.IP-RANGE.FROM	string	<c-string 7..15>	INF=*ALL/*IP O-F=*STD
End of the permitted range of IP addresses	var(*LIST).IP.IP-RANGE.TO	string	<c-string 7..15>	INF=*ALL/*IP O-F=*STD
IP address(/prefix)	var(*LIST).IP.IP-ADDR	string	<c-string 7..15>	INF=*ALL/*IP O-F=*STD
Route name of the IPV6 router route	var(*LIST).IPV6.RTR-ROUT-NAME	string	<c-string 1..8>	INF=*ALL/*IPV6 O-F=*STD
IPV6 address of the router route	var(*LIST).IPV6.RTR-IPV6-ADDR	string	<c-string 9..44>	INF=*ALL/*IPV6 O-F=*STD
Local IPV6 address of the router route	var(*LIST).IPV6.RTR-OWN-IPV6-ADDR	string	<c-string 9..48>	INF=*ALL/*IPV6 O-F=*STD
Host name to which the IPV6 route was assigned	var(*LIST).IPV6.HOST-NAME	string	<c-string 1..8>	INF=*ALL/*IPV6 O-F=*STD
IPV6-NET indicator	var(*LIST).IPV6.INDICATOR	string	*UNKNOWN/ *ADDR	INF=*ALL/*IPV6 O-F=*STD
IPV6 address range defined by an IPV6 prefix	var(*LIST).IPV6.IPV6-PREFIX	string	<c-string 9..48>	INF=*ALL/*IPV6 O-F=*STD

Route name of the INTF router route	var(*LIST).ISO.RTR-ROUT-NAME	string	<c-string 1..8>	INF=*ALL /*ISO O-F=*STD
INTF address of the router route	var(*LIST).ISO.RTR-ISO-ADDR	string	<c-string 6..20>	INF=*ALL /*ISO O-F=*STD
Local INTF address of the INTF router route	var(*LIST).ISO.RTR-OWN-ISO-ADDR	string	<c-string 6..20>	INF=*ALL /*ISO O-F=*STD
Host name to which the INTF router route was assigned	var(*LIST).ISO.HOST-NAME	string	<c-string 1..8>	INF=*ALL /*ISO O-F=*STD
ISO-NET indicator	var(*LIST).ISO.INDICATOR	string	*UNKNOWN/ *ADDR	INF=*ALL /*ISO O-F=*STD
INTF address range defined by an INTF address	var(*LIST).ISO.ISO-PREFIX	string	<c-string 6..20>	INF=*ALL /*ISO O-F=*STD
Generating command	var(*LIST).GENERATING-CMD(*LIST)	string	<text 1..256>	INF=<any> O-F=*GEN

SHOW-AEC-OPTIONS / SHAECO: Show information on automatic end system creation

You use the SHOW-AEC-OPTIONS command to output information about automatic end system creation (AEC).

The alias name SHAECO exists as an SDF alias for SHOW-AEC-OPTIONS.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-AEC-OPTIONS / **SHAECO**
INFORMATION = ***ALL** / list-poss (3): ***IP** / ***IPV6** / ***ISO**
,**OUTPUT** = ***SYSOUT** / ***SYSLST**
,**OUTPUT-FORMAT** = ***STD** / ***GENERATING-CMD**

INFORMATION=...
Specifies which AEC options are to be displayed.

INFORMATION=*ALL
All AEC options are displayed.

INFORMATION=*IP
IP-specific AEC options are displayed.

INFORMATION=*IPV6
IPv6-specific AEC options are displayed.

INFORMATION=*ISO
ISO-specific AEC options are displayed.

OUTPUT=...
Defines the output medium.

OUTPUT=*SYSOUT
Output takes place to SYSOUT.

OUTPUT=*SYSLST
Output takes place to SYSLST.

OUTPUT-FORMAT=...
Defines the output format.

OUTPUT-FORMAT=*STD
Standard output format.

OUTPUT-FORMAT=*GENERATING-CMD
The output format corresponds to the generating commands.

Command logging

A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Operand error
0	32	CMD0221	System error
0	64	CMD0216	Privilege not sufficient
0	64	BCA0203	Interface (&00) returns RC (&01)

Examples

Show all BCAM AEC options:

```
/SHOW-AEC-OPTIONS INFORMATION=*ALL
```

Show BCAM AEC options for IP:

```
/SHOW-AEC-OPTIONS INFORMATION=*IP
```

S variables

The command's INFORMATION operand defines the S variables to which values are assigned. Possible values for **INF**ORMATION are ***ALL**, ***IP**, ***IPV6**, and ***ISO** (in the table the values printed in bold are used).

Output information	Name of the S variable	Data type	Content	Condition
AEC because of IP incoming data	var(*LIST).IP.IN-DATA	string	*ON *OFF	INF=*ALL/*IP O-F=*STD
AEC because of IP outgoing data	var(*LIST).IP.OUT-DATA	string	*ON *OFF	INF=*ALL/*IP O-F=*STD
AEC because of IP routing data	var(*LIST).IP.ROUT-DATA	string	*ON *OFF	INF=*ALL/*IP O-F=*STD
AEC because of IP routing protocol	var(*LIST).IP.ROUT-PROTOCOL	string	*ON *OFF	INF=*ALL/*IP O-F=*STD
AEC because of IP incoming broadcast	var(*LIST).IP.IN-BROADCAST	string	*ON *OFF	INF=*ALL/*IP O-F=*STD
AEC because of IP incoming multicast	var(*LIST).IP.IN-MULTICAST	string	*ON *OFF	INF=*ALL/*IP O-F=*STD
AEC because of IP SNMP	var(*LIST).IP.SNMP	string	*ON *OFF	INF=*ALL/*IP O-F=*STD
AEC because of IPv6 incoming data	var(*LIST).IPV6.IN-DATA	string	*ON *OFF	INF=*ALL/*IPV6 O-F=*STD
AEC because of IPv6 outgoing data	var(*LIST).IPV6.OUT-DATA	string	*ON *OFF	INF=*ALL/*IPV6 O-F=*STD
AEC because of IPv6 routing protocol	var(*LIST).IPV6.ROUT-PROTOCOL	string	*ON *OFF	INF=*ALL/*IPV6 O-F=*STD
AEC because of IPv6 incoming multicast	var(*LIST).IPV6.IN-MULTICAST	string	*ON *OFF	INF=*ALL/*IPV6 O-F=*STD
AEC because of ISO incoming data	var(*LIST).ISO.IN-DATA	string	*ON *OFF	INF=*ALL/*ISO O-F=*STD
AEC because of ISO outgoing data	var(*LIST).ISO.OUT-DATA	string	*ON *OFF	INF=*ALL/*ISO O-F=*STD
AEC because of ISO routing data	var(*LIST).ISO.ROUT-DATA	string	*ON *OFF	INF=*ALL/*ISO O-F=*STD
AEC because of ISO routing protocol	var(*LIST).ISO.ROUT-PROTOCOL	string	*ON *OFF	INF=*ALL/*ISO O-F=*STD

Generating command	var(*LIST).GENERATING-CMD (*LIST)	string	<text 1..256>	INF=<any> O-F=*GEN

SHOW-APPLICATION / SHAP: Output information on applications

You use the SHOW-APPLICATION command to output information on an application.

The alias name SHAP exists for SHOW-APPLICATION.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x	x			

List of valid command sources

SHOW-APPLICATION / **SHAP**

APPLICATION = ***ALL** / [***NEA**](...) / ***OSI**(...) / ***SOCKETS**(...) / ***PORT**(...) / ***NUMBER**(...)

*[**NEA**](...)

| **NEA-NAME** = <text 1 .. 16> / <c-string 1 .. 16>

***OSI**(...)

| **OSI-NAME** = <text 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>

***SOCKETS**(...)

| **SOCKET-NAME** = <text 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>

***PORT**(...)

| **PORT-NUMBER** = <integer 1 .. 65535> / <x-string 1 .. 4>

***NUMBER**(...)

| **APPLICATION-NUMBER** = <integer 0 .. 2147483647> / <x-string 1 .. 8>

,**SELECT** = ***ALL** / [***BY-ATTRIBUTES**](...)

[***BY-ATTRIBUTES**](...)

| **JOB-IDENTIFICATION** = ***ANY** / ***TID**(...) / ***TSN**(...)

| ***TID**(...)

| | **TID** = <x-string 1 .. 8>

| ***TSN**(...)

| | **TSN** = <alphanum-name 1 .. 4>

| ,**INTERFACE** = ***ANY** / ***NEA** / ***ISO** / ***STREAMS** / ***SOCKETS**

,**MAX-MSG-NUMBER** = ***STD** / <integer 1 .. 2147483647>

APPLICATION=...
Name of the application for which information is output.
The information is displayed with console message BCA08E7.

APPLICATION=*ALL
Information for all existing applications is output.

APPLICATION=[*NEA](...)
Information for applications with a NEA application name is output.

NEA-NAME=<text 1..16> / <c-string 1..16>
NEA application name of the application for which information is output.

APPLICATION=*OSI(...)
Information for applications and OSI application names are output.

OSI-NAME=<text 1..78> / <c-string 1..78> / <x-string 1..156>
OSI app5lication name of the application for which information is output.

APPLICATION=*SOCKETS(...)
Information for applications with SOCKET application names is output.

SOCKET-NAME=<text 1..78> / <c-string 1..78> / <x-string 1..156>
SOCKET application name of the application for which information is output.

APPLICATION=*PORT(...)
Information for applications which are identified by means of TCP/IP port numbers is output.

PORT-NUMBER=<integer 1..65535> / <x-string 1..4>
TCP/IP port number of the application for which information is output.

APPLICATION=*NUMBER(...)
Information for applications which are identified by means of BCAM-internal application numbers are output.

APPLICATION-NUMBER=<integer 0..2147483647> / <x-string 1..8>BCAM-internal application number of the application for which information is output.

SELECT=...
Criterion used to search for an application.

SELECT=*ALL
Information for all existing applications is output.

SELECT=[*BY-ATTRIBUTES](...)
Information is output for applications which meet the following criteria.

JOB-IDENTIFICATION=...
Information is output for applications which are logged on under a given task.

JOB-IDENTIFICATION=*ANY
Information for all existing applications is output.

JOB-IDENTIFICATION=*TID(...)
Information is output for applications that were logged on under a given task ID.

TID=<x-string 1..8>
Information is output for applications that were logged on under this task ID.

JOB-IDENTIFICATION=*TSN(...)
Information is output for applications that were logged on under a given TSN.

TSN=<alphanum-name 1..4>
Information is output for applications that were logged on under this TSN.

INTERFACE=...
Information is output for applications which use a specific interface functionality.

INTERFACE=*ANY
Information for all existing applications is output.

INTERFACE=*NEA
Information for applications that use NEA interface functionality is output.

INTERFACE=*ISO
Information for applications that use NEA ISO functionality is output.

INTERFACE=*STREAMS
Information for applications that use STREAMS (SOCKETS) interface functionality is output.

INTERFACE=*SOCKETS
Information for applications that use STREAMS (SOCKETS) interface functionality is output.

MAX-MSG-NUMBER=...
Maximum number of messages that may be output for this command.

MAX-MSG-NUMBER=*STD
A maximum of 50 messages may be output at SYSOUT and a maximum of 10 at the console.

MAX-MSG-NUMBER=<integer 1..2147483647>
Maximum number of messages that may be output for this command.

> The number of messages issued can be exceeded when information is output because of the restricted output length of a message.
> Multiple messages are frequently output for BCAM objects. Within BCAM these messages are counted as just one message.
> In some cases the message BCA0765 is also issued in order to facilitate the assignment of the output information to the specified command.

Command logging

Positive acknowledgments are supplied in news BCA0720 and negative acknowledgments in news BCA0728 followed by the message NBR0740. If processing is positive the message BCA08E7 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	1	BCA0768	Syntax error in command
0	64	BCA0791	Application not found
0	64	BCA08EF	Nothing found to display
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	128	BCA0766	BCAM is not active

Example

Display applications

```
/SHOW-APPLICATION
```

Equivalent BCSHOW command:

```
/BCSHOW SHOW=APPLICATION
```

SHOW-APPLICATION-BASICS / SHAPBA: Output information on applications

You use the SHOW-APPLICATION-BASICS command to display information on applications which are selected by means of a search string. This command is based on existing BCAM functions.

SHOW-APPLICATION-BASICS may only be employed in interactive mode and is used for diagnostic purposes.

The alias for SHOW-APPLICATION-BASICS is SHAPBA.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-APPLICATION-BASICS / **SHAPBA**
INFORMATION=*APPLICATION / ***TSAP-OPEN** / ***CONNECTION**
,MAX-OBJECT-NUMBER = *STD / <integer 1 .. 2147483647>
,OUTPUT = *SYSOUT / <filename_1..54>
,SEARCH = ***NONE** / <text 1..78>

INFORMATION=...
Specifies the scope of the information output.

INFORMATION=*APPLICATION
Information on applications is to be output.

INFORMATION=*TSAP-OPEN
Only information on TSAP-Open is to be output.

INFORMATION=*CONNECTION
Only information on connections is to be output.

MAX-OBJECT-NUMBER=...
Maximum number of objects that may be output for this command.

MAX-OBJECT-NUMBER=*STD
A maximum of 50 objects may be output.

MAX-OBJECT-NUMBER=<integer 1..2147483647>
Maximum number of objects that may be output for this command.

OUTPUT=...
Specifies the output medium.

OUTPUT=*SYSOUT
The output is sent to SYSOUT.

OUTPUT=<filename_1..54>
Output takes place to a file with the specified name.

SEARCH=...
Specifies a search string which is to be searched for in the output information.

SEARCH=*NONE
No search string is specified.

SEARCH=<text 1..78>
Search string which is to be searched for.

Command logging

Positive acknowledgments result in the required information being output.
A description of the error messages that can be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Syntax error

Note

More detailed command return codes are not provided owing to the procedural processing of the command. An output always takes place unless a syntax error was detected in the command.

Example

Output of the connection information for a name:

```
/SHOW-APPLICATION-BASICS SEARCH=SOC
```

SHOW-BCAM-ADDRESS / SHBCAD: Show information on addresses

You use the SHOW-BCAM-ADDRESS command to show information on addresses which is selected by means of a search string. This command is based on existing BCAM functions.

SHOW-BCAM-ADDRESS can only be used in interactive mode and is designed for diagnostic purposes.

The alias for SHOW-BCAM-ADDRESS is SHBCAD.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-BCAM-ADDRESS / **SHBCAD**
SELECT=*OWN / ***PARTNER** / ***ALL** **,INFORMATION** = ***ADDR-STATUS** / ***STATUS** / ***SHOW-CMDS** / ***ENVIRONMENT-CMDS** / ***TRANSFER-DATA** **,OUTPUT = *SYSOUT** / <filename_1..54> **,SEARCH** = ***NONE** / <text 0..1800 case sensitive>

SELECT=...
Specifies the scope of the information output.

SELECT=*OWN
Information about own addresses is output.

SELECT=*PARTNER
Information about partner addresses is output.

SELECT=*ALL
Information about all addresses is output.

INFORMATION=...
Specifies the type of the information output.

INFORMATION=*ADDR-STATUS
The address status is output.

INFORMATION=*STATUS
The address status and the line/VLAN line status are output.

INFORMATION=*SHOW-CMDS
In addition to the status information, SHOW commands for further processing are also output.

INFORMATION=*ENVIRONMENT-CMDS
In addition to the status information, SHOW-BCAM-ENVIRONMENT commands for further processing are also output.

INFORMATION=*TRANSFER-DATA
In addition to the status information, commands for further processing are also output for showing the amount of transferred data.

OUTPUT=...
Specifies the output medium.

OUTPUT=*SYSOUT
The output is sent to SYSOUT.

OUTPUT=<filename_1..54>
Output takes place to a file with the specified name.

SEARCH=...
Specifies a search string which is to be searched for in the output information of the object which is to be output. The object-related information is always output. Wildcards are supported.

SEARCH=*NONE
No search string is specified.

SEARCH=<text 0..1800 case sensitive>
Search string which is searched for.

Command logging

In the normal case the required information is output.
A description of the error messages that can be issued during command processing is provided in the table belowlle.

Command return codes

(SC2)	SC1	Maincode	Bedeutung
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Syntax error

Note

More detailed command return codes are not provided owing to the procedural processing of the command. An output always takes place unless a syntax error was detected in the command.

Example

Output of the information for the own addresses:

```
/SHOW-BCAM-ADDRESS SELECT=*OWN
```

SHOW-BCAM-ATTRIBUTES / SHBCAM: Show mode parameters

You use the SHOW-BCAM-ATTRIBUTES command to display the settings of the BCAM mode parameters.

In order to support SNMP management, SHOW-BCAM-ATTRIBUTES can also be called under the alias SHBCAM.

BS2000-Konsole	BS2000-SDF-Kommando	Kommando-/SOF-Datei	SNMP-Management	Parameterservice
x	x	x		

List of valid command sources

SHOW-BCAM-ATTRIBUTES / **SHBCAM** Show BCAM mode parameters

SELECT = *MONITORINGS(...) / ***OPTIONS**(...) / ***PARAMETERS**(...) / ***START- PARAMETERS**(...) / * **TIMER** (...)

***MONITORINGS**(...)

| **RECORD = *ALL** , ... / list-poss (16): **TRANSFER** / **RES-MEMORY** / **TR-DATA** /

| **PAG-MEMORY** / **CONNECTIONS** / **MODIFY-CONNECTION** / **DATAGRAM** / **LOOPBACK** /

| **SIH-TIME** / **LAYER2** , ... / **L2** , ... / **LAYER4** / **L4** / **ROUTING** /

| **VLAN-DEVICE**, ... / **VLAN-LINE**, ...

| ***ALL** , ... / ...

| | **LINE = *ALL** / <line-name 1 .. 8>

| | ,**DEVICE = *ALL** / <device-name 1 .. 8>

| **LAYER2** , ... / **L2** , ...

| | **LINE = *ALL** / <line-name 1 .. 8>

| **VLAN-DEVICE** , ...

| | **DEVICE = *ALL** / <device-name 1 .. 8>

| **VLAN-LINE** , ...

| | **LINE = *ALL** / <line-name 1 .. 8>

***OPTIONS**(...)

| **OPTION = *ALL** , ... / list-poss (41):

| **AUTOMATIC-ES-CREATE** /

| **DEVICE-LPDU-SIZE-USAGE** / **IP-ROUTING** / **ISO8473-ROUTING** /

| **CMDFILE-CONTINUATION** / **BROADCAST**, ... / **MULTICAST**, ... / **CHECKSUM** /

| **ARP** / **RARP** / **ERROR-REPORT** / **ISO9542** / **AUTO-ROUTE-SWITCHING** /

```
|                    PERIODIC-FILE-ACCESS / SHORT-HOLDING-TIME /
|                    STOP-ROUTER-SEARCH / ARP-SWITCH /
|                    ROUTER-REDUNDANCE / SWITCH-LOCAL-ROUTER / SERVER-PORTS /
|                    NET-ROUTER-USAGE / REDIRECT-ON-QUERY / MSG-REPLY / SNMP-WRITE /
|                    ARP-REQUESTS-MAXIMUM / LINE-CONTINUATION /
|                    LINE-SUPERVISION / NSDU-MODIFICATION /
|                    JOIN-MULTICAST-GROUP / SLOW-POLL, ... / MAXTSDU-FOR-CREATE /
|                    REMOTE-SERVER-PORTS / IP-RANGE / IPV6 / IPV6-AUTO-CONFIG /
|                    IPV6-VLAN-AUTO-CONFIG / IPV6-PREFIX-LEN-CTRL
|                    ARP-AT-ROUTE-ACTIVATION / OSPF-USAGE / DNS-USAGE /
|      TCP-KEEP-ALIVE ,DEVICE-LPDU-SIZE-USAGE
|        *ALL, ... / BROADCAST, ... / MULTICAST, ... / SLOW-POLL, ...
|          |      LINE = *all / <line-name 1 .. 8>
*PARAMETERS(...)
|      PARAMETER = *ALL, ... / list-poss (24): CELL-DOUBLING /
|                    DISCON-RETARDING / APPL-CLOSE-MSG / ACCEPT-MSG /
|                    NET-ENTRY-CHECK / TRACE-INFO / TRACE-LENGTH,TRACE=...
|        *ALL, ...
|          |      LINE = *all / <line-name 1 .. 8>
|          |      ,DEVICE = *all / <device-name 1 .. 8>
|        TRACE-LENGTH ,TRACE=, ...
|          |      TRACE = *ALL / TRANS / PORT , ... / VLAN-DEVICE , .../ VLAN-LINE , ...
|          |        PORT , ...
|          |          |      LINE = *ALL / <line-name 1 .. 8>
|          |        VLAN-DEVICE , ...
|          |          |      DEVICE = *all / <device-name 1 .. 8>
|          |        VLAN-LINE , ...
|          |          |      LINE = *all / <line-name 1 .. 8>
*START-PARAMETERS(...)
|      START-PARAMETER = *ALL / list-poss (8): LIMITS / MSG / REMOTE-IP-NSDU /
|                    PROCESSOR-TABLE / APPLICATION-TABLE / SOCKETHOST-TABLE
```

```
    |                    FQDN-TABLE / SERVICES-TABLE

*TIMER(...)

    |       TIMER = *ALL / list-poss (16): LETT / CONN / WARN / WINDOW /

    |           CONFIGURATION / IP-LIFFETIME / INTF-LIFFETIME / I-REASSEMBLY / DATAGRAM /

    |           RETRANSMISSON / ARP-SUPERVISION / MAX-MSCF-DELAY
```

SELECT=

SELECT enables you to choose which monitoring settings, BCAM mode options, BCAM diagnostic parameters, BCAM startup parameters or timer intervals are shown.
The display occurs with the console message BCA084A.

SELECT=*MONITORINGS(RECORD=...)

Specifies which monitoring settings defined via the BCMON command (see section "BCMON: Control BCAM monitoring") are shown.
The values can also be specified as a list enclosed in parantheses (list-poss).

RECORD=*ALL

All monitoring settings are output.

LINE=...

Name of the line for which the monitoring settings are to be output.

LINE=*all

All line-specific monitoring settings are shown for all lines.

LINE=<line-name 1..8>

All line-specific monitoring settings for the line defined with <line-name> are shown.

DEVICE=...

Name of the VLAN device for which the monitoring settings are to be shown.

DEVICE=*all

All VLAN-device-specific monitoring settings are shown for all VLAN devices.

DEVICE=<device-name 1..8>

All VLAN-device-specific monitoring settings are shown for the VLAN device defined with <device-name>.

RECORD=TRANSFER

Shows the monitoring settings for connection-oriented data transfers.

RECORD=RES-MEMORY

Shows the monitoring settings for resident memory.

RECORD=TR-DATA

Shows the monitoring settings for TR memory.

RECORD=PAG-MEMORY

Shows the monitoring settings for pageable memory.

RECORD=CONNECTIONS

Shows the monitoring settings for transport connections.

RECORD=MODIFY-CONNECTION
Shows the monitoring settings for connection activities.

RECORD=DATAGRAM
Shows the monitoring settings for connectionless data transfers (UDP).

RECORD=LOOPBACK
Shows the monitoring settings for LOOPBACK data transfers.

RECORD=SIH-TIME
Shows the monitoring settings for SIH-TIME.

RECORD=LAYER2 / **L2**
Shows the monitoring settings for Layer 2.

LINE=...
Name of the line for which the Layer 2-relevant settings are shown.

LINE=*all
The Layer 2-relevant settings for all lines are shown.

LINE=<line-name 1..8>
The Layer 2-relevant settings for the line defined with <line-name> are shown.

RECORD=LAYER4 / **L4**
Shows the monitoring settings for Layer 4.

RECORD=ROUTING
Shows the monitoring settings for routing.

RECORD=VLAN-DEVICE
Shows the VLAN device settings for VLAN devices.

DEVICE=...
Name of the VLAN device for which the monitoring settings are shown.

DEVICE=*all
All VLAN-device-specific monitoring settings are shown for all VLAN devices.

DEVICE=<device-name 1..8>
All VLAN-device-specific monitoring settings are shown for the VLAN device defined with <device-name>.

RECORD=VLAN-LINE
The VLAN line settings for VLAN lines are shown.

LINE=...
Name of the VLAN line for which the monitoring settings are shown.

LINE=*all
All VLAN-line-specific monitoring settings are shown for all VLAN lines.

LINE=<line-name 1..8>
All VLAN-line-specific monitoring settings are shown for the VLAN line defined with <line-name>.

SELECT=*OPTIONS(OPTION=...)
Specifies which BCAM mode options defined via the BCOPTION command (see section "BCOPTION: Change mode options") are shown.
The values can also be specified as a list enclosed in parantheses (list-poss).

OPTION=*ALL
All BCAM mode options are shown.

LINE=...
Name of the line for which the BCAM mode options are to be shown.

LINE=*all
All line-specific BCAM mode options for all lines are shown.

LINE=<line-name 1..8>
All line-specific BCAM mode options for the line defined with <line-name> are shown.

OPTION=AUTOMATIC-ES-CREATE
Shows the setting for the "AUTOMATIC-ES-CREATE" option.

OPTION=DEVICE-LPDU-SIZE-USAGE
Shows the setting for the "DEVICE-LPDU-SIZE-USAGE" option.

OPTION=IP-ROUTING
Shows the setting for the "IP-ROUTING" option.

OPTION=ISO8473-ROUTING
Shows the setting for the "ISO8473-ROUTING" option.

OPTION=CMDFILE-CONTINUATION
The setting for the "CMDFILE-CONTINUATION" option is displayed (see section "BCOPTION: Change mode options").

OPTION=BROADCAST
Shows the setting for the "BROADCAST" option.

LINE=...
Name of the line for which the setting of the "BROADCAST" option is to be shown.

LINE=*all
The setting of the "BROADCAST" option for all lines is shown.

LINE=<line-name 1..8>
The setting of the "BROADCAST" option for the line defined with <line-name> is shown.

OPTION=MULTICAST
Shows the setting of the "MULTICAST" option.

LINE=...
Name of the line for which the setting of the "MULTICAST" option is to be shown.

LINE=*all
The setting of the "MULTICAST" option for all lines is shown.

LINE=<line-name 1..8>
The setting of the "MULTICAST" option for the line defined with <line-name> is shown.

OPTION=CHECKSUM
Shows the setting of the "CHECKSUM" option.

OPTION=ARP
Shows the setting of the "ARP" option.

OPTION=RARP
Shows the setting of the "RARP" option.

OPTION=ERROR-REPORT
Shows the setting of the "ERROR-REPORT" option.

OPTION=ISO9542
Shows the setting of the "ISO9542" option.

OPTION=AUTO-ROUTE-SWITCHING
Shows the setting of the "AUTO-ROUTE-SWITCHING" option.

OPTION=PERIODIC-FILE-ACCESS
Shows the setting of the "PERIODIC-FILE-ACCESS" option.

OPTION=SHORT-HOLDING-TIME
Shows the setting of the "SHORT-HOLDING-TIME" option.

OPTION=STOP-ROUTER-SEARCH
Shows the setting of the "STOP-ROUTER-SEARCH" option.

OPTION=ARP-SWITCH
Shows the setting of the "ARP-SWITCH" option.

OPTION=ROUTER-REDUNDANCE
Shows the setting of the "ROUTER-REDUNDANCE" option.

OPTION=SWITCH-LOCAL-ROUTER
Shows the setting of the "SWITCH-LOCAL-ROUTER" option.

OPTION=SERVER-PORTS
Shows the setting of the "SERVER-PORTS" option.

OPTION=NET-ROUTER-USAGE
Shows the setting of the "NET-ROUTER-USAGE" option.

OPTION=REDIRECT-ON-QUERY
Shows the setting of the "REDIRECT-ON-QUERY" option.

OPTION=MSG-REPLY
Shows the setting of the "MSG-REPLY" option.

OPTION=SNMP-WRITE
Shows the setting of the "SNMP-WRITE" option.

OPTION=ARP-REQUESTS-MAXIMUM
Shows the setting of the "ARP-REQUESTS-MAXIMUM" option.

OPTION=LINE-CONTINUATION
Shows the setting of the "LINE-CONTINUATION" option.

OPTION=LINE-SUPERVISION
Shows the setting of the "LINE-SUPERVISION" option.

OPTION=NSDU-MODIFICATION
Shows the setting of the "NSDU-MODIFICATION" option.

OPTION=JOIN-MULTICAST-GROUP
Shows the setting of the "JOIN-MULTICAST-GROUP" option.

OPTION=SLOW-POLL
Shows the setting of the "SLOW-POLL" option.

LINE=...
Name of the line for which the setting of the "SLOW-POLL" option is to be shown.

LINE=*all
The setting of the "SLOW-POLL" option for all lines is shown.

LINE=<line-name 1..8>
Shows the setting of the "SLOW-POLL" option for the line defined with <line-name> is shown.

OPTION=MAXTSDU-FOR-CREATE
Shows the setting of the "MAXTSDU-FOR-CREATE" option.

OPTION=REMOTE-SERVER-PORTS
Shows the setting of the "REMOTE-SERVER-PORTS" option.

OPTION=IP-RANGE
Shows the setting of the "IP-RANGE" option.

OPTION=IPV6
Shows the setting of the "IPV6" option.

OPTION=IPV6-AUTO-CONFIG
Shows the setting of the "IPV6-AUTO-CONFIG" option.

OPTION=IPV6-VLAN-AUTO-CONFIG
Shows the setting of the "IPV6-VLAN-AUTO-CONFIG" option.

OPTION=IPV6-PREFIX-LEN-CRTL
Shows the setting of the "IPV6-PREFIX-LEN-CRTL" option.

OPTION=ARP-AT-ROUTE-ACTIVATION
Shows the setting of the "ARP-AT-ROUTE-ACTIVATION" option.

OPTION=OSPF-USAGE
Shows the setting of the "OSPF-USAGE" option.

OPTION=DNS-USAGE
Shows the setting of the "DNS-USAGE" option.

OPTION=TCP-KEEP-ALIVE
Shows the setting of the "TCP-KEEP-ALIVE" option.

OPTION=DEVICE-LPDU-SIZE-USAGE
Shows the setting of the "DEVICE-LPDU-SIZE-USAGE" option.

SELECT=*PARAMETERS(PARAMETER=...)
Specifies which BCAM diagnostic parameters defined via the BCSET command (see section "BCSET: Set diagnostics and maintenance parameters") are shown.
The values can also be specified as a list enclosed in parantheses (list-poss).

PARAMETER=*ALL
All BCAM diagnostic parameters are shown.

LINE=...
Name of the line for which the BCAM diagnostic parameters are to be shown.

LINE=*all
All line-specific BCAM diagnostic parameters for all lines are shown.

LINE=<line-name 1..8>
All line-specific BCAM diagnostic parameters for the line defined with <line-name> are shown.

DEVICE=...
Name of the VLAN device for which the BCAM diagnostic parameters are shown.

DEVICE=*ALL
All device-specific BCAM diagnostic parameters for all VLAN devices are shown.

DEVICE=<device-name 1..8>
All device-specific BCAM diagnostic parameters for the VLAN device defined with <device-name> are shown.

PARAMETER=CELL-DOUBLING
The setting of the BCAM diagnostic function to "check for cell doubling" is shown.

PARAMETER=DISCON-RETARDING
The setting of the BCAM diagnostic function for "disconnect retarding", i.e. delays in clearing the transport connection, is shown.

PARAMETER=APPL-CLOSE-MSG
Shows the setting of the BCAM diagnostic function "APPLICATION CLOSED message".

PARAMETER=ACCEPT-MSG
Shows the setting of the BCAM diagnostic function "ACCEPT message".

PARAMETER=NET-ENTRY-CHECK
Shows the setting of the BCAM diagnostic function "net entry check".

PARAMETER=TRACE-INFO
Shows whether the output of additional trace information is set.

PARAMETER=TRACE-LENGTH,TRACE=...
Shows the setting of the trace lengths.

TRACE=
Defines for which traces the lengths are to be shown.

TRACE=*ALL
The length settings are shown for all traces.

TRACE=TRANS
The length settings are shown for the traces DCM.BCAM.TRANS and DCM.BCAM.LOC.

TRACE=PORT,...
The settings of the lengths for the port trace are shown.

LINE=...
Defines for which lines the length of the port trace is to be shown.

LINE=*all
The length settings for all port traces are shown.

LINE=<line-name 1..8>
The length setting for the port trace identified with <line-name> is shown.

TRACE=VLAN-DEVICE,...
The setting of the lengths for the port trace is shown.

DEVICE=...
Defines the VLAN devices for which the lengths of the V port traces are to be shown.

DEVICE=*all
The settings of the lengths are shown for all V port traces.

DEVICE=<device-name 1..8>
The length setting for the V port trace identified with <device-name> is shown.

TRACE=VLAN-LINE,...

LINE=...
Defines the VLAN lines for which the lengths of the V port traces are to be shown.

LINE=*all
The settings of the lengths are shown for all V port traces.

LINE=<line-name 1..8>
The length setting for the V port trace identified with <line-name> is shown.

SELECT=*START-PARAMETERS(START-PARAMETER=...)
Specifies which BCAM startup parameters defined via the DCSTART ("DCSTART: Start the data communication system in BS2000"ff), DCOPT ("DCOPT: Predefine DCSTART parameters"ff) or BCMOD ("BCMOD: Modify limit values specified with DCSTART"ff) command are shown.
The values can also be specified as a list enclosed by brackets (list-poss).

START-PARAMETER=*ALL
All BCAM start parameters are shown.

START-PARAMETER=LIMITS
Shows the setting for the start parameters "PAGMEM", "RESMEM", "MAXCNN", "MAXNPA", "MAXPNT", "PRIVPORT#" and "FREEPORT#".

START-PARAMETER=MSG
Shows the set message scope (MSG).

START-PARAMETER=REMOTE-IP-NSDU
Shows the set NSDU length (REMOTE-IP-NSDU) for IP routes that run via at least one router.

START-PARAMETER=PROCESSOR-TABLE
Shows the name set for the PROCESSOR-TABLE (processor file).

START-PARAMETER=APPLICATION-TABLE
Shows the name set for the APPLICATION-TABLE (application file).

START-PARAMETER=SOCKETHOST-TABLE
Shows the name set for the SOCKETHOST-TABLE (socket host file).

START-PARAMETER=FQDN-TABLE
Shows the name set for the FQDN-TABLE (FQDN file).

START-PARAMETER=SERVICES-TABLE
Shows the name set for the SERVICES-TABLE (services file).

SELECT=*TIMER(TIMER=...)
Specifies which BCAM timers defined via the BCTIMES command (see "BCTIMES: Define BCAM time intervals"ff) are shown.
The values can also be specified as a list enclosed in parantheses (list-poss).

TIMER=*ALL
All BCAM timers are shown.

TIMER=LETT
The setting of the Letter timer is shown.

TIMER=CONN
The setting of the Connection timer is shown.

TIMER=WARN
The setting of the Warn timer is shown.

TIMER=WINDOW
The setting of the Window timer is shown.

TIMER=CONFIGURATION
The setting of the Configuration timer is shown.

TIMER=IP-LIFETIME
The setting of the IP-Lifetime timer is shown.

TIMER=INTF-LIFETIME
The setting of the ISO8473-Lifetime timer is shown.

TIMER=I-REASSEMBLY
The setting of the Reassembly timer is shown.

TIMER=DATAGRAM
The setting of the Datagram timer is shown.

TIMER=RETRANSMISSION
The setting of the Retransmission timer is shown.

TIMER=ARP-SUPERVISION
The setting of the ARP-Supervision timer is shown.

TIMER=MAX-MSCF-DELAY
The setting of the MAX-MSCF-DELAY timer is shown.

Command logging

For reasons of compatibility, the processing acknowledgment is supplied in news BCA0731 if it is positive and in news BCA08EF if it is negative. In addition, for positive acknowledgments, the messages BCA084A, BCA08F5, BCA08F8 and BCA08F9 may also appear.
A description of the error messages that can be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	BCA0768	Syntax error in command
0	64	BCA07A2	Line is unknown
0	64	BCA07A5	Device is unknown
0	64	BCA07AA	VLAN line is unknown
0	64	BCA08EF	Nothing to be displayed was found
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

SHOW-BCAM-DEVICE-VALUES / SHBDV: Show information on BCAM device values

You use the SHOW-BCAM-DEVICE-VALUES command to display device-specific options and attributes for selected devices.

The alias for SHOW-BCAM-DEVICE-VALUES is SHBDV.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-BCAM-DEVICE-VALUES / **SHBDV**
UNIT = ***ALL** / <composed-name 1 .. 8>
,**INFORMATION** = ***ALL** / ***SM2-VALUES**
,**OUTPUT** = ***SYSOUT** / ***SYSLST**

UNIT=...
The devices for which device values are to be displayed are selected using the device names.

UNIT=*ALL
Displays the device values of all devices.

UNIT=<composed-name 1..8>
Name of the device for which device values are to be displayed.

INFORMATION=...
You use INFORMATION to specify which device values are to be displayed for the selected devices.

INFORMATION=*ALL
Displays all monitoring values for the device.

INFORMATION=*SM2-VALUES
Displays the device's current SM2 values.

OUTPUT=...
Defines the output medium.

OUTPUT=*SYSOUT
Output takes place to SYSOUT.

OUTPUT=*SYSLST
Output takes place to SYSLST.

Command logging

Positive acknowledgments result in the required information being output.
A description of the error messages that can be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Operand error
0	32	CMD0221	System error
0	64	CMD0216	Privilege not sufficient
0	64	BCA0203	Interface (&00) supplies the RC (&01)
0	64	BCA0242	No line defined to node (&00)
0	64	BCA0290	Line entry not found

Examples

1. Show SM2 device values of a device:

   ```
   /SHOW-BCAM-DEVICE-VALUES UNIT=60B1,INFORMATION=*SM2-VALUES
   ```

2. Show all device values for all devices:

   ```
   /SHOW-BCAM-DEVICE-VALUES UNIT=*ALL,INFORMATION=*ALL
   ```

S variables

No S variables are generated.

SHOW-BCAM-ENVIRONMENT / SHBCENV: Show BCAM environment of a processor

You use the SHOW-BCAM-ENVIRONMENT command to show a processor's environment which is defined in BCAM. This command is based on existing BCAM-SHOW functions. The command is used for diagnostic purposes.

The alias name for SHOW-BCAM-ENVIRONMENT is SHBCENV.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-BCAM-ENVIRONMENT / **SHBCENV**

PROCESSOR-NAME = **<u>*OWN</u>** / **<composed-name 1..8>** **,ROUTE-NAME** = **<u>*ANY</u>** / **<composed-name 1..8>**

,LINE-NAME = **<u>*NONE</u>** / **<composed-name 1..8>**

, INFORMATION = **<u>*STATUS</u>** / ***ADDRESS** / ***EDIT-CMDS** / ***SHOW-CMDS** / ***TRANSFER-DATA**

PROCESSOR-NAME=...

PROCESSOR-NAME=<u>*OWN</u>
Information for the own processor is shown.

PROCESSOR-NAME=<composed-name 1..8>
Name of the (partner) processor for which information is shown.

ROUTE-NAME=...

ROUTE-NAME=<u>*ANY</u>
Information for all routes of the (partner) processor are shown.

ROUTE-NAME=<composed-name 1..8>
Name of the route of the (partner) processor for which information is shown.

LINE-NAME=...

LINE-NAME=<u>*NONE</u>
Name of the line / VLAN line is not shown.

LINE-NAME=<composed-name 1..8>
Name of the line / VLAN line for which information is shown.

INFORMATION=...

INFORMATION=<u>*STATUS</u>
Shows the status information of the included BCAM objects.

INFORMATION=*ADDRESS
Shows the address information of the included BCAM objects.

INFORMATION=*EDIT-CMDS
Shows the status information of the included BCAM objects and generates the EDIT-BCAM-OBJECT commands to enable the object to be edited.

INFORMATION=*SHOW-CMDS
Shows the status information of the included BCAM objects and generates the SHOW commands in order to provide more detailed additional information. This permits followup processing.

INFORMATION=*TRANSFER-DATA
Shows the status information of the included BCAM objects and generates the commands in order to provide additional information on the transfer data. This permits follow-up processing.

Command logging

Positive acknowledgments result in the required information being output.
A description of the error messages that can be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	No error
0	1	CMD0202	Syntax error
0	64	BCA0290	Route entry not found

Note

More detailed command return codes are not provided owing to the procedural processing of the command. An output always takes place unless a syntax error was detected in the command.

Examples

1. Show the BCAM environment of the own processor:

```
/SHOW-BCAM-ENVIRONMENT   PROCESSOR-NAME=*OWN
```

2. Show the BCAM environment of the processor PROCOTTO which is defined in BCAM:

```
/SHOW-BCAM-ENVIRONMENT   PROCESSOR-NAME=PROCOTTO
```

SHOW-BCAM-FIREWALL / SHBCFW: Show BCAM firewall entries

You use the SHOW-BCAM-FIREWALL command to show the BCAM firewall entries. This command is based on existing BCAM-SHOW functions. The command is used for diagnostic purposes.

The alias name for SHOW-BCAM-FIREWALL is SHBCFW.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-BCAM-FIREWALL / **SHBCFW**
INFORMATION = ***ALL** / ***IP** / ***IPV6** **,OUTPUT =** ***SYSOUT** / <filename_1..54> **,SEARCH** = ***NONE** / <text 0..1800 case sensitive>

INFORMATION=...

INFORMATION=*ALL
Shows all BCAM firewall entries.

INFORMATION=*IP
Shows the IP-specific BCAM firewall entries.

INFORMATION=*IPV6
Shows the IPv6-specific BCAM firewall entries.

OUTPUT=...
Specifies the output medium.

OUTPUT=*SYSOUT
The output is sent to SYSOUT.

OUTPUT=<filename_1..54>
Output takes place to a file with the specified name.

SEARCH=...
specifies the search string that is to be searched for in the output information. Wildcards are supported.

SEARCH=*NONE
There is no search string specified, i.e. the complete command or tool output is shown in SYSOUT format.

SEARCH=<text 0..1800 case sensitive>
String to be searched for. Only (logical) rows that contain the specified string are shown.

Command logging

Positive acknowledgments result in the required information being output.
A description of the error messages that can be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	No error
0	0	CMD0202	Syntax error

Note

More detailed command return codes are not provided owing to the procedural processing of the command. An output always takes place unless a syntax error was detected in the command.

Example

Show the IP-specific BCAM firewall entries:

```
/SHOW-BCAM-FIREWALL   INFORMATION=*IP
```

SHOW-BCAM-INFO-ADDRESS / SHBCIA: Show BCAM information on an address

You use the SHOW-BCAM-INFO-ADDRESS command to show BCAM information on an address. This command can only be specified in interactive mode and is based on existing BCAM-SHOW functions. The command is used for diagnostic purposes.

The alias name for SHOW-BCAM-INFO-ADDRESS is SHBCIA.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-BCAM-INFO-ADDRESS / **SHBCIA**
ADDRESS = ***OWN** / <text 1..256> / <ip-addresse> / <ipv6-address>

ADDRESS=...
In ADDRESS you specify an IP or IPv6 address for which information is to be shown.

ADDRESS=*OWN
Shows the information for the address used (address from which the current interactive connection was established).

ADDRESS=<text 1..256> / <ip-address> / <ipv6-address>
Specifies the IP/IPv6 address. A text with a length of up to 256 is entered.

Command logging

In the normal case the required information is output.
A description of the error messages that can be issued during command processing is provided in the table below

Command return codes

(SC2)	SC1	Maincode	Bedeutung
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Syntax error

Note

More detailed command return codes are not provided owing to the procedural processing of the command. An output always takes place unless a syntax error was detected in the command.

Example

Show the information about an IP address:

```
/SHOW-BCAM-INFO-ADDRESS 172.47.11.10
```

SHOW-BCAM-INFO-BASIC / SHBCIB: Show BCAM basic information

You use the SHOW-BCAM-INFO-BASIS command to show the BCAM basic information. This command can only be specified in interactive mode and is based on existing BCAM-SHOW functions. The command is used for diagnostic purposes.

The alias name for SHOW-BCAM-INFO-BASIC is SHBCIB.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-BCAM-INFO-BASIC / SHBCIB

Command logging

In the normal case the required information is output.
A description of the error messages that can be issued during command processing is provided in the table below

Command return codes

(SC2)	SC1	Maincode	Bedeutung
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Syntax error

Note

More detailed command return codes are not provided owing to the procedural processing of the command. An output always takes place unless a syntax error was detected in the command.

Example

Show the BCAM basic information:

```
/SHOW-BCAM-INFO-BASIC
```

SHOW-BCAM-INFO-CONFIG / SHBCIC: Show BCAM configuration information

You use the SHOW-BCAM-INFO-CONFIG command to show BCAM configuration information. This command can only be specified in interactive mode and is based on existing BCAM-SHOW functions. The command is used for diagnostic purposes.

The alias name for SHOW-BCAM-INFO-CONFIG is SHBCIC.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-BCAM-INFO-CONFIG / **SHBCIC**

Command logging

In the normal case the required information is output.
A description of the error messages that can be issued during command processing is provided in the table below

Command return codes

(SC2)	SC1	Maincode	Bedeutung
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Syntax error

Note

More detailed command return codes are not provided owing to the procedural processing of the command. An output always takes place unless a syntax error was detected in the command.

Example

Show the BCAM configuration information:

```
/SHOW-BCAM-INFO-CONFIG
```

SHOW-BCAM-INFO-NAME / SHBCIN: Show BCAM information on a name

You use the SHOW-BCAM-INFO-NAME command to show information on BCAM objects which are selected by means of a name. This command can only be specified in interactive mode and is based on existing BCAM-SHOW functions. The command is used for diagnostic purposes.

The alias name for SHOW-BCAM-INFO-NAME is SHBCIN.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-BCAM-INFO-NAME / **SHBCIN**
NAME = ***OWN** / <text 1..256>

NAME=...
In NAME you specify a BCAM or DNS name for which information is to be shown.

NAME=*OWN
Specifies the BCAM name of the processor from which the current interactive connection was established.

NAME=<text 1..256>
Specifies the BCAM name or the DNS name.

Command logging

In the normal case the required information is output.
A description of the error messages that can be issued during command processing is provided in the table below

Command return codes

(SC2)	SC1	Maincode	Bedeutung
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Syntax error

Note

More detailed command return codes are not provided owing to the procedural processing of the command. An output always takes place unless a syntax error was detected in the command.

Example

Show the information on a name:

```
/SHOW-BCAM-INFO-NAME mgphugo.mgp.example.net
```

SHOW-BCAM-INFO-TOOLS / SHBCIT: Show BCAM information on BCAM tools

You use the SHOW-BCAM-INFO-TOOLS command to show information on BCAM tools. This command can only be specified in interactive mode and is based on existing BCAM-SHOW functions. The command is used for diagnostic purposes.

The alias name for SHOW-BCAM-INFO-TOOLS is SHBCIT.

This command can be executed with the STD-PROCESSING privilege.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-BCAM-INFO-TOOLS / **SHBCIT**

Command logging

In the normal case the required information is output.
A description of the error messages that can be issued during command processing is provided in the table below

Command return codes

(SC2)	SC1	Maincode	Bedeutung
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Syntax error

Note

More detailed command return codes are not provided owing to the procedural processing of the command. An output always takes place unless a syntax error was detected in the command.

Example

Show the information on the BCAM tools:

```
/SHOW-BCAM-INFO-TOOLS
```

SHOW-BCAM-IP-RANGE / SHBIR: Show information on BCAM IP ranges

You use the SHOW-BCAM-IP-RANGE command to show information on the defined BCAM IP ranges.

The alias name SHBIR exists for SHOW-BCAM-IP-RANGE.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-BCAM-IP-RANGE / **SHBIR**
SELECT = ***ALL** / ***IP-RANGE**
, **OUTPUT** = ***SYSOUT** / ***SYSLST**
, **OUTPUT-FORMAT** = ***** **STD** / ***GENERATING-CMD**

SELECT=...
Selects which information is to be shown.

SELECT=*ALL
Shows the IP ranges of the IP addresses for which access to BCAM is permitted.

SELECT=*IP-RANGE
Shows the IP ranges of the IP addresses for which access to BCAM is permitted.

OUTPUT=...
Defines the output medium.

OUTPUT=*SYSOUT
Output takes place to SYSOUT.

OUTPUT=*SYSLST
Output takes place to SYSLST.

OUTPUT-FORMAT=...
Defines the output format.

OUTPUT-FORMAT=*STD
The output format corresponds to the standard.

OUTPUT-FORMAT=*GENERATING-CMD
The output format corresponds to the generating commands.

Command logging

A description of the error messages that can be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Operand error
0	32	CMD0221	System error
0	64	CMD0216	Privilege not sufficient
0	64	BCA0203	Interface (&00) supplies the RC (&01)
0	64	BCA0291	IP range table not found

Examples

Show the IP ranges in BCAM:

```
/SHOW-BCAM-IP-RANGE SELECT=*ALL
/SHOW-BCAM-IP-RANGE SELECT=*IP-RANGE
/SHOW-BCAM-IP-RANGE SELECT=*IP-RANGE,OUTPUT=*SYSLST
```

S variables

The command's SELECT operand defines the S variables to which values are assigned. The possible values for **SELECT** are ***ALL** and ***IP**-RANGE.

Output information	Name of the S variable	Data type	Content	Condition
Start of the permissible range of IP addresses	var(*LIST).IP-RANGE(*LIST).FROM	string	<c-string 7..15>	SEL=*ALL/*IP O-F=*STD
End of the permissible range of IP addresses	var(*LIST).IP-RANGE(*LIST).TO	string	<c-string 7..15>	SEL=*ALL/*IP O-F=*STD
Generating commands	var(*LIST).GENERATING-CMD(*LIST)	string	<text 1..256>	SEL=<any> O-F=*GEN

SHOW-BCAM-NAMES / SHBCNA: Show information on BCAM names

You use the /SHOW-BCAM-NAMES command to show information on the names used in BCAM, the association between the BCAM and domain or alias name being established in the process.

The alias name SHBCNA exists for SHOW-BCAM-NAMES.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-BCAM-NAMES / **SHBCNA**

NAME = ***ALL** / ***DNS(...)** / ***BCAM**(...) / ***SOCKETHOST**(...)

***DNS**(...)

| **DNS-NAME** = <c-string 1 .. 256>

***BCAM**(...)

| **BCAM-NAME** = ***ALL** / <composed-name 1 .. 8>

***SOCKETHOST**(...)

| **SOCKETHOST-NAME** = ***ALL** / <composed-name 1 .. 32>

,**OBJECT-TYPE** = ***ANY** / ***HOST** / ***PROCESSOR**

,**INFORMATION** = ***STD** / ***ALL** / list-poss (3): ***DNS-NAMES** / ***BCAM-NAMES** / ***SOCKETHOST-NAMES**

,**OUTPUT** = ***SYSOUT** / ***SYSLST**

NAME=...
Name of a name type for which information on name associations is shown.

NAME=*ALL
Name associations are shown for all BCAM names.

NAME=*DNS(...)
The DNS names and the associated name associations are to be shown.

DNS-NAME= <c-string 1..256>
DNS name.

NAME=*BCAM(...)
The BCAM names and the associated name associations are to be shown.

BCAM-NAME= *ALL / <composed-name 1..8>
BCAM name.

NAME=*SOCKETHOST(...)
The socket host names and the associated name associations are to be shown.

SOCKETHOST-NAME= *ALL / <composed-name 1..32>
Socket host name.

OBJECT-TYPE= *ANY / *HOST / *PROCESSOR
Object type.

INFORMATION=...
Selects which information is to be shown.

INFORMATION=*STD
Shows the DNS names and the associations with the BCAM names which are used in BCAM.

INFORMATION=*ALL
Shows the DNS names and alias names and the associations with the BCAM names and socket host names which are used in BCAM.

INFORMATION=*DNS-NAMES
Shows which domain names and alias names are used in BCAM for hosts or processors.

INFORMATION=*BCAM-NAMES
Shows which BCAM names are used in BCAM for hosts or processors.

INFORMATION=*SOCKETHOST-NAMES
Shows which socket host names are used in BCAM for hosts or processors.

OUTPUT=...
Specifies the output medium.

OUTPUT=*SYSOUT
Output takes place to SYSOUT.

OUTPUT=*SYSLST
Output takes place to SYSLST.

Command logging

A description of the error messages that can be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Operand error
0	32	CMD0221	System error
0	64	CMD0216	Privilege not sufficient
0	64	BCA0203	Interface (&00) returns RC (&01)

Examples

1. Show the names in BCAM with the specification of the DNS name:

```
/SHOW-BCAM-NAMES NAME=*DNS(DNS-NAME='mgphugo.mgp.example.net')
```

2. Show all names in BCAM:

```
/SHOW-BCAM-NAMES NAME=*BCAM(BCAM-NAME=*ALL)
```

S variables

The command's INFORMATION operand defines the S variables to which values are assigned. Possible values for **INF**ORMATION are ***STD**, ***ALL, *DNS**-NAMES, ***BCAM**-NAMES and ***SOCKETHOST**-NAMES.

Output information	Name of the S variable	Data type	Content	Condition
Object type in the sense of a BCAM object	var(*LIST).OBJ.TYPE	string	*HOST *PROC	INF= *STD, *DNS, *BCAM, *SOCKET, *ALL
Host name	var(*LIST).OBJ.HOST-NAME	string	<text 1..8>	INF= *BCAM *ALL
Processor name	var(*LIST).OBJ.PROCESSOR-NAME	string	<text 1..8>	INF= *BCAM *ALL
Socket host name	var(*LIST).OBJ.SOCKETHOST-NAME	string	<text 1..32>	INF= *SOCKET *ALL
Name type	var(*LIST).ELM(*LIST).NAME-TYPE	string	*BCAM *DNS *EOL	INF= *DNS *ALL
Name	var(*LIST).ELM(*LIST).NAME	string	<text 1..256>	INF= *DNS *ALL

The content parameter *EOL means "end of list" and expresses, that there is no more informational data left.

SHOW-BCAM-OBJECTS / SHBCOB: Show BCAM objects in compact form

You use the /SHOW-BCAM-OBJECTS command to output a list of the BCAM objects in compact form to SYSOUT in interactive mode. This command is based on a procedure which processes information from various BCAM SHOW functions. The aim here was to provide a rapid overview of the defined BCAM objects.

The alias name for SHOW-BCAM-OBJECTS is SHBCOB.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-BCAM-OBJECTS / **SHBCOB**

OBJECT = ***ALL** / list-poss (4): ***HOST** / ***NODE** / ***LINE** / ***PROCESSOR** / ***ROUTE** /
***LINK-AGGREGATION** / ***VLAN-DEVICE** / ***VLAN-LINE** / ***INTERFACE**

,**INFORMATION** = ***STD** / ***ACTIVATE-CMDS** / ***CREATE-CMDS** / ***DEACTIVATE-CMDS** / ***EDIT-CMDS** /
***MODIFY-CMDS** / ***SHOW-CMDS**

,EXPAND-OPERAND = ***STD** / ***CHANGED-OPERAND**

,**OUTPUT** = ***SYSOUT** / **<file-name 1..54>**

,FORMAT = ***BY-OUTPUT** / ***SYSOUT** / ***FILE**

,SEARCH = ***NONE** / <text 1..1800>

OBJECT=...
You use OBJECT to specify which BCAM objects are to be output in a list.

OBJECT=*ALL
Outputs all BCAM objects in a list.

OBJECT=*HOST
Outputs information about the defined hosts.

OBJECT=*NODE
Outputs information about the defined nodes.

OBJECT=*LINE
Outputs information about the defined lines.

OBJECT=*PROCESSOR
Outputs information about the defined processors.

OBJECT=*ROUTE
Outputs information about the defined routes.

OBJECT=*LINK-AGGREGATION
Outputs information about the defined link aggregation.

OBJECT=*VLAN-DEVICE
Outputs information about the defined VLAN devices.

OBJECT=*VLAN-LINE
Outputs information about the defined VLAN lines.

OBJECT=*INTERFACE
Outputs information about the defined interfaces. The information consists of the information about the line, link aggregations, VLAN devices and VLAN lines.

INFORMATION=...
Specifies which information is output for the BCAM objects.

INFORMATION=*STD
The default information for the BCAM objects is output.

INFORMATION=*ACTIVATE-CMDS
The activation commands for the BCAM objects are output.

INFORMATION=*CREATE-CMDS
The CREATE commands for the BCAM objects are output.

INFORMATION=*DEACTIVATE-CMDS
The deactivation commands for the BCAM objects are output.

INFORMATION=*EDIT-CMDS
The EDIT commands for the BCAM objects are output.

INFORMATION=*MODIFY-CMDS
The MODIFY commands for the BCAM objects are output.

INFORMATION=*SHOW-CMDS
The SHOW commands for the BCAM objects are output.

EXPAND-OPERAND=...
In EXPAND-OPERAND you specify which operands are output.

EXPAND-OPERAND=*STD
Outputs all operands.

EXPAND-OPERAND=*CHANGED-OPERAND
Outputs the changed operands.

OUTPUT=...
Defines the output medium.

OUTPUT=*SYSOUT
Output takes place to SYSOUT.

OUTPUT =<filename_1..54_without-generation-version>
Output takes place to a file with the specified name.

FORMAT=...
Specifies how the output is formatted.

INFORMATION=*BY-OUTPUT
The output format is determined by the OUTPUT operand.

INFORMATION=*SYSOUT
The output format corresponds to the display on the screen.

INFORMATION=*FILE
The output format corresponds to the output in the file.

SEARCH=...
Specifies a search string which is to be searched for in the output information of the object which is to be output.
The object-related information is always output.
The search works only when the output takes place to SYSOUT. Wildcards are supported.

SEARCH=*NONE
No search string is specified.

SEARCH=<text 1..1800 case sensitive>
Search string which is searched for.

Command logging

Positive acknowledgments result in the required information being output.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	No error
0	1	CMD0202	Syntax error

Note

More detailed command return codes are not provided owing to the procedural processing of the command. An output always takes place unless a syntax error was detected in the command.

Examples

1. Show the BCAM information for lines in list form:

```
/SHOW-BCAM-OBJECTS   OBJECT=*LINE
```

2. Show the BCAM information for VLAN lines and then VLAN devices in list form:

```
/SHOW-BCAM-OBJECTS   OBJECT=(*VLAN-DEVICE,*VLAN-LINE)
```

3. Show the BCAM information for all BCAM objects in list form:

```
/SHOW-BCAM-OBJECTS   OBJECT=*ALL
```

4. Show the BCAM information for processors and routes in list form, where names are looked for.

```
/SHOW-BCAM-OBJECTS   OBJECT=(*PROC,*ROUT),SEARCH=MCH
```

SHOW-BCAM-OPTIONS / SHBCO: Show BCAM options information

You use the SHOW-BCAM-OPTIONS command to show BCAM options information.

The alias name SHBCO exists for SHOW-BCAM-OPTIONS.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-BCAM-OPTIONS / **SHBCO**
OPTION = ***ALL** / list-poss (16): ***AVAILABILITY** / ***CMDFILE-PROCESSING** / ***IP** / ***IPV6** / ***ISO** / ***SNMP** / ***DNS** / ***MISCELLANEOUS**
,**OUTPUT** = ***SYSOUT** / ***SYSLST**
,**OUTPUT-FORMAT** = ***** **STD** / ***GENERATING-CMD**

OPTION=...
Specifies which options are to be shown.

OPTION=*ALL
All BCAM options are shown.

OPTION=*AVAILABILITY
Shows BCAM options that affect availability.

OPTION=*CMDFILE-PROCESSING
Shows BCAM options that affect the handling of command files.

OPTION=*IP
Shows IP-specific BCAM options.

OPTION=*IPV6
Shows IPv6-specific BCAM options.

OPTION=*ISO
Shows ISO-specific BCAM options.

OPTION=*SNMP
Shows SNMP-specific BCAM options.

OPTION=*DNS
DNS-specific BCAM options are output.

OPTION=*MISCELLANEOUS
Shows miscellaneous BCAM options.

OUTPUT=...
Specifies the output medium.

OUTPUT=*SYSOUT
The output is sent to SYSOUT.

OUTPUT=*SYSLST
The output is sent to SYSLST.

OUTPUT-FORMAT=...
Specifies the output format.

OUTPUT-FORMAT=*STD
The output format corresponds to the standard.

OUTPUT-FORMAT=*GENERATING-CMD
The output format corresponds to the generated command.

Command logging

A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Operand error
0	32	CMD0221	System error
0	64	BCA0216	Privilege not sufficient
0	64	BCA0203	Interface (&00) returns RC (&01)

Examples

Show BCAM options:

```
/SHOW-BCAM-OPTIONS OPTION=*ALL
/SHOW-BCAM-OPTIONS OPTION=*AVAILABILITY,OUTPUT=*SYSOUT
/SHOW-BCAM-OPTIONS OPTION=*CMDFILE-PROCESSING,OUTPUT=*SYSOUT
/SHOW-BCAM-OPTIONS OPTION=*IP,OUTPUT=*SYSLST
/SHOW-BCAM-OPTIONS OPTION=*IPV6,OUTPUT=*SYSLST
/SHOW-BCAM-OPTIONS OPTION=*ISO,OUTPUT=*SYSLST
/SHOW-BCAM-OPTIONS OPTION=*SNMP,OUTPUT-FORMAT=*GENERATING-CMD
/SHOW-BCAM-OPTIONS OPTION=*DNS,OUTPUT-FORMAT=*GENERATING-CMD
/SHOW-BCAM-OPTIONS OPTION=*MISCELLANEOUS,OUTPUT-FORMAT=*GENERATING-CMD
```

S Variables

The command's OPTION operand defines the S variables to which values are assigned. Possible values for OPTION are ***ALL**, ***AVAIL**ABILITY, ***CMDFILE**-PROCESSING, ***IP**, ***IPV6**, ***ISO**, ***SNMP, *DNS** and ***MISC** ELLANEOUS (the values in bold are used in the table).

Output information	Name of the S variable	Data type	Content	Condition
Message numbers, which are to be acknowledged	var(*LIST).ACK-MSG.MSG-ID (*LIST)	string	BCA07B2 BCA0999	OPTION= *ALL/ *AVAIL O-F=*STD
Rerouting	var(*LIST).ALT-ROUTER-SEARCH	string	*OPEN-CONN-ONLY *ON *OFF	OPTION= *ALL/ *AVAIL O-F=*STD
Failure detection of routers, which no longer send ARP replies	var(*LIST).ARP-ROUTER-SWITCH	string	*ON *OFF	OPTION= *ALL/ *AVAIL O-F=*STD
Route selection	var(*LIST).AUTO-ROUT-SWITCH	string	*ON *OFF	OPTION= *ALL/ *AVAIL O-F=*STD
Checking of local routers using ICMP-ECHO in the event of TCP transmission problems	var(*LIST).LOCAL-ROUTER-CHECK	string	*ON *OFF	OPTION= *ALL/ *AVAIL O-F=*STD
Checking of functionality of redundant line connections	var(*LIST).LINE-SUPERVISION	string	*ON *OFF	OPTION= *ALL/ *AVAIL O-F=*STD
Automatic NSDU length adjustment during switching	var(*LIST).MAX-NSDU-SIZE	string	*RESET-AT-SWITCH *KEEP	OPTION= *ALL/ *AVAIL O-F=*STD
Using OSPF Hello PDU time monitoring to detect route failure	var(*LIST).OSPF-USAGE	string	*ON *OFF	OPTION= *ALL/ *AVAIL O-F=*STD
	var(*LIST).SECURE-CONNECTION	string	*ON *OFF	OPTION= *ALL/

Checking NEA connection requests using SYSDAT.BCAM.APPLICATIONS				*AVAIL O-F=*STD
SOF and command file processing	var(*LIST).CONTI-AFTER-ERROR	string	*YES *ONLY *NO	OPTION= *ALL/ *CMDFILE O-F=*STD
Detecting the continuation character	var(*LIST).LINE-CONTI	string	*ON *OFF	OPTION= *ALL/ *CMDFILE O-F=*STD
Sending of ARP requests when activating routes of type NODE	var(*LIST).ARP-AT-ROUT-ACTIVATE	string	*ALWAYS *CONN	OPTION= *ALL/*IP O-F=*STD
ARP	var(*LIST).ARP	string	*ON *OFF *QUIET	OPTION= *ALL/*IP O-F=*STD
Routing forward of IP elements	var(*LIST).IP-ROUT	string	*ALLOW *NOT-ALLOW	OPTION= *ALL/*IP O-F=*STD
IGMP multicast groups	var(*LIST).MULTICAST-GROUP-JOIN	string	*ALLOW *NOT-ALLOW	OPTION= *ALL/*IP O-F=*STD
Evaluating IP subnet mask usage	var(*LIST).NET-ROUTER-USAGE	string	*ON *OFF	OPTION= *ALL/*IP O-F=*STD
RARP	var(*LIST).RARP-REPLIES	string	*ALLOW *NOT-ALLOW	OPTION= *ALL/*IP O-F=*STD
TCP alive monitoring	var(*LIST).TCP-KEEP-ALIVE.OPT	string	*ON *OFF	OPTION= *ALL/*IP O-F=*STD
TCP alive monitoring time value	var(*LIST).TCP-KEEP-ALIVE.TIME	integer	<integer 120..32767>	OPTION= *ALL/*IP O-F=*STD
ARP request per time period	var(*LIST).MAX-ARP-REQ-NUM	integer	<integer 1..65535>	OPTION= *ALL/*IP O-F=*STD
IPv6 autoconfiguration	var(*LIST).IPV6-AUTO-CONFIG	string	*ON *OFF	

				OPTION= *ALL /*IPV6 O-F=*STD
IPv6 usage	var(*LIST).IPV6-SUP	string	*ON *OFF	OPTION= *ALL /*IPV6 O-F=*STD
IPv6 autoconfiguration for VLAN	var(*LIST).IPV6-VLAN-AUTO-CONFIG	string	*ON *OFF	OPTION= *ALL /*IPV6 O-F=*STD
IPv6 prefix length control	var(*LIST).IPV6-PREFIX-LEN-CTRL	string	*ON *OFF	OPTION= *ALL /*IPV6 O-F=*STD
Error flag in ISO8473 elements	var(*LIST).SET-ERROR-FLAG	string	*YES *NO	OPTION= *ALL/*ISO O-F=*STD
Routing forward of ISO8473 elements	var(*LIST).INTF-ROUTING	string	*ALLOW *NOT-ALLOW	OPTION= *ALL/*ISO O-F=*STD
Use of ISO9542 protocols	var(*LIST).ISO9542-USAGE	string	*ON *OFF	OPTION= *ALL/*ISO O-F=*STD
ISO8073 checksum	var(*LIST).ADD-CHECKSUM	string	*YES *NO	OPTION= *ALL/*ISO O-F=*STD
Evaluation of ISO89542 redirect messages for ISO8473 query configuration requests	var(*LIST).REDIRECT-ON-QUERY	string	*ON *OFF	OPTION= *ALL/*ISO O-F=*STD
Shorter time intervals compared to those specified in EN41102 for ISO9542 configuration and holding time interval regulation	var(*LIST).CONFIG-HOLD-TIME	string	*EN41102-COMPLIANT *SHORT	OPTION= *ALL/*ISO O-F=*STD
Write access according to RFC1213	var(*LIST).SNMP-WRITE-ACCESS	string	*ALLOW *NOT-ALLOW	OPTION= *ALL /*SNMP O-F=*STD
Access to DNS data in BCAM	var(*LIST).DNS-USAGE	string	*OFF *ON	

				OPTION= *ALL /*DNS O-F=*STD
BROADCAST	var(*LIST).BROADCAST	string	*ON *OFF	OPTION= *ALL/ *MISC O-F=*STD
Receiving of Ethernet multicast messages	var(*LIST).MULTICAST	string	*ON *OFF	OPTION= *ALL/ *MISC O-F=*STD
SLOW-POLL	var(*LIST).SLOW-POLL	string	*ON *OFF	OPTION= *ALL/ *MISC O-F=*STD
Periodic file access	var(*LIST).PERIODIC-FILE-ACCESS	string	*ON *OFF	OPTION= *ALL/ *MISC O-F=*STD
Use of the LPDU-SIZE supplied by the device	var(*LIST).DEV-LPDU-SIZE-USAGE	string	*ON *OFF	OPTION= *ALL/ *MISC O-F=*STD
BCAM-Exitversion	var(*LIST).EXIT-VERSION	integer	<integer 1..2>	OPTION= *ALL/ *MISC O-F=*STD
Generated commands	var(*LIST).GENERATING-CMD (*LIST)	string	<text 1..256>	OPTION= <any> O- F=*GEN

SHOW-BCAM-PARAMETERS / SHBCP: Show BCAM parameter information

You use the SHOW-BCAM-PARAMETERS command to show BCAM parameter information.

The alias name SHBCP exists for SHOW-BCAM-PARAMETERS.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-BCAM-PARAMETERS / **SHBCP**
PARAMETER = ***ALL** / list-poss (8): ***CONTROL-PARAMETERS** / ***FILES** / ***LIMITS**
,**OUTPUT** = ***SYSOUT** / ***SYSLST**
,**OUTPUT-FORMAT** = ***** **STD** / ***GENERATING-CMD**

PARAMETER=...
Specifies the type of information.

PARAMETER=*ALL
Shows all BCAM parameters.

PARAMETER=*CONTROL-PARAMETERS
Shows all BCAM parameters that can be used to control BCAM.

PARAMETER=*FILES
Shows the BCAM control file names.

PARAMETER=*LIMITS
Shows the BCAM limit parameters.

OUTPUT=...
Specifies the output medium.

OUTPUT=*SYSOUT
The output is sent to SYSOUT.

OUTPUT=*SYSLST
The output is sent to SYSLST.

OUTPUT-FORMAT=...
Specifies the output format.

OUTPUT-FORMAT=*STD
The output format corresponds to the standard.

OUTPUT-FORMAT=*GENERATING-CMD
The output format corresponds to the generated command.

Command logging

A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Operand error
0	32	CMD0221	System error
0	64	CMD0216	Privilege not sufficient
0	64	BCA0203	Interface (&00) returns RC (&01)

Examples

Show BCAM parameters:

```
/SHOW-BCAM-PARAMETERS PARAMETER=*ALL
/SHOW-BCAM-PARAMETERS PARAMETER=*CONTROL-PARAMETERS,OUTPUT=*SYSOUT
/SHOW-BCAM-PARAMETERS PARAMETER=*FILES,OUTPUT=*SYSLST
/SHOW-BCAM-PARAMETERS PARAMETER=*LIMITS,OUTPUT=*SYSLST
```

S Variables

The command's PARAMETER operand defines the S variables to which values are assigned. Possible values for **PAR**AMETER are ***ALL**, ***CONTROL**-PARAMETERS, ***FILES** and ***LIMITS** (the values in bold are used in the table).

Output information	Name of the S variable	Data type	Content	Condition
Behavior of the message output	var(*LIST).MSG	string	*ALL *NAK *ERROR-ONLY	PAR=*ALL/ *CONTROL O-F=*STD
Processor file	var(*LIST).PROCESSOR-TAB.F-NAME	string	<filename>	PAR=*ALL/ *FILES O-F=*STD
Access to the processor file	var(*LIST).PROCESSOR-TAB.ACCESS	string	*READ *UPDATE *ALLOW	PAR=*ALL/ *FILES O-F=*STD
Socket host file	var(*LIST).SOCKETHOST-TAB.F-NAME	string	<filename>	PAR=*ALL/ *FILES O-F=*STD

Application file	var(*LIST).APPL-TAB.F-NAME	string	<filename>	PAR=*ALL/ *FILES O-F=*STD
FQDN file	var(*LIST).FQDN-TAB.F-NAME	string	<filename>	PAR=*ALL/ *FILES O-F=*STD
Services file	var(*LIST).SERVICES-TAB.F-NAME	string	<filename>	PAR=*ALL/ *FILES O-F=*STD
Limits the number of non predefined applications that can be opened simultaneously	var(*LIST).MAX-NPA-NUM	integer	<integer 1.. 2147483647>	PAR=*ALL/ *LIMITS O-F=*STD
Limits the number of non predefined applications that can be opened simultaneously by a task	var(*LIST).MAX-NPT-NUM	integer	<integer 1.. 2147483647>	PAR=*ALL/ *LIMITS O-F=*STD
Limits the number of connections that a non predefined application can have	var(*LIST).MAX-CNN-NUM	integer	<integer 1.. 2147483647>	PAR=*ALL/ *LIMITS O-F=*STD
Size of the virtual memory in Kbytes	var(*LIST).PAGABLE-MEM-SIZE	integer	<integer 1024.. 1048576>	PAR=*ALL/ *LIMITS O-F=*STD
Size of the resident memory in Kbytes	var(*LIST).RESIDENT-MEM-SIZE	integer	<integer 1024.. 1048576>	PAR=*ALL/ *LIMITS O-F=*STD
First socket port number that can be assigned with non privileged applications	var(*LIST).PORT-NUM.FIRST-NON-PRIVIL	integer	<integer 1.. 65535>	PAR=*ALL/ *LIMITS O-F=*STD
First free socket port number, that can be dynamically assigned by BCAM	var(*LIST).PORT-NUM.FIRST-DYN	integer	<integer 1.. 65535>	PAR=*ALL/ *LIMITS O-F=*STD
Defines the NSDU-length for IP routes	var(*LIST).REM-IP-NSDU-SIZE	integer	<integer 512.. 65530>	PAR=*ALL/ *LIMITS O-F=*STD
Maximum size of ISAM buffer pool in BCAM control files	var(*LIST).MAX-ISAM-POOL-SIZE	integer	<integer 128.. 32766>	PAR=*ALL/ *LIMITS O-F=*STD
Maximum size of the control block pool	var(*LIST).MAX-SLOT-POOL-SIZE	integer	<integer 2048.. 65535>	PAR=*ALL/ *LIMITS O-F=*STD

Generated commands	var(*LIST).GENERATING-CMD (*LIST)	string	<text 1..256>	PAR=*ALL/ <any> O-F=*GEN

SHOW-BCAM-ROUTER / SHBCRTR: Show BCAM routers

You use the SHOW-BCAM-ROUTER command to show the routers which are known in BCAM. This command is based on existing BCAM-SHOW functions. The command is used for diagnostic purposes.

The alias name for SHOW-BCAM-ROUTER is SHBCRTR.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-BCAM-ROUTER / **SHBCRTR**
INFORMATION = ***ALL** / ***IP** / ***IPV6**
,OUTPUT = ***SYSOUT** / <filename_1..54>
,SEARCH = ***NONE** / <text 0..1800 case sensitive>

INFORMATION=...

Specifies the scope of the information output.

INFORMATION=*ALL

Shows all routers which are known in BCAM.

INFORMATION=*IP
Shows the IP-specific routers.

INFORMATION=*IPV6
Shows the IPv6-specific routers.

OUTPUT=...
Specifies the output medium.

OUTPUT=*SYSOUT
The output is sent to SYSOUT.

OUTPUT=<filename_1..54>
Output takes place to a file with the specified name.

SEARCH=...
specifies the search string that is to be searched for in the output information. Wildcards are supported.

SEARCH=*NONE
There is no search string specified, i.e. the complete command or tool output is shown in SYSOUT format.

SEARCH=<text 0..1800 case sensitive>
String to be searched for. Only (logical) rows that contain the specified string are shown.

Command logging

Positive acknowledgments result in the required information being output.
A description of the error messages that can be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	No error
0	1	CMD0202	Syntax error

Note

More detailed command return codes are not provided owing to the procedural processing of the command. An output always takes place unless a syntax error was detected in the command.

Example

Show the IP-specific BCAM routers:

```
/SHOW-BCAM-ROUTER   INFORMATION=*IP
```

SHOW-BCAM-SERVER-PORTS / SHBCPT: Show BCAM server port information

You use the SHOW-BCAM-SERVER-PORTS command to show BCAM server port information.

The alias name SHBCPT exists for SHOW-BCAM-SERVER-PORTS.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-BCAM-SERVER-PORTS / **SHBCPT**
SERVER-PORT = ***ALL** / list-poss (8): ***LOCAL** / ***REMOTE**
,**OUTPUT** = ***SYSOUT** / ***SYSLST**
,**OUTPUT-FORMAT** = ***STD** / ***GENERATING-CMD**

SERVER-PORT=...
Specifies the type of information.

SERVER-PORT=*ALL
Shows all BCAM server ports.

SERVER-PORT=*LOCAL
Shows the local BCAM server ports.

SERVER-PORT=*REMOTE
Shows the remote BCAM server ports.

OUTPUT=...
Specifies the output medium.

OUTPUT=*SYSOUT
The output is sent to SYSOUT.

OUTPUT=*SYSLST
The output is sent to SYSLST.

OUTPUT-FORMAT=...
Specifies the output format.

OUTPUT-FORMAT=*STD
The output format corresponds to the standard.

OUTPUT-FORMAT=*GENERATING-CMD
The output format corresponds to the generated command.

Command logging

A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Operand error
0	32	CMD0221	System error
0	64	CMD0216	Privilege not sufficient
0	64	BCA0203	Interface (&00) returns RC (&01)

Examples

Show BCAM server ports

```
/SHOW-BCAM-SERVER-PORTS SERVER-PORT=*ALL
/SHOW-BCAM-SERVER-PORTS SERVER-PORT=*LOCAL,OUTPUT=*SYSLST
```

S variables

The command's SERVER-PORT operand defines the S variables to which values are assigned. Possible values for **SERV**ER-**PORT** are *ALL, *LOCAL and *REMOTE.

Output information	Name of the S variable	Data type	Content	Condition
Local BCAM server ports	var(*LIST).LOC-SERVER-PORT (*LIST)	integer	<integer 1..65635>	SERV-PORT= *ALL/*LOCAL O-F=*STD
Remote BCAM server ports	var(*LIST).REM-SERVER-PORT (*LIST)	integer	<integer 1..65535>	SERV-PORT= *ALL/*REMOTE O-F=*STD
Generated commands	var(*LIST).GENERATING-CMD (*LIST)	integer	<text 1..256>	SERV-PORT= *ALL/*REMOTE O-F=*GEN

SHOW-BCAM-START-PARAMETERS / SHBCSRP: Show BCAM start parameter information

You use the SHOW-BCAM-START-PARAMETERS command to show BCAM start parameter information.

The alias name SHBCSRP exists for SHOW-BCAM-START-PARAMETERS.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-BCAM-START-PARAMETERS / **SHBCSRP**
START-PARAMETER = ***ALL** / list-poss (8): ***CONTROL-PARAMETERS** / ***FILES** / ***STATUS-JV** / ***LIMITS** / ***TIMER**
,**OUTPUT** = ***SYSOUT** / ***SYSLST**
,**OUTPUT-FORMAT** = * **STD** / ***GENERATING-CMD**

START-PARAMETER=...
Specifies the type of information.

START-PARAMETER=*ALL
Shows all BCAM start parameters.

START-PARAMETER=*CONTROL-PARAMETERS
Shows BCAM start parameters that can be used to control BCAM during startup.

START-PARAMETER=*FILES
Shows BCAM control file names that can be specified during BCAM start.

START-PARAMETER=*STATUS-JV
Shows the BCAM control job variables that can be specified during BCAM start.

START-PARAMETER=*LIMITS
Shows the BCAM limit parameters that can be specified during BCAM start.

START-PARAMETER=*TIMER
Shows the BCAM timer parameters that can be specified during BCAM start – in particular the SOF timer.

OUTPUT=...
Specifies the output medium.

OUTPUT=*SYSOUT
The output is sent to SYSOUT.

OUTPUT=*SYSLST
The output is sent to SYSLST.

OUTPUT-FORMAT=...
Specifies the output format.

OUTPUT-FORMAT=*STD
The output format corresponds to the standard.

OUTPUT-FORMAT=*GENERATING-CMD
The output format corresponds to the generated command.

Command logging

A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Operand error
0	32	CMD0221	System error
0	64	CMD0216	Privilege not sufficient
0	64	BCA0203	Interface (&00) returns RC (&01)
0	64	BCA0215	Operand suppressed

Examples

Show the BCAM start parameters.

```
/SHOW-BCAM-START-PARAMETERS START-PARAMETER=*ALL
/SHOW-BCAM-START-PARAMETERS START-PARAMETER=*CONTROL-PARAMETERS,OUTPUT=*SYSOUT
/SHOW-BCAM-START-PARAMETERS START-PARAMETER=*STATUS-JV,OUTPUT=*SYSLST
/SHOW-BCAM-START-PARAMETERS START-PARAMETER=*FILES,OUTPUT=*SYSLST
/SHOW-BCAM-START-PARAMETERS START-PARAMETER=*LIMITS,OUTPUT=*SYSLST
```

S variables

The command's START-PARAMETER operand defines the S variables to which values are assigned. Only the value *ALL is significant for **START-PAR**AMETER in combination with the OUTPUT-FORMAT *GENERATING-CMD operands because the command information for DCOPT is always to be output.

Output information	Name of the S variable	Data type	Content	Condition
Name of the BS2000 host	var(*LIST).HOST-NAME	string	<c-string 1..8>	START-PAR= *ALL/ *CONTROL O-F=*STD
Socket host name of the host	var(*LIST).SOCKETHOST-NAME	string	<c-string 1..32> <text 1..32>	START-PAR= *ALL/ *CONTROL O-F=*STD
Continuation of SOF and command file processing	var(*LIST).CONTI-AFTER-ERROR	string	*YES *ONLY *NO	START-PAR= *ALL/ *CONTROL O-F=*STD
Controls the scope of the message output	var(*LIST).MSG	string	*ALL *NAK *ERROR-ONLY	START-PAR= *ALL/ *CONTROL O-F=*STD
Controls whether LWRESD is started	var(*LIST).LWRESD	string	*YES *NO	START-PAR= *ALL/ *CONTROL O-F=*STD
Name of the RDF file	var(*LIST).RDF-FILE	string	<filename>	START-PAR= *ALL/ *FILES O-F=*STD
Maximum message length, which the host can receive	var(*LIST).MAX-TSDU-SIZE	integer	<integer 4096.. 65530>	START-PAR= *ALL/ *FILES O-F=*STD

Name of the SOF file	var(*LIST).SOF-FILE	string	<filename>	START-PAR= *ALL/ *FILES O-F=*STD
Processing using a SEQ file	var(*LIST).DADM	string	*NO *YES *SPOOL	START-PAR= *ALL/ *FILES O-F=*STD
Name of the SEQ file	var(*LIST).SEQ-FILE	string	<filename>	START-PAR= *ALL/ *FILES O-F=*STD
Processor file	var(*LIST).PROCESSOR-TAB.F-NAME	string	<filename>	START-PAR= *ALL/ *FILES O-F=*STD
Access to processor file	var(*LIST).PROCESSOR-TAB.ACCESS	string	*READ *UPDATE *ALLOW	START-PAR= *ALL/ *FILES O-F=*STD
Socket host file	var(*LIST).SOCKETHOST-TAB.F-NAME	string	<filename>	START-PAR= *ALL/ *FILES O-F=*STD
Application file	var(*LIST).APPL-TAB.F-NAME	string	<filename>	START-PAR= *ALL/ *FILES O-F=*STD
FQDN file	var(*LIST).FQDN-TAB.F-NAME	string	<filename>	START-PAR= *ALL/ *FILES O-F=*STD
Services file	var(*LIST).SERVICES-TAB.F-NAME	string	<filename>	START-PAR=

				*ALL/ *FILES O-F=*STD
BCAM status (old)	var(*LIST).JV-READY	string	<filename>	START-PAR= *ALL/ *STA-JV O-F=*STD
BCAM RDF file (old)	var(*LIST).JV-RDF	string	<filename>	START-PAR= *ALL/ *STA-JV O-F=*STD
Job variable for the BCAMstatus	var(*LIST).STA-JV	string	<filename>	START-PAR= *ALL/ *STA-JV O-F=*STD
Limits the number of non predefined applications that can be opened simultaneously	var(*LIST).MAX-NPA-NUM	integer	<integer 1.. 2147483647>	START-PAR= *ALL/ *LIMITS O-F=*STD
Limits the number of non predefined applications that can be opened simultaneously by a task	var(*LIST).MAX-NPT-NUM	integer	<integer 1.. 2147483647>	START-PAR= *ALL/ *LIMITS O-F=*STD
Limits the number of connections that a non predefined application can have	var(*LIST).MAX-CNN-NUM	integer	<integer 1.. 2147483647>	START-PAR= *ALL/ *LIMITS O-F=*STD
Size of the virtual memory in Kbytes	var(*LIST).PAGABLE-MEM-SIZE	integer	<integer 1024.. 1048576>	START-PAR= *ALL/ *LIMITS O-F=*STD
Default value of the virtual memory in Kbytes	var(*LIST).PAGABLE-MEM-DFT	integer	<integer 1024.. 1048576>	START-PAR= *ALL/ *LIMITS O-F=*STD

Size of the resident memory in Kbytes	var(*LIST).RESIDENT-MEM-SIZE	integer	<integer 1024..1048576>	START-PAR=*ALL/*LIMITS O-F=*STD
Default value of the resident memory in Kbytes	var(*LIST).RESIDENT-MEM-DFT	integer	<integer 1024..1048576>	START-PAR=*ALL/*LIMITS O-F=*STD
First socket port number that can be assigned with non privileged applications	var(*LIST).PORT-NUM.FIRST-NON-PRIVIL	integer	<integer 1..65535>	START-PAR=*ALL/*LIMITS O-F=*STD
First free socket port number, that can be dynamically assigned by BCAM	var(*LIST).PORT-NUM.FIRST-DYN	integer	<integer 1..65535>	START-PAR=*ALL/*LIMITS O-F=*STD
NSDU length for IP routes	var(*LIST).REM-IP-NSDU-SIZE	integer	<integer 512..65530>	START-PAR=*ALL/*LIMITS O-F=*STD
Maximum size of the ISAM buffer pool in BCAM control files	var(*LIST).MAX-ISAM-POOL-SIZE	integer	<integer 128..32766>	START-PAR=*ALL/*LIMITS O-F=*STD
Maximum size of the control block pool	var(*LIST).MAX-SLOT-POOL-SIZE	integer	<integer 2048..65535>	START-PAR=*ALL/*LIMITS O-F=*STD
Maximum number of entries for DNS-ACCESS	var(*LIST).MAX-DNS-ACC-ENTR	integer	“ “ <integer 0..32766>	START-PAR=*ALL/*LIMITS O-F=*STD
Maximum number of entries forVLAN-ACCESS	var(*LIST).MAX-VLAN-ACC-ENTR	integer	“ “ <integer 0..32766>	START-PAR=

				*ALL /*LIMITS O-F=*STD
Number of bitmaps for management of the data slot pool	var(*LIST).NUM-OF-BITMAP	integer	<integer 1..8>	START-PAR= *ALL/ *LIMITS O-F=*STD
SOF timer (in msec)	var(*LIST).SOF-PROCESS-TIME	integer	<integer 1.. 99999999>	START-PAR= *ALL/ *TIMER O-F=*STD
Generating commands	var(*LIST).GENERATING-CMD	string	<text 1..2000>	START-PAR= *ALL <any> O-F=*GEN

SHOW-BCAM-TIMER / SHBCTI: Show BCAM timer information

You use the SHOW-BCAM-TIMER command to show BCAM timer information.

The alias name SHBCTI exists for SHOW-BCAM-TIMER.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-BCAM-TIMER / **SHBCTI**
TIMER = ***ALL** / list-poss (8): ***STD** / ***IP** / ***ISO**
,**OUTPUT** = ***SYSOUT** / ***SYSLST**
,**OUTPUT-FORMAT** = ***STD** / ***GENERATING-CMD**

TIMER=...
Specifies the type of information.

TIMER=*ALL
Shows all BCAM timers that can be controlled.

TIMER=*STD
Shows the general BCAM timers.

TIMER=*IP
Shows the IP-specific BCAM timers.

TIMER=*ISO
Shows the ISO-specific BCAM timers.

OUTPUT=...
Specifies the output medium.

OUTPUT=*SYSOUT
The output is sent to SYSOUT.

OUTPUT=*SYSLST
The output is sent to SYSLST.

OUTPUT-FORMAT=...
Specifies the output format.

OUTPUT-FORMAT=*STD
The output format corresponds to the standard.

OUTPUT-FORMAT=*GENERATING-CMD
The output format corresponds to the generated command.

Command logging

A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Operand error
0	32	CMD0221	System error
0	64	CMD0216	Privilege not sufficient
0	64	BCA0203	Interface (&00) returns RC (&01)

Examples

Show BCAM timer.

```
/SHOW-BCAM-TIMER TIMER=*ALL
/SHOW-BCAM-TIMER TIMER=*STD,OUTPUT=*SYSLST
/SHOW-BCAM-TIMER TIMER=*IP,OUTPUT=*SYSLST
/SHOW-BCAM-TIMER TIMER=*ISO,OUTPUT=*SYSLST
```

S variables

The command's TIMER operand defines the S variables to which values are assigned. Possible values for **TIM**ER are *ALL, *IP, *ISO and *STD.

Output information	Name of the S variable	Data type	Content	Condition
Time interval for the reassembly timer	var(*LIST).I-REASSAMBLY	integer	<integer 1..255>	TIM=*ALL/ *STD O-F=*STD
Timeout for incoming messages of the connectionoriented transport service	var(*LIST).LETT	integer	<integer 0..32767>	TIM=*ALL/ *STD O-F=*STD
Time interval for termination of MSCF at BCEND	var(*LIST).MAX-MSCF-DELAY	integer	<integer 0..32765>	TIM=*ALL/ *STD O-F=*STD
Timeout for warnings	var(*LIST).WARN	integer	<integer 5..32765>	TIM=*ALL/ *STD O-F=*STD
Time interval for ARP monitoring	var(*LIST).ARP-SUPERVISION	integer	<integer 5..32765>	TIM=*ALL/ *IP O-F=*STD

Timeout for incoming messages of the connectionless transport service	var(*LIST).DATAGRAM	integer	<integer 5..32765>	TIM=*ALL/*IP O-F=*STD
Time interval for IP lifetime	var(*LIST).IP-LIFETIME	integer	<integer 1..255>	TIM=*ALL/*IP O-F=*STD
Time interval for the ISO9542 configuration timer	var(*LIST).CONF	integer	<integer 150..900>	TIM=*ALL/*ISO O-F=*STD
Time monitoring for connection establishment	var(*LIST).CONN	integer	<integer 5..32765>	TIM=*ALL/*ISO O-F=*STD
Time interval for ISO8743 lifetime	var(*LIST).INTF-LIFETIME	integer	<integer 1..127>	TIM=*ALL/*ISO O-F=*STD
Time interval for ISO8073 retransmission timer (2 sec)	var(*LIST).RETRANSMISSION	integer	<integer 2..36>	TIM=*ALL/*ISO O-F=*STD
Time interval for ISO8073 wIndow timer	var(*LIST).WINDOW	integer	<integer 2..180>	TIM=*ALL/*ISO O-F=*STD
Generating commands	var(*LIST).GENERATING-CMD(*LIST)	string	<text 1..256>	TIM=*ALL <any> O-F=*GEN

SHOW-CONNECTION / SHCN: Show connection information

You use the SHOW-CONNECTION command to output information about transport connections. The command is mapped directly to BCSHOW.

The alias SHCN exists for SHOW-CONNECTION.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x	x			

List of valid command sources

SHOW-CONNECTION / **SHCN**

CONNECTION = ***ALL** / [***PARAMETERS**](...) / ***NUMBER**(...) / ***VIA-HOST**(...) / ***VIA-NODE**(...) / ***VIA-LINE**(...) /

***VIA-PROCESSOR**(...) / ***VIA-ROUTE**(...)

[***PARAMETERS**](...)

| **APPLICATION** = ***ALL** / [***NEA**](...) / ***OSI**(...) / ***SOCKETS**(...) / ***PORT**(...) / ***NUMBER**(...)

| *[**NEA**](...)

| | **NEA-NAME** = <text 1 .. 16> / <c-string 1 .. 16>

| ***OSI**(...)

| | **OSI-NAME** = <composed-name 1 .. 78> / <text 1 .. 78> / <x-string 1 .. 156>

| ***SOCKETS**(...)

| | **SOCKET-NAME** = <composed-name 1 .. 78> / <text 1 .. 78> / <x-string 1 .. 156>

| ***PORT**(...)

| | **PORT-NUMBER** = <integer 1 .. 65535> / <x-string 1 .. 4>

| ***NUMBER**(...)

| | **APPLICATION-NUMBER** = <integer 0 .. 2147483647> / <x-string 1 .. 8>

| ,**PARTNER** = ***ALL** / [***NEA**](...) / ***OSI**(...) / ***SOCKETS**(...) / ***PORT**(...)

| *[**NEA**](...)

| | **NEA-NAME** = <text 1 .. 16> / <c-string 1 .. 16>

| ***OSI**(...)

| | **OSI-NAME** = <composed-name 1 .. 78> / <text 1 .. 78> / <x-string 1 .. 156>

| ***SOCKETS**(...)

| | **SOCKET-NAME** = <composed-name 1 .. 78> / <text 1 .. 78> / <x-string 1 .. 156>

```
        |       *PORT(...)
        |           |   PORT-NUMBER = <integer 1 .. 65535> / <x-string 1 .. 4>
    *NUMBER(...)
        |   CONNECTION-NUMBER = <integer 0 .. 2147483647> / <x-string 1 .. 8>
    *VIA-HOST(...)
        |   HOST-NAME = <composed-name 1 .. 8> / <text 1 .. 8>
    *VIA-NODE(...)
        |   NODE-NAME = <composed-name 1 .. 8> / <text 1 .. 8>
    *VIA-LINE(...)
        |   LINE-NAME = <composed-name 1 .. 8> / <text 1 .. 8>
    *VIA-PROCESSOR(...)
        |   PROCESSOR-NAME = <composed-name 1 .. 8> / <text 1 .. 8>
    *VIA-ROUTE(...)
        |   ROUTE-NAME = <composed-name 1 .. 8> / <text 1 .. 8>
,SELECT = *ALL / [*BY-ATTRIBUTES](...)
    [*BY-ATTRIBUTES](...)
        |   JOB-IDENTIFICATION = *ANY / *TID(...) / *TSN(...)
        |       *TID(...)
        |           |   TID = <x-string 1 .. 8>
        |       *TSN(...)
        |           |   TSN = <alphanum-name 1 .. 4>
        |   ,IPSEC = *ANY / *NO / *YES
        |   ,VLAN-ID = *ANY / *ALL / <integer 2 .. 4094>
        |   ,PROCESSOR-NAME = *ANY / <composed-name 1 .. 8> / <text 1 .. 8>
        |   ,INTERFACE = *ANY / *NEA / *ISO / *STREAMS / *SOCKETS
        |   ,L4-PROTOCOL = *ANY / list-poss(4): *LOCAL / *ISO / *ISO-4 / *TCP
,MAX-MSG-NUMBER = *STD / <integer 1 .. 2147483647>
```

CONNECTION=...
Connection for which the information is output.
The information is output using the console messages BCA08A7, BCA08A8, BCA08A1, BCA08A2 and BCA08E8.

CONNECTION=*ALL
Information is output for all existing connections

CONNECTION=[*PARAMETERS](...)
Information for connections concerning applications with a NEA application name is output.

APPLICATION=...
Name of the application for whose connections information is output.

APPLICATION=*ALL
Information is output for all applications for which connections exist.

APPLICATION=[*NEA](...)
Information for connections concerning applications with a NEA application name is output.

NEA-NAME=<text 1..16>
NEA application name of the application for whose connections information is output.

APPLICATION=*OSI(...)
Information for connections concerning applications with an OSI application name is output.

OSI-NAME=<text 1..78> / <x-string 1..156>
OSI application name of the application for whose connections information is output.

APPLICATION=*SOCKETS(...)
Information for connections concerning applications with a SOCKET application name is output.

SOCKET-NAME=<text 1..78> / <x-string 1..156>
SOCKET application name of the application for whose connections information is output.

APPLICATION=*PORT(...)
Information for connections concerning applications identified via a TCP/IP port number is output.

PORT-NUMBER=<integer 1..65535> / <x-string 1..4>
TCP/IP port number of the application for whose connections information is output.

APPLICATION=*NUMBER(...)
Information for connections concerning applications identified via an internal BCAM application number is output.

APPLICATION-NUMBER=<integer 0..2147483647> / <x-string 1..8>
Internal BCAM application number of the application for whose connections information is output.

PARTNER=...
Name of the partner application for whose connections information is to be output.

PARTNER=*ALL
Information is output for all partner applications for which connections exist.

PARTNER=[*NEA](...)
Information is output for connections concerning partner applications with a NEA application name.

NEA-NAME=<text 1..16>
NEA application name of the partner application for whose connections information is to be output.

PARTNER=*OSI(...)
Information is output for connections concerning partner applications with an OSI application name.

OSI-NAME=<text 1..78> / <x-string 1..156>
OSI application name of the partner application for whose connections information is to be output.

PARTNER=*SOCKETS(...)
Information is output for connections concerning partner applications with a SOCKET application name.

SOCKET-NAME=<text 1..78> / <x-string 1..156>
SOCKET application name of the partner application for whose connections information is to be output.

PARTNER=*PORT(...)
Information for connections concerning partner applications identified via a TCP/IP port number is output.

PORT-NUMBER=<integer 1..65535> / <x-string 1..4>
TCP/IP port number of the partner application for whose connections information is output.

CONNECTION=*NUMBER(...)
Information for connections concerning partner applications identified via an internal BCAM application number is output.

CONNECTION-NUMBER=<integer 0..2147483647> / <x-string 1..8>
Internal BCAM application number of the partner application for whose connections information is output.

CONNECTION=*VIA-HOST(...)
Outputs the information for connections which are identified via the BCAM host.

HOST-NAME=<composed-name 1 .. 8> / <text 1 .. 8>
BCAM host of the connections for which information is output.

CONNECTION=*VIA-NODE(...)
Outputs the information for connections which are identified via a BCAM node.

NODE-NAME=<composed-name 1 .. 8> / <text 1 .. 8>
BCAM node of the connections for which information is output.

CONNECTION=*VIA-LINE(...)
Outputs the information for connections which are identified via a BCAM line (with the exception of the VLAN lines).

LINE-NAME=<composed-name 1 .. 8> / <text 1 .. 8>
BCAM line of the connections for which information is output.

CONNECTION=*VIA-PROCESSOR(...)
Outputs the information for connections which are identified via the BCAM processor.

PROCESSOR-NAME=<composed-name 1 .. 8> / <text 1 .. 8>
BCAM processor of the connections for which information is output.

CONNECTION=*VIA-ROUTE(...)
Outputs the information for connections which are identified via the BCAM route.

ROUTE-NAME=<composed-name 1 .. 8> / <text 1 .. 8>
BCAM route of the connections for which information is output.

SELECT=...
Criterion used to search for a connection.

SELECT=*ALL
Information on all existing connections is output.

SELECT=[*BY-ATTRIBUTES](...)
Information is output on the connections that meet the following criteria.

JOB-IDENTIFICATION=...
Information is output on connections that were logged on under a specific task.

JOB-IDENTIFICATION=*ANY
Information on all existing connections is output.

JOB-IDENTIFICATION=*TID(...)
Information is output on connections that were logged on under a specific task ID.

TID=<x-string 1..8>
Information is output on connections that were logged on under the specified task ID.

JOB-IDENTIFICATION=*TSN(...)
Information is output on connections that were logged on under a specific TSN.

TSN=<alphanum-name 1..4>
Information is output on connections that were logged on under the specified TSN.

IPSEC=...
Information is shown for connections that are used securely via IPSec.

IPSEC=*ANY
Information is shown for all existing connections.

IPSEC=NO
Information is shown only for connections not being used securely with IPSec.

IPSEC=YES
Information is shown only for connections being used with IPSec.

VLAN-ID=...
Information is shown for connections which are assigned to a VLAN ID.

VLAN-ID=*ANY
Information is shown for all existing connections.

VLAN-ID=*ALL
Information is shown for connections to all VLAN IDs.

VLAN-ID=<integer 2..4094>
Information is shown for connections which are assigned to a VLAN ID.

PROCESSOR-NAME=...
Information is shown for connections that lead to a specific partner processor.

PROCESSOR-NAME=*ANY
Information for all existing connections is shown.

PROCESSOR-NAME=<composed-name 1..8> / <text 1..8>
Information is shown for connections that use a specific NEA interface functionality.

INTERFACE=...
Information is output on connections that use a specific interface functionality.

INTERFACE=*ANY
Information on all existing connections is output.

INTERFACE=*NEA
Information is output on connections that use NEA interface functionality.

INTERFACE=*ISO
Information is output on connections that use ISO interface functionality.

INTERFACE=*STREAMS
Information is output on connections that use STREAMS (SOCKETS) interface functionality.

INTERFACE=*SOCKETS
Information is output on connections that use STREAMS (SOCKETS) interface functionality.

L4-PROTOCOL=...
Information is output on connections with a specific protocol type

L4-PROTOCOL=*ANY
Information on all existing connections is output.

L4-PROTOCOL=*LOCAL
Information is output on all existing connections with the Layer 4 protocol for local connections.

L4-PROTOCOL=*ISO
Information is output on all existing connections with the Layer 4 protocol ISO8073.

L4-PROTOCOL=*ISO-4
Information is output on all existing connections with the Layer 4 protocol ISO8073 Class 4.

L4-PROTOCOL=*TCP
Information is output on all existing connections with the Layer 4 protocol TCP.

MAX-MSG-NUMBER=...
Maximum number of messages that can be output for this command.

MAX-MSG-NUMBER=*STD
A maximum of 50 messages may be output at SYSOUT and a maximum of 10 at the console.

MAX-MSG-NUMBER=<integer 1..2147483647>
Maximum number of messages that can be output for this command.

> The number of messages issued can be exceeded when information is output because of the restricted output length of a message.
> Multiple messages are frequently output for BCAM objects. Within BCAM these messages are counted as just one message.
> In some cases the message BCA0765 is also issued in order to facilitate the assignment of the output information to the specified command.

Command logging

For reasons of compatibility, positive acknowledgments are supplied in news BCA0720, and negative acknowledgments in news BCA0728, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA08E8, BCA08A1, BCA08A2, BCA08A7 and BCA08A8 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	1	BCA0768	Syntax error in command
0	64	BCA07A1	Route not found
0	64	BCA07A2	Line not found
0	64	BCA07A3	Node not found
0	64	BCA07A4	Host not found
0	64	BCA08EF	Nothing found to show
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Example

Show connections

```
/SHOW-CONNECTION
```

Equivalent BCSHOW command:

```
/BCSHOW SHOW=CONNECTION,INFORMATION=(SHORT,LONG)
```

SHOW-CONNECTION-BY-NAME / SHCNN: Show connection information about names

You use the SHOW-CONNECTION-BY-NAME command to output information about connections which are selected using a name. This command is based on the existing BCAM-SHOW functionality.

SHOW-CONNECTION-BY-NAME may only be employed in interactive mode and is used for diagnostic purposes.

The alias for SHOW-CONNECTION-BY-NAME is SHCNN.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-CONNECTION-BY-NAME / **SHCNN**
NAME = ***OWN** / ***SELECT** / ***ALL** / <text 1..256>
,**INFORMATION=*ALL** / ***MINIMUM**
,OUTPUT = *SYSOUT / <filename_1..54>
,SEARCH = ***NONE** / <text 0..1800 case sensitive>
,MAX-OBJECT-NUMBER = *STD / <integer 1 .. 2147483647>

NAME=...
Specifies a host name, processor name or FQDN name for which connection information is to be output.

NAME=*OWN
Processor name under which the interactive task is running.

NAME=*SELECT
Creates a list of SHOW-CONNECTION-BY-NAME commands, which includes all current to the system known processor and DNS names.

NAME=*ALL
Delivers information from all available processors.

NAME=<text 1..256>
Specifies the name.

INFORMATION=...
Specifies the scope of the information output.

INFORMATION=*ALL
All information about a connection is to be output.

INFORMATION=*MINIMUM
Only the information about the storage space currently assigned to a connection is to be output.

OUTPUT=...
Specifies the output medium.

OUTPUT=*SYSOUT
The output is sent to SYSOUT.

OUTPUT=<filename_1..54>
Output takes place to a file with the specified name.

SEARCH=...
specifies the search string that is to be searched for in the output information. Wildcards are supported.

SEARCH=*NONE
There is no search string specified, i.e. the complete command or tool output is shown in SYSOUT format.

SEARCH=<text 0..1800 case sensitive>
String to be searched for. Only (logical) rows that contain the specified string are shown.

MAX-OBJECT-NUMBER=...
Maximum number of objects that may be output for this command.

MAX-OBJECT-NUMBER=*STD
A maximum of 50 objects may be output.

MAX-OBJECT-NUMBER=<integer 1..2147483647>
Maximum number of objects that may be output for this command.

Command logging

Positive acknowledgments result in the required information being output.
A description of the error messages that can be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command processed successfully
0	1	CMD0202	Syntax error
0	64	BCA0290	No entry found

Note

More detailed command return codes are not provided owing to the procedural processing of the command. An output always takes place unless a syntax error was detected in the command.

Example

Show the connection information for a name:

```
/SHOW-CONNECTION-BY-NAME NAME=MCH1860D
```

SHOW-DNS-ACCESS / SHDNA: Show information about DNS access in BCAM

You use the SHOW-DNS-ACCESS command to output information about the DNS Resolver and access to DNS data in BCAM and in particular restrictions relating to DNS access.

The SDF alias name SHDNA exists for SHOW-DNS-ACCESS.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-DNS-ACCESS / **SHDNA**
SELECT = ***ALL** / list-poss (8): ***DNS-RESOLVER** / ***IP-ADDRESS-RANGE** / ***IPV6-ADDRESS-RANGE** / ***NAMES** / ***LIMITS** / ***OPTIONS**
,**OUTPUT** = ***SYSOUT** / ***SYSLST**
,**OUTPUT-FORMAT** = * **STD** / ***GENERATING-CMD**

SELECT=...
Selects the information that is to be output.

SELECT=*ALL
Displays the IP and IPv6 address ranges as well as the namespace which is to be permitted for access to DNS data.

SELECT=*DNS-RESOLVER
Displays which DNS Resolver is currently set to access DNS data.

SELECT=*IP-ADDRESS-RANGE
Displays the IP address ranges which are permitted for access to DNS data.

SELECT=*IPV6-ADDRESS-RANGE
Displays the IPv6 address ranges which are permitted for access to DNS data.

SELECT=*NAMES
Displays the namespace which is permitted for access to DNS data.

SELECT=*LIMITS
Displays the number of possible table entries.

SELECT=*OPTIONS
Displays the DNS options for access to DNS data.

OUTPUT=...
Specifies the output medium.

OUTPUT=*SYSOUT
The output is sent to SYSOUT.

OUTPUT=*SYSLST
The output is sent to SYSLST.

OUTPUT-FORMAT=...
Specifies the output format.

OUTPUT-FORMAT=*STD
The output format corresponds to the default.

OUTPUT-FORMAT=*GENERATING-CMD
The output corresponds to the generating commands.

Command logging

A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command processed successfully
0	1	CMD0202	Operand error
0	32	CMD0221	System error
0	64	CMD0216	Privilege not sufficient
0	64	BCA0203	Interface (&00) returns RC (&01)

Examples

Displays of access to DNS data in BCAM:

```
/SHOW-DNS-ACCESS SELECT=*ALL
/SHOW-DNS-ACCESS SELECT=*DNS-RESOLVER
/SHOW-DNS-ACCESS SELECT=*OPTIONS
/SHOW-DNS-ACCESS SELECT=*IP-ADDRESS-RANGE,OUTPUT=*SYSLST
/SHOW-DNS-ACCESS SELECT=*IPV6-ADDRESS-RANGE,OUTPUT=*SYSLST
/SHOW-DNS-ACCESS SELECT=*NAMES,OUTPUT=*SYSLST
```

S variables

The command's SELECT operand specifies which S variables are to be assigned values. Possible values for **SELECT** are ***ALL**, ***IP**-ADDRESS-RANGE, ***IPV6**-ADDRESS-RANGE, ***NAM**ES, ***DNS**-RESOLVER, ***LIM**ITS and ***OPT**IONS.

Output information	Name of the S variable	Data type	Content	Condition
Access to DNS data in BCAM	var(*LIST).OPTION.DNS-USAGE	string	*OFF *ON	SEL= *ALL/*OPT O-F=*STD
Number of permitted entries	var(*LIST).MAX-DNS-ACC-ENTR	integer	<integer 1..65535>	SEL= *LIM/*OPT O-F=*STD
PORT number indicator	var(*LIST).DNS-RESOLVER.PORT-IND	string	*STD *VALUE	SEL= *ALL/*DNS O-F=*STD
PORT number which is set for the DNS Resolver	var(*LIST).DNS-RESOLVER.PORT-NUM	integer	<integer 1..65535>	SEL= *ALL/*DNS O-F=*STD
IP address indicator	var(*LIST).DNS-RESOLVER-IND	string	*STD *NONE *VALUE	SEL= *ALL/*DNS O-F=*STD
IP address set for the DNS Resolver	var(*LIST).DNS-RESOLVER.IP-ADDR	string	<c-string 7..15>	SEL= *ALL/*DNS O-F=*STD
IPv6 address indicator	var(*LIST).DNS-RESOLVER-IPV6-IND	string	*STD *NONE *VALUE	SEL= *ALL/*DNS O-F=*STD
IPv6 address which is set for the DNS Resolver	var(*LIST).DNS-RESOLVER.IPV6-ADDR	string	<c-string 3..45>	SEL= *ALL/*DNS O-F=*STD
Permitted IP addresses for access to DNS data (all, none or address range)	var(*LIST).IP-ADDR.INDICATOR	string	*ALL *NONE *ADD	SEL= *ALL/*IP O-F=*STD
Start of range of permitted IP addresses for access to DNS data	var(*LIST).IP-ADDR.RANGE(*LIST).FROM	string	<c-string 7..15>	SEL= *ALL/*IP O-F=*STD

End of range of permitted IP addresses for access to DNS data	var(*LIST).IP-ADDR.RANGE (*LIST).TO	string	<c-string 7..15>	SEL=*ALL/*IP O-F=*STD
Permitted IPv6 addresses for access to DNS data (all, none or address range)	var(*LIST).IPV6-ADDR.INDICATOR	string	*ALL *NONE *ADD	SEL=*ALL/*IPV6 O-F=*STD
Permitted IPv6 addresses for access to DNS data (specified via IPv6 prefix)	var(*LIST).IPV6-ADDR.IPV6-PREFIX(*LIST)	string	<c-string 9..49>	SEL=*ALL/*IPV6 O-F=*STD
Permitted names for access to DNS data (all, none or namespace)	var(*LIST).NAMES.INDICATOR	string	*ALL *NONE *ADD	SEL=*ALL/*NAM O-F=*STD
Namespace of processors which are permitted for access to DNS data	var(*LIST).NAMES.PROCESSOR-NAME(*LIST)	string	<c-string 1..8>	SEL=*ALL/*NAM O-F=*STD
Generating commands	var(*LIST).GENERATING-CMD(*LIST)	string	<text 1..256>	SEL=<any> O-F=*GEN

SHOW-HOST / SHHT: Show host information

You use the SHOW-HOST command to output information on hosts.

The alias SHHT exists for SHOW-HOST.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
x	x			

List of valid command sources

SHOW-HOST / SHHT
HOST-NAME = ***ALL** / <composed-name 1..8> / <c-string 1 .. 8>

HOST-NAME=...
Name of the host for which information is output.
The information is displayed by means of console message BCA08E0.

HOST-NAME=*ALL
Information on all hosts is output.

HOST-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the host for which information is output.

Command logging

Positive acknowledgments are supplied in news BCA0720, and negative acknowledgments in news BCA0728, followed by the message NBR0740. In addition, for positive acknowledgments, the message BCA08E0 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	1	BCA0768	Syntax error in command
0	64	BCA07A4	Host not found
0	64	BCA08EF	Nothing found to show
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Example

Show host or hosts:

```
/SHOW-HOST
```

Equivalent BCSHOW command:

```
/BCSHOW SHOW=HOST
```

SHOW-HOST-ATTRIBUTES / SHHTA: Show host attribute information

You use the SHOW-HOST-ATTRIBUTES command to show detailed host information.

The alias name SHHTA exists for SHOW-HOST-ATTRIBUTES.

This command can be executed with the STD-PROCESSING privilege.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-HOST-ATTRIBUTES / **SHHTA**
HOST-NAME = ***STD** / ***ALL** / **<composed-name 1..8>**
,**INFORMATION** = ***STD** / ***BCAM-NAMES** / ***HOST-NAMES** / ***STATUS-JV** / ***ALL**
,**OUTPUT** = ***SYSOUT** / ***SYSLST**

HOST-NAME=...
Specifies the name of the host to be shown.

HOST-NAME=*STD
The standard host (normal host) is to be shown.

HOST-NAME=*ALL
All hosts are to be shown.

HOST-NAME=<composed-name 1..8>
Name of the host to be shown.

INFORMATION=...
Defines the type of information.

INFORMATION=*STD
Shows standard host information.

INFORMATION=*BCAM-NAMES
Shows information on the names used in BCAM.

INFORMATION=*HOST-NAMES
Shows a list of the host names.

INFORMATION=*STATUS-JV
Shows the STATUS job variable.

INFORMATION=*ALL
Shows all host information.

OUTPUT=...
Specifies the output medium.

OUTPUT=*SYSOUT
The output is sent to SYSOUT.

OUTPUT=*SYSLST
The output is sent to SYSLST.

Command logging

A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Operand error
0	32	CMD0221	System error
0	64	BCA0216	Privilege not sufficient
0	64	BCA0203	Interface (&00) returns RC (&01)
0	64	BCA0232	Host entry not found

Examples

Show standard host information:

```
/SHOW-HOST-ATTRIBUTES HOST-NAME=*STD,INFORMATION=*ALL
```

Show host information of a virtual host:

```
/SHOW-HOST-ATTRIBUTES HOST-NAME=VH01
/SHOW-HOST-ATTRIBUTES HOST-NAME=VH01,INFORMATION=*ALL
/SHOW-HOST-ATTRIBUTES HOST-NAME=VH01,INFORMATION=*STATUS-JV
```

Show host names:

```
/SHOW-HOST-ATTRIBUTES HOST-NAME=*ALL,INFORMATION=*HOST-NAMES
```

S variables

The command's INFORMATION operand defines the S variables to which values are assigned. Possible values for **INF**ORMATION are ***ALL**, ***BCAM**-NAMES, ***HOST**-NAMES, ***STA**TUS**-JV** and ***STD** (the values in bold are used in the table).

Output information	Name of the S variable	Data type	Content	Condition
Host name	var(*LIST).HOST-NAME	string	<c-string 1..8>	INF=*ALL/ *STA-JV/ *STD
Socket host name	var(*LIST).SOCKETHOST-NAME	string	*HOST-NAME <c-string 1..32> <text 1..32>	INF=*ALL/ *STD
Maximum message length that the host can receive	var(*LIST).MAX-TSDU-SIZE	integer	<integer 4096..65530>	INF=*ALL
Host type	var(*LIST).TYPE	string	*NORMAL *VIRTUAL	INF=*ALL/ *STD
Status	var(*LIST).ADM-STA	string	*INCLUDED *EXCLUDED *ACTIVE	INF=*ALL/ *STD
Status JV	var(*LIST).STA-JV	string	*NONE <filename>	INF=*ALL/ *STA-JV
Name type	var(*LIST).ELM(*LIST).NAME-TYPE	string	*BCAM *DNS *EOL	INF= *BCAM *ALL
Name	var(*LIST).ELM(*LIST).NAME	string	<text 1..256>	INF= *BCAM *ALL
List of host names	var(*LIST).HOST-NAMES(*LIST)	string	<c-string 1..8>	INF=*HOST

SHOW-LINE / SHLN: Show lines

You use the SHOW-LINE command to display line-specific options and/or attributes.

The alias name SHLN exists for SHOW-LINE din order to provide SNMP support.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x	x		x	

List of valid command sources

SHOW-LINE / **SHLN**

LINE-NAME = ***ALL** / <composed-name 1 .. 8> / <c-string 1 .. 8> / ***VIA-NODE**(...)

***VIA-NODE**(...)

| **NODE-NAME** = <composed-name 1 .. 8> / <c-string 1 .. 8>

,**INFORMATION** = ***STATE** / ***ALL** /

list-poss (16): ***BROADCAST** / ***MULTICAST** / ***SLOW-POLL** / ***MAX-LPDU-SIZE** / ***MAX-LPDU-VALUE** / ***AUTO-ROUTE-SWITCHING** / ***ROUTE-RESWITCHING** / ***REDUNDANCY** / ***STATE** / ***TIMEOUT-PROCESSING** / ***PROTOCOL** / ***DEVICES** / ***DUP-ADDR-DETECTION** / ***ADDR-CONFLICT-DETECT** / ***CHECKSUM** / ***OFFLOAD** ***IPV6-AUTO-CONFIG**

LINE-NAME=...
In LINE-NAME you specify the lines for which you want to display information.

LINE-NAME=*ALL
Information on all lines is displayed.

LINE-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the line for which information is displayed.

LINE-NAME=*VIA-NODE(...)
Information on lines which are determined by specifying a node.

NODE-NAME=<composed-name 1..8>/ <c-string 1..8>
Name of the node about whose lines information is to be displayed.

INFORMATION=...
In INFORMATION you specify which information is displayed.

INFORMATION=*STATE
The status of the line is output.
The information is displayed by means of console message BCA07D3.

INFORMATION=*ALL
All the information concerning the line is displayed.

INFORMATION=*BROADCAST
The line-specific BROADCAST option is displayed.
For this option to be displayed, a LAN protocol – CSMACD – must be used on the line. The information is displayed by means of console message BCA07D2.

INFORMATION=*MULTICAST
The line-specific MULTICAST option is displayed.
For this option to be displayed, a LAN protocol – CSMACD – must be used on the line.The information is displayed by means of console message BCA07D2.

INFORMATION = *SLOW-POLL
The line-specific SLOW-POLL option is displayed.
For this option to be displayed, a LAN protocol – CSMACD – must be used on the line.The information is displayed by means of console message BCA07D2.

INFORMATION=*MAX-LPDU-SIZE
The line-specific MAX-LPDU-SIZE attribute is displayed.
The information is displayed by means of console message BCA07D2.

IINFORMATION=*MAX-LPDU-VALUE
The line-specific MAX-LPDU-VALUE is displayed.
The information is displayed by means of console message BCA0560.

INFORMATION=*AUTO-ROUTE-SWITCHING
The line-specific AUTO-ROUTE-SWITCHING option is displayed.
For this option to be displayed, a LAN protocol – CSMACD – must be used on the line.The information is displayed by means of console message BCA07D2.

INFORMATION=*ROUTE-RESWITCHING
The line-specific ROUTE-RESWITCHING option is displayed.
For this option to be displayed, a LAN protocol – CSMACD – must be used on the line.The information is displayed by means of console message BCA07D2.

INFORMATION=*REDUNDANCY
Information about redundancy is displayed.
A prerequisite for the display of this information is that a LAN protocol – CSMACD – is used on the line.
The information is displayed using console message BCA07DF.

INFORMATION=*STATE
The line status is displayed.
The information is displayed by means of console message BCA07D3.

INFORMATION=*TIMEOUT-PROCESSING
The line-specific TIMEOUT-PROCESSING behavior is displayed.
This behavior can only be displayed if a LAN protocol is used on the line (CSMACD). The information is displayed by means of console message BCA07D2.

INFORMATION=*PROTOCOL
The protocol that is used on the line is displayed.
The information is displayed by means of console message BCA07D2.

INFORMATION=*DEVICES
The mnemonic device names for the line are displayed
The information is displayed by means of console message BCA07D4.

INFORMATION=*DUP-ADDR-DETECTION
The Duplicate Address Detection (DAD) for IPv6 is displayed.
The information is displayed by mean of console message BCA07D2.

INFORMATION=*ADDR-CONFLICT-DETECT
The Address Conflict Detection (ACD) for IP is displayed.
The information is displayed by mean of console message BCA07D2.

INFORMATION=*CHECKSUM
The value for CHECKSUM processing set by the administration is displayed.
The information for CHECKSUM is displayed by mean of console messages BCA07D2 and BCA0564.

INFORMATION=*OFFLOAD
The value set for (TCP-)OFFLOAD processing is displayed.
The information for OFFLOAD is displayed by means of console message BCA0564.

INFORMATION=*IPV6-AUTO-CONFIG
The IPv6 autoconfiguration is displayed.
The information is displayed by means of console message BCA07D2.

Command logging

Positive acknowledgments are supplied in news BCA0663, and negative acknowledgments in news BCA06B3, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA07D2, BCA07D3 and BCA07D4 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
2	0	BCA06A4	SHOW-LINE command cancelled
0	2	BCA0768	Syntax error in command
0	64	BCA07A2	LINE-NAME not found
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Example

Show line

```
/SHOW-LINE LINE-NAME=LAN1#6,INFORMATION=(SLOW-POLL,DEVICES)
```

SHOW-LINE-ATTRIBUTES / SHLNA: Show line information

You use the SHOW-LINE-ATTRIBUTES command to display line-specific options and attributes for selected lines.

The alias name for SHOW-LINE-ATTRIBUTES is SHLNA.

BS2000 console	BS2000 SDF command	Command SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-LINE-ATTRIBUTES / **SHLNA**

LINE-NAME = ***ALL** / <composed-name 1 .. 8>

SELECT = ***ALL** / ***BY-ATTR**IBUTES(**...**)

***BY-ATTRI**BUTES(...)

| **NODE-**NAME = ***ANY** / <composed-name 1 .. 8>

,**INF**ORMATION = ***STA**TE / ***ALL** / ***LINE-**NAMES /

list-poss (16): ***ADDR**ESSES / ***DEV**ICES / ***LIM**ITS / ***OPT**IONS / ***PROT**OCOLS /

***RED**UNDANCY / ***STA**TE

,**OUTPUT** = ***SYSOUT** / ***SYSLST**

LINE-NAME=...
The lines for which information is displayed are selected via the line name.

LINE-NAME=*ALL
Displays information for all lines.

LINE-NAME=<composed-name 1..8>
Name of the line for which information is displayed.

SELECT=...
The lines for which information is displayed are restricted by means of selection criteria.

SELECT=*ALL
All the lines are selected.

SELECT=*BY-ATTRIBUTES(...)
The line that is to be selected is specified in greater detail.

NODE-NAME=...
Name of the node. The LAN protocol used on the line may only be CSMACD.

NODE-NAME=*ANY
Any node name.

NODE-NAME=<composed-name 1..8>
Name of node.

INFORMATION=...

INFORMATION allows you to specify the information that is to be output for the selected lines.

INFORMATION=*STATE

Displays the status of the lines.

INFORMATION=*ALL

Displays all the information relating to the lines.

INFORMATION=*LINE-NAMES

Displays the names of the lines.

INFORMATION=*ADDRESSES

Displays the addresses of the lines.

INFORMATION=*DEVICES

Displays the mnemonic device names of the lines.

INFORMATION=*LIMITS

Displays the adjustable limit values of the lines.

INFORMATION=*OPTIONS

Displays the options that can be set for the lines

INFORMATION=*PROTOCOLS

Displays the protocols used for the lines.

INFORMATION=*REDUNDANCY

Displays the redundancy information of the lines.

OUTPUT=...

Specifies the output medium.

OUTPUT=*SYSOUT

The output is sent to SYSOUT.

OUTPUT=*SYSLST

The output is sent to SYSLST.

Command logging

Positive acknowledgments result in the required information being output.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command processed successfully
0	1	CMD0202	Operand error
0	32	CMD0221	System error
0	64	CMD0216	Privilege not sufficient
0	64	BCA0203	Interface (&00) returns RC (&01).
0	64	BCA0241	Line (&00) to node (&01) not defined
0	64	BCA0242	No line defined to node (&00).
0	64	BCA0290	Line entry not found.

Examples

1. Show line:

   ```
   /SHOW-LINE-ATTRIBUTES LINE-NAME=LAN1#6,INFORMATION=*STATE
   ```

2. Show all lines:

   ```
   /SHOW-LINE-ATTRIBUTES LINE-NAME=*ALL,INFORMATION=*STATE
   ```

3. Show all line names:

   ```
   /SHOW-LINE-ATTRIBUTES LINE-NAME=*ALL,INFORMATION=*LINE-NAMES
   ```

S variables

The command's INFORMATION operand defines the S variables to which values are assigned. Possible values for **INF**ORMATION are ***STA**TE, ***ADDR**ESSES, ***DEV**ICES, ***LIM**ITS, ***OPT**IONS, ***PROT**OCOLS, *REDUNDANCY , ***ALL**,***LIN**E-NAMES.

Output information	Name of the S variable	Data type	Content	Condition
Line name	var(*LIST).LINE-NAME	string	<c-string 1..8>	INF= <in any case>
Host name	var(*LIST).HOST-NAME	string	*STD <c-string 1..8>	INF= *STA/*DEV /*ALL
Addresses assigned to host	var(*LIST).ADDR(*LIST).ADD-TO-HOST	string	*STD <c-string 1..8>	INF= *ADDR/*ALL
IP address	var(*LIST).ADDR(*LIST).IP-ADDR	string	*NONE <text 7..15>	INF= *ADDR/*ALL
IP address status	var(*LIST).ADDR(*LIST).IP-ADDR-STA	string	TENTATIVE VALID INVALID DEACTIVATED DUPLICATE	INF= *ADDR/*ALL
IPv6 address	var(*LIST).ADDR(*LIST).IPV6-ADDR	string	*NONE <text 9..49>	INF= *ADDR/*ALL
IPv6 address status	var(*LIST).ADDR(*LIST).IPV6-ADDR-STA	string	TENTATIVE VALID DEPRICATED INVALID DEACTIVATED DUPLICATE	INF= *ADDR/*ALL
ISO address	var(*LIST).ADDR(*LIST).ISO-ADDR	string	*NONE <text 1..20>	INF= *ADDR/ *ALL
ISO address status	var(*LIST).ADDR(*LIST).ISO-ADDR-STA	string	VALID INVALID	INF= *ADDR/*ALL
LAN address, only for L2 protocol CSMACD	var(*LIST).ADDR(*LIST).LAN-ADDR	string	*DYN <text 1..6>	INF= *ADDR/*ALL
LAN address status	var(*LIST).ADDR(*LIST).LAN-ADDR-STA	string	VALID INVALID	INF= *ADDR/*ALL

Administrative status	var(*LIST).STA.ADM	string	*EXCLUDE *INCL *ACTIVE	INF= *STA/*ALL
Transfer status	var(*LIST).STA.TRANS	string	*NONE *WORKING	INF= *STA/*ALL
L2 protocol	var(*LIST).L2-PROTOCOL	string	CSMACD	INF= *STD/*PROT /*ALL
Node name only for L2 protocol CSMACD	var(*LIST).NODE-NAME	string	<c-string 1.. 8>	INF= *STA/*ALL
Mnemonic device name for write access	var(*LIST).DEV.WRITE	string	<text 2..4>	INF= *DEV/*ALL
Mnemonic device name for read access	var(*LIST).DEV.READ	string	<text 2..4>	INF= *DEV/*ALL
Redundancy indicator	var(*LIST).REDUNDANCY. INDICATOR	string	*STD *NAME *NONE *FIRST	INF= *RED/*ALL
Redundancy for a line determines the group	var(*LIST).REDUNDANCY.LINE	string	<c-string 1.. 8>	INF= *RED/*ALL
Redundancy subgroup	var(*LIST).REDUNDANCY. SUBGROUP	string	*NONE <c-string 1.. 1>	INF= *RED/*ALL
Reception of broadcast messages	var(*LIST).BROADCAST.TARGET	string	*ON *OFF	INF= *OPT/*ALL
Reception of broadcast messages	var(*LIST).BROADCAST.WORK	string	*ON *OFF	INF= *OPT/*ALL
Reception of multicast messages	var(*LIST).MULTICAST.TARGET	string	*ON *OFF	INF= *OPT/*ALL
Reception of multicast messages	var(*LIST).MULTICAST.WORK	string	*ON *OFF	INF= *OPT/*ALL
Automatic reactivation after line failure	var(*LIST).SLOW-POLL.TARGET	string	*ON *OFF	INF= *OPT/*ALL

Automatic reactivation after line failure	var(*LIST).SLOW-POLL.WORK	string	*ON *OFF	INF= *OPT /*ALL
Shows whether CHECKSUM calculation by the device is possible	var(*LIST). CHECKSUM. INDICATOR	string	*YES *NO	INF= *OPT /*ALL
CHECKSUM calculation is to be executed	var(*LIST). CHECKSUM.TARGET	string	*BY-BCAM *BY-DEVICE	INF= *OPT /*ALL
CHECKSUM calculation is executed	var(*LIST). CHECKSUM.WORK	string	*BY-BCAM *BY-DEVICE	INF= *OPT /*ALL
(TCP-)OFFLOAD processing is executed	var(*LIST).OFFLOAD. WORK	string	*BY-BCAM *BY-DEVICE	INF= *OPT /*ALL
Line handling after timeout on line, only for L2 protocol CSMACD	var(*LIST).TIMEOUT-PROCESS	string	*KEEP-LINE *DEACTIVATE-LINE	INF= *OPT /*ALL
Alternative line on line failure, only for L2 protocol CSMACD	var(*LIST).AUTO-ROUT-SWITCH	string	*ON *OFF	INF= *OPT /*ALL
Resumption of original path definition, only for L2 protocol CSMACD	var(*LIST).ROUT-RESWITCH	string	*ON *OFF	INF= *OPT /*ALL
Line-specific IPv6 autoconfiguration	var(*LIST).IPV6-AUTO-CONFIG	string	*ON *OFF	INF= *OPT /*ALL
Use of Duplicate Address Detection (DAD) only with L2 protocol CSMACD	var(*LIST).DAD. INDICATOR	string	*ON *OFF *STD	INF= *OPT /*ALL
Duplicate Address Detection (DAD) number of Transmits only with L2 protocol CSMACD	var(*LIST).DAD. TRANSMIT-NUM	integer	<integer 1..10>	INF= *OPT /*ALL
Address Conflict Detection (ACD) used, only with L2 protocol CSMACD	var(*LIST).ACD. INDICATOR	string	*ON *OFF *STD	INF= *OPT /*ALL

Address Conflict Detection (ACD) number of Transmits only with L2 protocol CSMACD	var(*LIST).ACD.TRANSMIT-NUM	integer	<integer 1..10>	INF=*OPT /*ALL
Maximum frame data length, only for L2 protocol CSMACD	var(*LIST).MAX-LPDU-SIZE	string integer	*STD *ETHERNET-STD *BY-DEVICE <integer 1514..65535>	INF=*LIM /*ALL
Maximum message length that the host can receive only for L2 protocol of type NEA	var(*LIST).MAX-TSDU-SIZE	integer	<integer 4096..65535>	INF=*LIM /*ALL
List of line names	var(*LIST).LINE-NAMES(*LIST)	string	<c-string 1..8>	INF=*LIN

SHOW-LINK-AGGREGATION / SHLAG: Show link aggregation

You use the SHOW-LINK-AGGREGATION command to display a link aggregation.

The alias name SHLAG exists for SHOW-LINK-AGGREGATION to provide SNMP support.

BS2000 console	BS2000 SDF command	Command SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

SHOW-LINK-AGGREGATION / SHLAG
AGGREGATION-NAME = ***ALL** / <composed-name 1..8> , **INFORMATION** = ***STATE** / ***ALL** / list-poss (8): ***STATE**

AGGREGATION-NAME= *ALL / <composed-name 1..8>
Name of the link aggregation which is to be displayed.

INFORMATION=...
You use INFORMATION to specify which information is to be displayed.

INFORMATION=*STATE
The status of the link aggregation is displayed.
The information is displayed with console message BCA05B3.

INFORMATION=*ALL
All information on the link aggregation is displayed.

Command logging

Positive acknowledgments are supplied in news BCA0657, and negative acknowledgments in news BCA06A7.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
2	0	BCA06A7	No link aggregation found
0	1	BCA0768	Syntax error in command
0	64	BCA07A7	Aggregation name not known
0	64	BCA0770	Parameter invalid
0	64	BCA0773	Incorrect data type for aggregation e
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Example

All link aggregations which are defined are displayed:

```
/SHOW-LINK-AGGREGATION AGGREGATION-NAME=*ALL,INFORMATION=*ALL
```

SHOW-LINK-AGGREGATION-ATTR / SHLAGA: Show attributes of a link aggregation

You use the SHOW-LINK-AGGREGATION-ATTR command to display the attributes of a link aggregation.

The alias name SHLAGA exists for SHOW-LINK-AGGREGATION-ATTR to provide SNMP support.

BS2000 console	BS2000 SDF command	Command SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-LINK-AGGREGATION-ATTR / SHLAGA
AGGREGATION-NAME = ***ALL** / <composed-name 1..8>
, **INFORMATION** = ***STATE** / ***ALL** / ***AGGREGATION-NAMES** list-poss (8): ***STATE** / ***ADDR**ESS
, **OUTPUT** = ***SYSOUT** / ***SYSLST**

AGGREGATION-NAME= *ALL / <composed-name 1..8>
Name of the link aggregation which is to be displayed.

INFORMATION=...
Specifies which information is to be displayed.

INFORMATION=*STATE
The status of the link aggregation is displayed.

INFORMATION=*ADDRESS
The address information of the link aggregation is displayed.

INFORMATION=*ALL
All information on the link aggregation is displayed.

INFORMATION=*AGGREGATION-NAMES
The names of the link aggregations are displayed.

OUTPUT=...
Specifies the output medium.

OUTPUT=*SYSOUT
Output takes place to SYSOUT.

OUTPUT=*SYSLST
Output takes place to SYSLST.

Command logging

Positive acknowledgments result in SHOW output.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	64	BCA0200	System error
0	64	BCA0201	System error (internal)
0	64	BCA0202	Privilege not sufficient for the command
0	64	BCA0203	Interface (&00) returns RC (&01)
0	64	BCA0290	Link aggregation entry was not found

Example

Show all link aggregations:

```
/SHOW-LINK-AGGREGATION-ATTR AGGREGATION-NAME=*ALL,INFORMATION=*STATE
```

S variables

The command's INFORMATION operand defines the S variables to which values are assigned. Possible values for **INF**ORMATION are ***STA**TE, ***ADDR**ESS, ***ALL**,***AGGR**EGATION-***NAM**ES.

Output information	Name of the S variable	Data type	Content	Condition
Aggregation name	var(*LIST).AGGREGATION-NAME	string	<c-string 1..8>	INF= <in any case>
Administrative status	var(*LIST).STA.ADM	string	*EXCLUDE *INCL *ACTIVE	INF= *STA/*ALL
Transfer status	var(*LIST).STA.TRANS	string	*NONE *WORKING	INF= *STA/*ALL
Current LAN address	var(*LIST).ADDR.LAN-ADDR	string	“ <text 1..6>	INF= *ADDR/*ALL
List of the link aggregation names	var(*LIST).AGGREGATION-NAMES (*LIST)	string	<c-string 1..8>	INF= *AGGR-NAM

SHOW-MAPPING-ENTRIES / SHMPE: Show BCAM mappings

The BCAM mapping function enables privileged users to display mapping entries. SHOW-MAPPING-ENTRIES is a dialog command.

You use the SHOW-MAPPING-ENTRIES command to generate an overview of the assignments that have been performed. It provides you with information concerning the assignment of specific applications, partners or partner systems.

The alias SHMPE exists for SHOW-MAPPING-ENTRIES.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-MAPPING-ENTRIES / **SHMPE** Show mapping entries

SCOPE = ***APPLICATION** / ***PARTNER** / ***BOTH** / ***ANY**

,**SELECT-APPLICATION** = ***ALL** / [***BY-ATTRIBUTES**](...)

[***BY-ATTRIBUTES**](...)

| ,**APPLICATION** = ***ANY** / [***NEA**](...) / ***OSI**(...) / ***SOCKETS**(...)

| [***NEA**](...)

| | **NEA-NAME** = ***ANY** / <text 1 .. 16> / <c-string 1 .. 16>

| ***OSI**(...)

| | **OSI-NAME** = ***ANY** / <text 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>

| ***SOCKETS(.**..)

| | **SOCKET-NAME** = ***ANY** / <text 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>

| ,**HOST-NAME** = ***ANY** / ***STD** / <composed-name 1 .. 8> / <c-string 1 .. 8>

| ,**TSEL-NEA-NAME** = ***ANY** / <text 1 .. 8> / <c-string 1 .. 8>

| ,**TSEL-ISO-NAME** = ***ANY** / <text 1 .. 32> / <c-string 1 .. 32> / <x-string 1 .. 64>

| ,**PORT-NUMBER** = ***ANY** / <integer 1 .. 65535>

,**SELECT-PARTNER** = ***ALL** / [***BY-ATTRIBUTES**](...)

[***BY-ATTRIBUTES**](...)

| ,**PARTNER** = ***ANY** / [***NEA**](...) / ***OSI**(...) / ***SOCKETS**(...)

| [***NEA**](...)

| | **NEA-NAME** = ***ANY** / <text 1 .. 16> / <c-string 1 .. 16>

| ***OSI**(...)

```
        |           |   OSI-NAME = *ANY / <text 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>
        |       *SOCKETS(...)
        |           |   SOCKET-NAME = *ANY / <text 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>
        |   ,PROCESSOR-NAME = *ANY / <composed-name 1 .. 8> / <c-string 1 .. 8>
        |   ,TSEL-NEA-NAME = *ANY / <text 1 .. 8> / <c-string 1 .. 8>
        |   ,TSEL-ISO-NAME = *ANY / <text 1 .. 32> / <c-string 1 .. 32> / <x-string 1 .. 64>
        |   ,PORT-NUMBER = *ANY / <integer 1 .. 65535>
,OUTPUT = *SYSOUT / *SYSLST
,OUTPUT-FORMAT = *STD / *GENERATING-CMD
```

SCOPE=...
Specifies the scope of mapping entry output.

SCOPE=*APPLICATION
The scope of mapping entry output is restricted to “local” mapping entries.

SCOPE=*PARTNER
The scope of mapping entry output is restricted to “global” mapping entries.

SCOPE= *BOTH
The scope of mapping entry output is restricted to “special” mapping entries.

SCOPE= *ANY
All mapping entries are output.

SELECT-APPLICATION=...
Defines the selection criterion for the application.

SELECT-APPLICATION=*ALL
No selection criterion is defined for the application.

SELECT-APPLICATION=*BY-ATTRIBUTES(...)
The mapping entries that correspond to the selection criterion for the application are displayed.

APPLICATION=...
Name of the application in the mapping system.

APPLICATION=*ANY
Any application name in the mapping system.

APPLICATION=[*NEA](...)
The name of the application in the mapping system is assigned to a NEA application.

NEA-NAME=*ANY
Any NEA application name.

NEA-NAME=<text 1..16> / <c-string 1..16>
NEA application name.
For the NEA name, you use the first eight characters of the NEA name and the first eight characters

of the processor name (one to eight alphanumeric characters in each case, left-justified, and padded with blanks). If the application name is shorter than eight characters, the NEA name must be specified as a C string.
If only the name part containing the NEA name is specified, the part containing the HOST name is derived from the HOST specification when BCAM is started.

APPLICATION=*OSI(...)
The name of the application in the mapping system is assigned to an OSI application.

OSI-NAME=*ANY
Any OSI application name.

OSI-NAME=<text 1..78> / <c-string 1..78> / <x-string 1..156>
OSI application name.

APPLICATION=*SOCKETS(...)
The name of the application in the mapping system is assigned to a SOCKET application.

SOCKET-NAME=*ANY
Any SOCKET application name.

SOCKET-NAME=<text 1..78> / <c-string 1..78> / <x-string 1..156>
SOCKET application name.

HOST-NAME=...
Name of the host on which the application resides.

HOST-NAME=*ANY
Any host name.

HOST-NAME=*STD
Name of the default host defined as the host name on DCSTART/DCOPT.

HOST-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the host.

TSEL-NEA-NAME=...
Name of the NEA T selector.

TSEL-NEA-NAME=*ANY
Any NEA T selector name.

TSEL-NEA-NAME=<text 1..8> / <c-string 1..8>
Name of the NEA T selector.

TSEL-ISO-NAME=...
Name of the ISO T selector.

TSEL-ISO-NAME=*ANY
Any ISO T selector name.

TSEL-ISO-NAME=<text 1..32> / <c-string 1..32> / <x-string 1..64>
Name of the ISO T selector.

PORT-NUMBER=...
The local port number.

PORT-NUMBER=*ANY
Any local port number.

PORT-NUMBER=<integer 1..65535>
Local port number specified as an integer value.

SELECT-PARTNER=...
Defines the selection criterion for the partner application.

SELECT-PARTNER=*ALL
No partner application selection is performed.

SELECT-PARTNER=*BY-ATTRIBUTES(...)
The mapping entries that correspond to the selection criterion are displayed.

PARTNER=...
Name of the partner application in the mapping system

PARTNER=*ANY
Any partner application name in the mapping system.

PARTNER=[*NEA](...)
The name of the partner application in the mapping system is assigned to a NEA application.

NEA-NAME=*ANY
Any NEA partner application name.

NEA-NAME=<text 1..16> / <c-string 1..16>
NEA partner application name.
For the NEA name, you use the first eight characters of the application name and the first eight characters of the end system name.

PARTNER=*OSI(...)
The name of the partner application in the mapping system is assigned to an OSI application.

OSI-NAME=*ANY
Any OSI partner application name.

OSI-NAME=<text 1..78> / <c-string 1..78> / <x-string 1..156>
OSI partner application name.

PARTNER=*SOCKETS(...)
The name of the partner application in the mapping system is assigned to a SOCKET application.

SOCKET-NAME=*ANY
Any SOCKET partner application name.

SOCKET-NAME=<text 1..78> / <c-string 1..78> / <x-string 1..156>
SOCKET partner application name.

PROCESSOR-NAME=...
Name of the processor.

PROCESSOR-NAME=*ANY
Any processor name.

PROCESSOR-NAME=<composed-name 1..8> / <c-string 1..8>
Processor name.

TSEL-NEA-NAME=...
Name of the partner NEA T selector.

TSEL-NEA-NAME=*ANY
Any partner NEA T selector name.

TSEL-NEA-NAME=<text 1..8> / <c-string 1..8>
Name of the partner NEA T selector.

TSEL-ISO-NAME=...
Name of the partner ISO T selector.

TSEL-ISO-NAME=*ANY
Any partner ISO T selector name.

TSEL-ISO-NAME=<text 1..32> / <c-string 1..32> / <x-string 1..64>
Name of the partner ISO T selector.

PORT-NUMBER=...
Partner port number.

PORT-NUMBER=*ANY
Any partner port number.

PORT-NUMBER=<integer 1..65535>
Partner port number specified as an integer value.

OUTPUT=...
Specifies the output destination

OUTPUT=*SYSOUT
The output is sent to SYSOUT.

OUTPUT=*SYSLST
The output is sent to SYSLST.

OUTPUT-FORMAT=...
Specifies the output format.

OUTPUT-FORMAT=*STD
The output format corresponds to the standard.

OUTPUT-FORMAT=*GENERATING-CMD
The output format corresponds to the generated command.

Command logging

Positive acknowledgments result in SHOW output.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	64	BCA0200	System error
0	64	BCA0201	System error (internal)
0	64	BCA0202	Privilege not sufficient for command
0	64	BCA0203	Interface (&00) returns RC (&01)
0	64	BCA0208	BCAM mapping not initialized
0	64	BCA0216	Entries not found.

S variables

The command's SCOPE operand defines the S variables to which values are assigned. Possible values for SCOPE are {*ANY, *APPLICATION, *PARTNER,*BOTH}.

Output information	Name of the S variable	Data type	Content	Condition
Scope of the mapping entry	var(*LIST).SCOPE	string	*APPLICATION *PARTNER *BOTH *ANY	SCOPE={...} O-F=*STD
Application type	var(*LIST).APPL-TYPE	string	*NEA *OSI *SOCKETS	SCOPE={...} O-F=*STD
Application	var(*LIST).APPL-NAME	string	<text 1..16> <c-string 1..16> <text 1..78> <c-string 1..78> <x-string 1..156>	SCOPE={...} O-F=*STD
Host	var(*LIST).HOST-NAME	string	<composed-name 1..8>	SCOPE={...} O-F=*STD
NEA T selector	var(*LIST).APPL-TSEL-NEA-NAME	string	<text 1..8> <c-string 1..8>	SCOPE={...} O-F=*STD
ISO T selector	var(*LIST).APPL-TSEL-ISO-NAME	string	<text 1..32> <c-string 1..32> <x-string 1..64>	SCOPE={...} O-F=*STD
Port number	var(*LIST).APPL-PORT-NUMBER	integer	<integer 1..65535>	SCOPE={...} O-F=*STD
Partner application type	var (*LIST).PART-APPL-TYPE	string	*NEA *OSI *SOCKETS	SCOPE={...} O-F=*STD
Partner application	var(*LIST).PART-APPL-NAME	string	<text 1..16> <c-string 1..16> <text 1..78> <c-string 1..78> <x-string 1..156>	SCOPE={...} O-F=*STD

Processor	var(*LIST).PROCESSOR-NAME	string	<composed-name 1..8>	SCOPE={...} O-F=*STD
Partner NEAT selector	var(*LIST).PART-TSEL-NEA-NAME	string	<text 1..8> <c-string 1..8>	SCOPE={...} O-F=*STD
Partner ISO T selector	var(*LIST).PART-TSEL-ISO-NAME	string	<text 1..32> <c-string 1..32> <x-string 1..64>	SCOPE={...} O-F=*STD
Partner port number	var(*LIST).PART-PORT-NUMBER	integer	<integer 1..65535>	SCOPE={...} O-F=*STD
L3 call user data	var(*LIST).L3-CALL-USER-DATA	string	<text 1..16> <c-string 1..16> <x-string 1..32>	SCOPE={...} O-F=*STD
Route name	var(*LIST).ROUTE-NAME(*LIST)	string	<text 1..8> <c-string 1..8>	SCOPE={...} O-F=*STD
Generated commands	var(*LIST). GENERATING-CMD (*LIST)	string	<text 1..256>	SCOPE={...} O-F=*GEN

Examples

1. Show all mapping entries.

   ```
   /SHOW-MAPPING-ENTRIES SCOPE=*ANY
   ```

2. Show local mapping entries.

   ```
   /SHOW-MAPPING-ATTRIBUTES SCOPE=*APPLICATION
   ```

3. Show global mapping entries.

   ```
   /SHOW-MAPPING-ATTRIBUTES SCOPE=*PARTNER
   ```

4. Show special mapping entries.

   ```
   /SHOW-MAPPING-ATTRIBUTES SCOPE=*BOTH
   ```

It is not usually possible to issue an equivalent BCMAP command since selection is performed differently. BCMAP commands should therefore be avoided in this case.

In principle, the BCMAP command would start as follows:

```
/BCMAP FUNCT=SHOW,SUBFUNCT=...
```

SHOW-MAPPING-STATUS / SHMPS: Show mapping information

You use the SHOW-MAPPING-STATUS command to output the mapping status information. SHOW-MAPPING-STATUS is a dialog command.

The command broadly corresponds to the “old” command
`BCMAP FUNCT=SHOW,SUBFUNCT=STATE.`

The alias SHMPS exists for SHOW-MAPPING-STATUS.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-MAPPING-STATUS / SHMPS
INFORMATION = ***SUMMARY** / ***HOSTS** ,**OUTPUT** = ***SYSOUT** / ***SYSLST** ,**OUTPUT-FORMAT** = ***STD** / ***GENERATING-CMD**

INFORMATION=...
Defines the type of information.

INFORMATION=*SUMMARY
Certain mapping values, for example the number of current mapping entries, are output.

INFORMATION=*HOSTS
The host names for which mapping entries exist are output.

OUTPUT=...
Specifies the output medium.

OUTPUT=*SYSOUT
The output is sent to SYSOUT.

OUTPUT=*SYSLST
The output is sent to SYSLST.

OUTPUT-FORMAT=...
Specifies the output format.

OUTPUT-FORMAT=*STD
The output format corresponds to the standard.

OUTPUT-FORMAT=*GENERATING-CMD
The output format corresponds to the generated command.

Command logging

A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	64	BCA0200	System error
0	64	BCA0201	System error (internal)
0	64	BCA0202	Privilege not sufficient for the command
0	64	BCA0203	Interface (&00) returns RC (&01).
0	64	BCA0208	BCAM mapping not initialized
0	64	BCA0215	Operand suppressed
0	64	BCA0222	No host entry found in BCAM mapping

Examples

Show mapping status information.

```
/SHOW-MAPPING-STATUS INFORMATION=*SUMMARY
/SHOW-MAPPING-STATUS INFORMATION=*HOSTS,OUTPUT=*SYSLST
```

The equivalent BCMAP command returns both types of information (output in the form of messages):

```
/BCMAP FUNCT=SHOW,SUBFUNC=STATE
```

S variables

The command’s INFORMATION operand defines the S variables to which values are assigned. Possible values for INFORMATION are SUMMARY and HOSTS.

Output information	Name of the S variable	Data type	Content	Condition
Maximum number of possible mapping entries	var(*LIST).MAX-NUMB-ENTRIES	integer	<integer 1..1000000>	INF=*SUMMARY O-F=*STD
Current number of mapping entries	var(*LIST).CUR-NUMB-ENTRIES	integer	<integer 1..1000000>	INF=*SUMMARY O-F=*STD
Queue length	var(*LIST).MAX-QUEUE-LENGTH	integer	<integer 1..1000000>	INF=*SUMMARY O-F=*STD
Host name	var(*LIST).HOST-NAME(*LIST)	string	<composed-name 1..8>	INF=*HOSTS O-F=*STD
Generated command	var(*LIST).GENERATING-CMD	string	„<text 1..256>	INF=*SUMMARY O-F=*GEN

SHOW-NET-STATISTICS / NETSTAT: Show network connection information

You use the SHOW-NET-STATISTICS command to request information about applications, connections, routing data, network connections and BCAM itself.

The alias name NETSTAT exists for SHOW-NET-STATISTICS.

This command can be executed with the STD-PROCESSING privilege.

Detailed information is provided in the section “NETSTAT”.

SHOW-NODE / SHND: Show LAN node information

You use the SHOW-NODE command to output information for a LAN node of a different LAN type (*NORMAL, *VIRTUAL).

The alias SHND exists for SHOW-NODE.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x	x			

List of valid command sources

SHOW-NODE / SHND
NODE-NAME = ***ALL** / <composed-name 1..8> / <c-string 1 .. 8>

NODE-NAME=...
Name of the LAN node for which the information is output.
The information is displayed by means of the console messages BCA08CB, BCA08EC and BCA08EB.

NODE-NAME=*ALL
Information is output for all LAN nodes.

NODE-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the LAN node for which the information is output.

Command logging

Positive acknowledgments are supplied in news BCA0720, and negative acknowledgments in news BCA0728, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA0EBC, BCA08EC and BCA08EB may appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	1	BCA0768	Syntax error in command
0	64	BCA07A3	LAN node not found
0	64	BCA08EF	Nothing found to show
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Example

```
/SHOW-NODE
```

Equivalent BCSHOW command

```
/BCSHOW SHOW=NODE
```

SHOW-NODE-ATTRIBUTES / SHNDA: Show LAN node information

You use the SHOW-NODE-ATTRIBUTES command to output detailed information about different LAN types (*NORMAL, *VIRTUAL).

The alias name for SHOW-NODE-ATTRIBUTES is SHNDA.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-NODE-ATTRIBUTES / **SHNDA**
NODE-NAME = ***ALL** / <composed-name 1 .. 8>
,**INFORMATION** = ***STD** / ***ALL** / ***NODE-NAMES**
,**OUTPUT** = ***SYSOUT** / ***SYSLST**

NODE-NAME=...
With NODE-NAME you specify the LAN nodes for which information is to be displayed.

NODE-NAME=*ALL
Information is displayed for all nodes.

NODE-NAME=<composed-name 1..8>
Name of the node for which information is displayed.

INFORMATION=...
With INFORMATION, you specify what information is to be displayed.

INFORMATION=*STD
The default information for the node is displayed.

INFORMATION=*ALL
All the information relating to the node is displayed.

INFORMATION=*NODE-NAMES
The names of the nodes are displayed.

OUTPUT=...
Specifies the output medium.

OUTPUT=*SYSOUT
The output is sent to SYSOUT.

OUTPUT=*SYSLST
The output is sent to SYSLST.

Command logging

Positive acknowledgments result in the required information being output.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command processed successfully
0	1	CMD0202	Operand error
0	32	CMD0221	System error
0	64	CMD0216	Privilege not sufficient
0	64	BCA0203	Interface (&00) returns RC (&01).
0	64	BCA0290	Node entry not found.

Examples

1. Show node:

   ```
   /SHOW-NODE-ATTRIBUTES NODE-NAME=NODE,INFORMATION=*STD
   ```

2. Show all nodes:

   ```
   /SHOW-NODE-ATTRIBUTES NODE-NAME=*ALL,INFORMATION=*STD
   ```

3. Show all node names:

   ```
   /SHOW-NODE-ATTRIBUTES NODE-NAME=*ALL,INFORMATION=*NODE-NAMES
   ```

S variables

The command's INFORMATION operand defines the S variables to which values are assigned. Possible values for **INF**ORMATION are ***STD**, ***ALL**,***NOD**E-NAMES.

Output information	Name of the S variable	Data type	Content	Condition
Node name	var(*LIST).NODE-NAME	string	<c-string1..8>	INF=*STD/ *ALL
Administrative status	var(*LIST).STA.ADM	string	*EXCLUDE *INCL *ACTIVE	INF=*STD/ *ALL
IP subnet mask	var(*LIST).IP-SUBNET-MASK	string	<text 7..15>	INF=*ALL
LAN type	var(*LIST).LAN-TYPE.INDICATOR	string	*NORMAL *VIRTUAL	INF=*ALL
VLAN identification	var(*LIST).LAN-TYPE.VLAN-ID	integer string	<integer 2..4094> *UNTAGGED	INF=*ALL
Priority of the VLAN	var(*LIST).LAN-TYPE.PRIORITY	integer string	<integer 2..7> *STD	INF=*ALL
List of node names	var(*LIST).NODE-NAMES(*LIST)	string	<c-string 1..8>	INF=*NOD

SHOW-OWN-ADDRESS / SHOAD: Show local address

SHOW-OWN-ADDRESS shows the local addresses for a line / VLAN line.

The alias name SHOAD exists for SHOW-OWN-ADDRESS in order to provide SNMP support.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x	x	x	x	

List of valid command sources

SHOW-OWN-ADDRESS / **SHOAD**
LINE-NAME = ***ALL** / <composed-name 1..8>
,**HOST-NAME** = ***STD** / ***ALL** / <composed-name 1 .. 32>
ADDRESS-TYPE = ***ALL** / list-poss (4): ***IP** / ***IPV6** / ***ISO** / ***NEA** / ***LAN**
,**ADDRESS-STATE** = ***ANY** / list-poss (4): ***TENTATIVE** / ***VALID** / ***INVALID**/ ***DUPLICATE**

LINE-NAME=
Name of the line / VLAN line for which the local addresses are displayed.

LINE-NAME=*ALL
The local addresses are to be displayed for all lines / VLAN lines.

LINE-NAME=<composed-name 1..32>
Name of the line / VLAN line

HOST-NAME=...
You use HOST-NAME to specify the name of the host for which the local addresses are to be displayed.

HOST-NAME=*STD
The name of the standard host is used as the host name (host name from the DCSTART or DCOPT command).

HOST-NAME=*ALL
The names of all hosts are selected to which the line/VLAN line is connected.

HOST-NAME=<composed-name 1..8>
Name of the host to which the line / VLAN line is connected.

ADDRESS-TYPE=...
You use ADDRESS-TYPE to specify which local addresses of the line / VLAN line are to be displayed. The output information is created with message BCA057E for lines and with BCA057F for VLAN lines.

ADDRESS-TYPE=*ALL
The local addresses of all address types are displayed.

ADDRESS-TYPE=*IP
Local IP addresses of the line / VLAN line are to be displayed.

ADDRESS-TYPE=*IPV6
Local IPv6 addresses of the line / VLAN line are to be displayed.

ADDRESS-TYPE=*ISO
Local ISO addresses of the line / VLAN line are to be displayed.

ADDRESS-TYPE=*LAN
Local LAN addresses of the line / VLAN line are to be displayed.

ADDRESS-STATE=...
Specifies which own addresses of the line/VLAN line selected according to the address status are displayed. The output information is created with the message BCA057E for lines or BCA057F for VLAN lines.

ADDRESS-STATE=*ANY
The own addresses with any address status are displayed.

ADDRESS-STATE=*TENTATIVE
Own addresses of the line/VLAN line whose address status is checked are to be displayed.

ADDRESS-STATUS=*VALID
Own addresses of the line/VLAN line which are valid are to be displayed.

ADDRESS-STATUS=*INVALID
Own addresses of the line/VLAN line which are already known at another place in the network are to be displayed.

ADDRESS-STATUS=*DUPLICATE
Own addresses of the (VLAN) line are displayed which are already known elsewhere in the network and have been recognized as duplicates and are therefore not used.

Command logging

Positive acknowledgments are supplied in news BCA065A, and negative acknowledgments in news BCA06AA.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
2	0	BCA06AA	Command aborted
0	1	BCA0768	Syntax error in command
0	64	BCA0770	Parameter error
0	64	BCA07A2	LINE-NAME is not known
0	64	BCA07A4	HOST-NAME is not known
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

SHOW-PROCESSOR / SHPRR: Show processor information

You use the SHOW-PROCESSOR command to display information concerning a (partner) processor.

The alias SHPRR exists for SHOW-PROCESSOR.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x	x			

List of valid command sources

SHOW-PROCESSOR / SHPRR
PROCESSOR-NAME = ***ALL** / <composed-name 1..8> / <c-string 1 .. 8>
,**MAX-MSG-NUMBER** = ***STD** / <integer 1 .. 2147483647>

PROCESSOR-NAME=...
Name of the (partner) processor for which the information is output.
The information is displayed by means of console message BCA08EA.

PROCESSOR-NAME=*ALL
Information is output for all (partner) processors.

PROCESSOR-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the (partner) processor for which the information is output.

MAX-MSG-NUMBER=...
Maximum number of messages that can be issued for this command.

MAX-MSG-NUMBER=*STD
A maximum of 10 messages may be output at the console and a maximum of 50 at SYSOUT.

MAX-MSG-NUMBER=<integer 1..2147483647>
Maximum number of messages that can be issued for this command.

> The number of messages issued can be exceeded when information is output because of the restricted output length of a message.
> Multiple messages are frequently output for BCAM objects. Within BCAM these messages are counted as just one message.
> In some cases the message BCA0765 is also issued in order to facilitate the assignment of the output information to the specified command.

Unbekanntes Makro: 'pagebreak'

Command logging

Positive acknowledgments are supplied in news BCA0720, and negative acknowledgments in news BCA0728, followed by the message NBR0740. In addition, for positive acknowledgments, the message BCA08EA may appear. A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	1	BCA0768	Syntax error in command
0	64	BCA07A0	Processor not found
0	64	BCA08EF	Nothing found to show
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Example

```
/SHOW-PROCESSOR
```

Equivalent BCSHOW command:

```
/BCSHOW SHOW=PROCESSOR
```

SHOW-PROCESSOR-ATTRIBUTES / SHPRA: Show processor information

You use the SHOW-PROCESSOR-ATTRIBUTES command to output detailed information about a (partner) processor.

The alias name for SHOW-PROCESSOR-ATTRIBUTES is SHPRA.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-PROCESSOR-ATTRIBUTES / **SHPRA**
PROCESSOR-NAME = ***ALL** / ***OWN** / <composed-name 1 .. 8> ,**INFORMATION** = ***STD** / ***ALL** / ***PROCESSOR-NAMES** list-poss(3): ***STATE** / ***PROPERTIES** / ***BCAM-NAMES** ,**OUTPUT** = ***SYSOUT** / ***SYSLST**

PROCESSOR-NAME=...
With PROCESSOR-NAME, you specify the (partner) processor for which information is to be output.

PROCESSOR-NAME=*ALL
Output information for all (partner) processors.

PROCESSOR-NAME=*OWN
Outputs information for the own processor. This command only returns information if the connection was not established via OMNIS.

PROCESSOR-NAME=<composed-name 1..8>
Name of the (partner) processor for which information is to be output.

INFORMATION=...
With INFORMATION, you specify what information is to be displayed.

INFORMATION=*STD
Displays the default information for the (partner) processor.

INFORMATION=*ALL
Displays all the information for the (partner) processor.

INFORMATION=*PROCESSOR-NAMES
Displays the names of the (partner) processors.

INFORMATION=*STATE
Displays the status information of the (partner) processor.

INFORMATION=*PROPERTIES
Displays information about the attributes of the (partner) processor.

INFORMATION=*BCAM-NAMES
Displays information about the names the (partner) processor used in BCAM.

OUTPUT=...
Specifies the output medium.

OUTPUT=*SYSOUT
The output is sent to SYSOUT.

OUTPUT=*SYSLST
The output is sent to SYSLST.

Command logging

Positive acknowledgments result in the required information being output.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Operand error
0	32	CMD0221	System error
0	64	CMD0216	Privilege not sufficient
0	64	BCA0203	Interface (&00) returns RC (&01).
0	64	BCA0290	Processor entry not found.

Examples

1. Show (partner) processor with name PROC:

   ```
   /SHOW-PROCESSOR-ATTRIBUTES PROCESSOR-NAME=PROC,INFORMATION=*STD
   ```

2. Show all (partner) processors:

   ```
   /SHOW-PROCESSOR-ATTRIBUTES PROCESSOR-NAME=*ALL,INFORMATION=*STD
   ```

3. Show names of all (partner) processors:

   ```
   /SHOW-PROCESSOR-ATTRIBUTES PROCESSOR-NAME=*ALL,INFORMATION=*PROCESSOR-NAMES
   ```

S variables

The command's INFORMATION operand defines the S variables to which values are assigned. Possible values for **INF**ORMATION are ***STD**, ***ALL**, ***PRO**CESSOR-NAMES, ***STA**TE, ***PROP**ERTIES and ***BCAM**-NAMES.

Output information	Name of the S variable	Data type	Content	Condition
Processor name	var(*LIST).PROCESSOR-NAME	string	<c-string 1..8>	INF=*STD/ *PROP/ *STA/ *BCAM/ *ALL
Socket host name	var(*LIST).SOCKETHOST-NAME	string	*PROCESSOR-NAME <c-string 1..32>	INF=*STD/ *PROP/ *STA/ *BCAM/ *ALL
Administrative status	var(*LIST).STA.ADM	string	*EXCLUDE *INCL *ACTIVE	INF=*STD/ *STA/*ALL
Automatically adopted route	var(*LIST).CRE-BY-AEC	string	*NO *YES	INF=*STD/ *STA/*ALL
Administrative type	var(*LIST).ADM-TYPE	string	*UNKNOWN *BCAM	INF= *PROP/*ALL
Mapping permitted	var(*LIST).MAPPING	string	*ALLOW *NOT-ALLOW	INF= *PROP/*ALL
Selection of routes	var(*LIST).ROUT-SELECT	string	*SEQ-WITH-RETRY *SEQ *BALANCED-WITH-RETRY *BALANCED	INF= *PROP/*ALL
Maximum message length which the host can receive	var(*LIST).MAX-TSDU-SIZE	integer	<integer 4096..65530>	INF= *PROP/*ALL
Name type	var(*LIST).ELM(*LIST).NAME-TYPE	string	*BCAM *DNS *EOL	INF= *BCAM/*ALL
Name	var(*LIST).ELM(*LIST).NAME	string	<text 1..256>	INF= *BCAM/*ALL
List of processor names	var(*LIST).PROCESSOR-NAMES (*LIST)	string	<c-string 1..8>	INF=*PROC

SHOW-ROUTE / SHROUTE: Show route attributes

You use the SHOW-ROUTE command to display the attributes of routes.

The alias name SHROUTE also exists for SHOW-ROUTE in order to support SNMP management.

BS2000 console	BS 2000 SDF command	Command/S OF file	SNMP management	Parameter service
x		x	x	

List of valid command sources

SHOW-ROUTE / **SHROUTE** Displaying route attributes

ROUTES = ***NAME**(...), ... / ***ADDRESS**(...), ...

***NAME**(...), ...

| (...)

| | **ROUTE-NAME** = <rout-name 1 .. 8>

| | ,**PROCESSOR-NAME** = <processor-name 1 .. 8>

***ADDRESS**(...), ...

| (...)

| | **IP-ADDRESS** = <composed-name 7..15> / <x-string 1 .. 8> / list-poss (4): <integer 0 .. 255>

| | ,**LAN-ADDRESS** = <x-string 1 .. 12>

| | ,**ISO-ADDRESS** = <x-string 1 .. 40>

| | ,**I6-ADDRESS** = <c-string 1..45>

,**RANGE = *NONE** / ***NEXT-HOP** / ***IS-ROUTES**

,**INFORMATION** = list-poss (3): ***ROUTE** / ***LINE** / ***TIMES**

ROUTES=
ROUTES is used to specify which routes are shown.

ROUTES=*NAME(...)
Routes defined by name are shown.

ROUTE-NAME=<rout-name 1..8>
Name of the shown route.

PROCESSOR-NAME=<processor-name 1..8>
Name of the processor, whose routes are shown.

ROUTES=*ADDRESS(...)
Routes defined using addresses are shown.

IP-ADDRESS=<composed-name 7..15> / **<x-string 1..8>** / **list-poss (4):<integer 0..255>**
IP address of the shown route.

LAN-ADDRESS=<x-string 1..12>
LAN address of the shown INT0 route.

ISO-ADDRESS=<x-string 1..40>
ISO Internet address of the shown route.

I6-ADDRESS = <c-string 1..45>
IPv6 address of the shown route.

RANGE=
RANGE can be used to specify additional routes to be shown.

RANGE=*NONE
No additional routes are shown.

RANGE=*NEXT-HOP
If the route has a router and/or gateway function, those routes that lead via this router and/or gateway but not via any other router are shown.

RANGE=*IS-ROUTES
This shows the intermediate system (IS) routes over which the specified route operates The information is shown with the console message BCA08AE.

INFORMATION=
INFORMATION is used to specify what information on the routes is shown.
The values can also be specified as a list (list-poss).

INFORMATION=*ROUTE
The address and profile information of the route are shown.
This information is displayed with the console messages BCA08E6, BCA08AB, and BCA08AF.

Status information and other information on the route are shown.
This information is displayed with the console message BCA08EE.

INFORMATION=*LINE
The line to which this route belongs is shown.
This information is displayed with the console message BCA08ED.

INFORMATION=*TIMES
The route-specific timer values are shown.
This information is displayed with the console message BCA08F6.

Command logging

The processing acknowledgment is supplied in news BCA0730 if it is positive and in news BCA08EF if it is negative. In addition, for positive acknowledgments, the messages BCA08A6, BCA08AB, BCA08AE, BCA0A8F, BCA08E6, BCA08ED, BCA08EE, and BCA08F6 may also appear.
A description of the error messages that can be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	BCA0768	Syntax error in command
0	64	BCA079F	Address is not known
0	64	BCA07A0	Processor is unknown
0	64	BCA07A1	Route is unknown
0	64	BCA08EF	Nothing to be displayed was found
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

SHOW-ROUTE-ATTRIBUTES / SHRTA: Show route attributes

You use the SHOW-ROUTE-ATTRIBUTES command to display the route-specific attributes for selected routes.

The alias name of SHOW-ROUTE-ATTRIBUTES is SHRTA.

This command can be executed with the STD-PROCESSING privilege, but not all operand values will be available.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-ROUTE-ATTRIBUTES / **SHRTA**

ROUTE-NAME = <composed-name 1 .. 8> / ***ALL** / ***PROCESSOR**(...) /
IP-ADDRESS**(...) /ISO-ADDRESS**(...) / ***LAN-ADDRESS**(...) / ***IPV6-ADDRESS**(...)

***PROCESSOR**(...)

| **PROCESSOR-NAME** = ***OWN** / <composed-name 1 .. 8>

***IP-ADDRESS**(...)

| **IP-ADDRESS** = ***ALL** / <text 7 .. 15> / <x-string 7 .. 8>

***ISO-ADDRESS**(...)

| **ISO-ADDRESS** = ***ALL** / <x-string 1 .. 40>

***LAN-ADDRESS**(...)

| **LAN-ADDRESS** = ***ALL** / <x-string 1 .. 12>

***IPV6-ADDRESS**(...)

| **IPV6-ADDRESS** = *ALL / <text 9 .. 45> / <c-string 9 .. 45>

,**SELECT** = ***ALL** / ***BY-ATTRIBUTES**(...)

***BY-ATTRIBUTES**(...)

| **HOST-NAME** = ***ANY** / <composed-name 1 .. 8>

| ,**NODE-NAME** = ***ANY** / <composed-name 1 .. 8>

| ,**LINE-NAME** = ***ANY** / <composed-name 1 .. 8>

| ,**AGGREGATION-NAME** = ***ANY** / <composed-name 1 .. 8>

,**INFORMATION =** ***ADDRESSES** / ***ALL** / ***ROUTE-NAMES** / list-poss(16): ***ADDRESSES** / ***PROTOCOLS** /
***STATE** / ***LIMITS** / ***OPTIONS** / ***PATH** / ***PROPERTIES** / ***TIMER**

,**OUTPUT** = ***SYSOUT** / ***SYSLST**

ROUTE-NAME=...
Routes whose attributes are to be displayed.

ROUTE-NAME=*ALL
The attributes of all routes are displayed.

ROUTE-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the route whose attributes are displayed.

ROUTE-NAME=*PROCESSOR(...)
The routes whose attributes are displayed are specified via the partner processor.

PROCESSOR-NAME=*OWN
Displays the attributes of the routes which lead to the own processor. This command only returns information if the connection was not established via OMNIS .

PROCESSOR-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the processor to which the routes lead.

ROUTE-NAME=*IP-ADDRESS(...)
The routes whose attributes are displayed are specified via the partner IP address.

IP-ADDRESS=<text 7..15> / <x-string 7..8>
Displays the attributes of the routes which lead to the processor with the specified partner IP address.

IP-ADDRESS=*ALL
Displays the attributes of all the routes on which the layer 3 protocol IP is running.

ROUTE-NAME=*ISO-ADDRESS(...)
The routes whose attributes are displayed are specified via the partner ISO internet address.

ISO-ADDRESS=<x-string 1..40>
Displays the attributes of the routes which lead to the processor with the specified partner ISO internet address.

ISO-ADDRESS=*ALL
Displays the attributes of all the routes on which the layer 3 protocol ISO 8473 Full Internet is running.

ROUTE-NAME=*LAN-ADDRESS(...)
The routes whose attributes are displayed are specified via the partner LAN address.

LAN-ADDRESS=<x-string 1..12>
Displays the attributes of the routes which lead to the processor with the specified partner LAN address

LAN-ADDRESS=*ALL
Displays the attributes of all the routes on which the layer 3 protocol ISO 8473 Null Internet is running.

ROUTE-NAME=*IPV6-ADDRESS(...)
The routes whose attributes are displayed are specified via the partner IPv6 address.

IPV6-ADDRESS=<text 9..45> / <c-string 9..45>
Displays the attributes of the routes which lead to the processor with the specified partner IPv6 address.

IPV6-ADDRESS= *ALL
Displays the attributes of all the routes on which the layer 3 protocol IPv6 is running.

SELECT=...
The routes for which information is displayed are limited by a selection criterion.

SELECT=*ALL
All routes are selected.

SELECT=*BY-ATTRIBUTES(...)
The route to be selected is specified more precisely.

HOST-NAME=...
Name of the host.

HOST-NAME=*ANY
Any name for the host.

HOST-NAME=<composed-name 1..8>
Name of the host.

NODE-NAME=...
Name of the node.

NODE-NAME=*ANY
Any name for the node.

NODE-NAME=<composed-name 1..8>
Name of the node.

LINE-NAME=...
Name of the line/VLAN line.

LINE-NAME=*ANY
Any name for the line/VLAN line.

LINE-NAME=<composed-name 1..8>
Name of the line/VLAN line.

AGGREGATION-NAME=...
Name of the link aggregation.

AGGREGATION-NAME=*ANY
Arbitrary name of the link aggregation.

AGGREGATION-NAME=<composed-name 1..8>
Name of the link aggregation.

INFORMATION=...
With INFORMATION, you specify what information is to be displayed.

INFORMATION=*ADDRESSES
Displays the route-specific addresses.

INFORMATION=*PROTOCOLS
Displays the route-specific protocol profile.

INFORMATION=*STATE
Displays the route-specific status.

INFORMATION=*LIMITS
Displays the route-specific limits.

INFORMATION=*OPTIONS
Displays the route-specific options.

INFORMATION=*PATH
Displays the route-specific path.

INFORMATION=*PROPERTIES
Displays the route-specific properties.

INFORMATION=*TIMER
Displays the route-specific timer values.

INFORMATION=*ALL
Displays the complete route information.

INFORMATION=*ROUTE-NAMES
Displays the route name.

OUTPUT=...
Specifies the output medium.

OUTPUT=*SYSOUT
The output is sent to SYSOUT.

OUTPUT=*SYSLST
The output is sent to SYSLST.

Command logging

Positive acknowledgments result in the required information being output.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Operand error
0	32	CMD0221	System error
0	64	CMD0216	Privilege not sufficient
0	64	BCA0203	Interface (&00) returns RC (&01).
0	64	BCA0290	Route entry not found.
0	64	BCA0292	No entry satisfies the selection criterion

Examples

1. Show route attributes (route names) of all (partner) processors:

```
/SHOW-ROUTE-ATTRIBUTES ROUTE-NAME=*ALL,INFORMATION=*ROUTE-NAMES
```

2. Show route attributes (addresses and path) of processors for a line:

```
/SHOW-ROUTE-ATTRIBUTES ROUTE-NAME=*ALL,SELECT=*BY-ATTRIBUTES( -
/ LINE-NAME=L#LAN#X),INFORMATION=(*ADDRESS,*PATH)
```

S variables

The command's INFORMATION operand defines the S variables to which values are assigned. Possible values for **INF**ORMATION are ***ADDR**ESSES, ***PROT**OCOL, ***STA**TE, ***LIM**ITS, ***OPT**IONS, ***PATH**, ***PROP**ERTIES, ***TIM**ER, ***ALL**, ***ROU**TE-NAMES.

Output information	Name of the S variable	Data type	Content	Condition
Route name	var(*LIST).ROUT-NAME	string	<c-string 1..8>	INF=any/ *ROU/*ALL
Processor name	var(*LIST).PROCESSOR-NAME	string	<c-string 1..8> *ROUTE-NAME	INF=any/ *ROU/*ALL
Administrative status	var(*LIST).STA.ADM	string	*EXCLUDE *INCL *ACTIVE	INF= *STA/*ALL
Transfer status	var(*LIST).STA.TRANS	string	*NONE *READY *NOT-READY *WAIT-FOR-INIT *WAIT-FOR-READY	INF= *STA/*ALL
Protocol status	var(*LIST).STA.PROTOCOL	string	*NONE *WORKING *TESTING *ADDRESS-RESOLUTION *LIVETIME-SUPER-VISION-FAILED	INF= *STA/*ALL
Route path	var(*LIST).PATH	string	*LOCAL *NODE *VIA-ROUTER *VIA-TUNNEL	INF= *PATH/*ALL
Host name	var(*LIST).HOST-NAME	string	*STD <c-string 1..8>	INF= *PATH/*ALL
Line name	var(*LIST).LINE-NAME	string	*STD *PROCESSOR-NAME <c-string 1..8>	INF= *PATH/*ALL

Node name	var(*LIST).NODE-NAME	string	<c-string 1..8>	INF= *PATH/*ALL
Link aggregation name	var(*LIST).AGGREGATION-NAME	string	<c-string 1..8>	INF= *PATH/*ALL
Router route name (if path=*viaroute)	var(*LIST).ROUTER-ROUT-NAME	string	<c-string 1..8>	INF= *PATH/*ALL
Tunnel route name (if path=*viatunnel)	var(*LIST).TUNNEL-ROUT-NAME	string	<c-string 1..8>	INF= *PATH/*ALL
L3 protocol (pathdependent)	var(*LIST).L3-PROTOCOL	string	*IP *IPV6 *INTF *INT0	INF= *PROT /*ALL
L3 subprotocol	var(*LIST).L3-SUB-PROTOCOL	string	*NONE *SNAP	INF= *PROT /*ALL
L4 protocol	var(*LIST).L4-PROTOCOL	string	*ISO-4 *TCP	INF= *PROT /*ALL
IP address	var(*LIST).IP.IP-ADDR	string	<text 7..15>	INF= *ADDR /*ALL
Own IP address	var(*LIST).IP.OWN-IP-ADDR	string	<text 7..15>	INF= *ADDR /*ALL
IPv6 address	var(*LIST).IPV6.IPV6-ADDR	string	<c-string 9..45>	INF= *ADDR /*ALL
Own IPv6 address	var(*LIST).IPV6.OWN-IPV6-ADDR	string	<c-string 9..49>	INF= *ADDR /*ALL
ISO address	var(*LIST).ISO.ISO-ADDR	string	<c-string 1..20>	INF= *ADDR /*ALL

Own ISO address	var(*LIST).ISO.OWN-ISO-ADDR	string	<c-string 1..20>	INF= *ADDR /*ALL
LAN address	var(*LIST).LAN-ADDR	string	<c-string 2..12>	INF= *ADDR /*ALL
ARP (Address Resolution Protocol)	var(*LIST).ARP	string	*OFF *ON *QUIET	INF= *OPT /*ALL
Passive RARP support (reverse ARP) via RARP-REPLIES	var(*LIST).RARP-REPLIES	string	*ALLOW *NOT-ALLOW	INF= *OPT /*ALL
Alternative line on line failure	var(*LIST).AUTO-ROUT-SWITCH	string	*ON *OFF	INF= *OPT /*ALL
Reswitch of original route definition	var(*LIST).ROUT-RESWITCH	string	*ON *OFF	INF= *OPT /*ALL
Checksum option	var(*LIST).CHECKSUM	string	*ON *OFF	INF= *OPT /*ALL
ECN (Explicit Congestion Notification)	var(*LIST).ECN	string	*OFF *ON	INF= *OPT /*ALL
Highspeed TCP	var(*LIST).HIGHSPEED-TCP	string	*ON *OFF	INF= *OPT /*ALL
DRS (Dynamic Right-Sizing), inbound	var(*LIST).DRS-INBOUND	string	*ON *OFF	INF= *OPT /*ALL
DRS (Dynamic Right-Sizing), outbound	var(*LIST).DRS-OUTBOUND	string	*ON *OFF	INF= *OPT /*ALL
Route as access to aTranSON server	var(*LIST).TRANSON-USAGE	string	*OFF *ON	INF= *OPT /*ALL
Transport connections on route failure	var(*LIST).ROUT-DOWN	string	*KEEP-CONN *DISCONN	INF= *OPT /*ALL

Time interval of ISO8073 retransmission timer (2 sec)	var(*LIST).TIMER. RETRANSMISSION	integer	<integer 2..36>	INF= *TIM/*ALL
Time interval for the ISO8073 window timer	var(*LIST).TIMER.WINDOW	integer	<integer 2..180>	INF= *TIM/*ALL
Maximum frame data length (only if path=*node)	var(*LIST).MAX-LPDU-SIZE	string	*STD *ETHERNET-STD	INF= *LIM/*ALL
Maximum NSDU length	var(*LIST).MAX-NSDU-SIZE	integer	<integer 556..65530>	INF= *LIM/*ALL
Maximum message length which the host can receive	var(*LIST).MAX-TSDU-SIZE	integer	<integer 512..65530>	INF= *LIM/*ALL
ROUTE-SEQUENCE-NUMBER	var(*LIST).ROUT-SEQ-NUM	integer	<integer 0..99>	INF= *LIM/*ALL
Automatically adopted route	var(*LIST).CRE-BY-AEC	string	*YES *NO	INF= *PROP /*ALL
Classification of route	var(*LIST).ROUT-CLASS	string	*NORMAL *FIREWALL *MULTICAST *SERVER-PORT	INF= *PROP /*ALL
Route is router route	var(*LIST).ROUTER-ROUT. INDICATOR	string	*YES *NO	INF= *PROP /*ALL
Route is router route	var(*LIST).ROUTER-ROUT. TYPE(*LIST)	string	*IP *IPV6 *ISO *TUNNEL	INF= *PROP /*ALL
List of route names	var(*LIST).ROUT-NAMES (*LIST)	string	<c-string 1..8>	INF=*ROU

SHOW-ROUTE-PATH / SHRTP: Show route path

You use the SHOW-ROUTE-PATH command to display information on the path taken by the route.

The alias name SHRTP exists for SHOW-ROUTE-PATH in order to provide SNMP support.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x	x			

List of valid command sources

SHOW-ROUTE-PATH / **SHRTP**

ROUTE-NAME = <composed-name 1 .. 8> / <c-string 1 .. 8> / ***PROCESSOR**(...) / ***IP-ADDRESS**(...) /
***ISO-ADDRESS**(...) / ***LAN-ADDRESS**(...) / ***IPV6-ADDRESS**(...)

***PROCESSOR**(...)

| **PROCESSOR-NAME** = <composed-name 1 .. 8> / <c-string 1 .. 8>

***IP-ADDRESS**(...)

| **IP-ADDRESS** = <composed-name 7 .. 15> / <x-string 7 .. 8>

***ISO-ADDRESS**(...)

| **ISO-ADDRESS** = <x-string 1 .. 40>

***LAN-ADDRESS**(...)

| **LAN-ADDRESS** = <x-string 1 .. 12>

***IPV6-ADDRESS**(...)

| **IPV6-ADDRESS** = <text 9 .. 45> / <c-string 9 .. 45>

,**INFORMATION** = ***PARTIAL-ROUTES** / ***ROUTE-EXTENSIONS**

ROUTE-NAME=...
Route whose path is shown.

ROUTE-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the route whose path is shown.

ROUTE-NAME=*PROCESSOR(...)
The paths of all the routes to a processor are shown.

PROCESSOR-NAME=<composed-name 1..8> / <c-string 1..8>
Name of the processor to which the routes lead.

ROUTE-NAME=*IP-ADDRESS(...)
The paths of the routes whose partner IP address is specified are shown.

IP-ADDRESS= <composed-name 7..15> / <x-string 7..8>
Partner IP address of the routes that are shown.

ROUTE-NAME=*ISO-ADDRESS(...)
The paths of the routes whose partner ISO Internet address is specified are shown.

ISO-ADDRESS=<x-string 1..40>
Partner ISO Internet address of the routes that are shown.

ROUTE-NAME=*LAN-ADDRESS(...)
The paths of the routes whose partner LAN address is specified are shown.

LAN-ADDRESS=<x-string 1..12>
Partner LAN address of the routes that are shown.

ROUTE-NAME=*IPV6-ADDRESS(...)
The paths of the routes whose partner IPv6 address is specified are shown.

IPV6-ADDRESS=<text 9..45> / <c-string 9..45>
Partner IPv6 address of the routes that are shown.

INFORMATION=...
In INFORMATION you specify the type of information that is shown.

INFORMATION=*PARTIAL-ROUTES
The Intermediate System (IS) routes via which the route operates are shown.
The IS route information is output for each route by means of the console messages BCA08E6, BCA08EE and BCA08AE.

INFORMATION=*ROUTE-EXTENSIONS
If the route has a router and/or gateway function, those routes that lead via this router and/or gateway but not via any other router are shown.
The route information is output for each route by means of the console messages BCA08E6 and BCA08EE.

Command logging

Positive acknowledgments are supplied in news BCA0663, and negative acknowledgments in news BCA06B3, followed by the message NBR0740. In addition, for positive acknowledgments, the messages BCA08E6, BCA08EE and BCA08AE may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	1	BCA0768	Syntax error in command
0	64	BCA079F	Unknown address
0	64	BCA07A0	Unknown processor
0	64	BCA07A1	Unknown route
0	64	BCA08EF	Nothing found to show
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Examples

Show a processor's route path

```
/SHOW-ROUTE-PATH ROUTE-NAME=ROUTE,INFORMATION=*ROUTE-EXTENSIONS
```

Equivalent SHOW-ROUTE command:

```
/SHOW-ROUTE ROUTES=*NAME(ROUTE-NAME=ROUTE),RANGE=*NEXT-HOP
```

SHOW-TSAP-OPEN / SHTO: Show information on TSAP

You use the SHOW-TSAP-OPEN command to display information on an application.

The SDF alias SHTO exists for SHOW-TSAP-OPEN.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x	x			

List of valid command sources

SHOW-TSAP-OPEN / **SHTO**

APPLICATION = ***ALL** / [***NEA**](...) / ***OSI**(...) / ***SOCKETS**(...) / ***PORT**(...) / ***NUMBER**(...)

*[**NEA**](...)

| **NEA-NAME** = <text 1 .. 16> / <c-string 1 .. 16>

***OSI**(...)

| **OSI-NAME** = <text 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>

***SOCKETS**(...)

| **SOCKET-NAME** = <text 1 .. 78> / <c-string 1 .. 78> / <x-string 1 .. 156>

***PORT**(...)

| **PORT-NUMBER** = <integer 1 .. 65535> / <x-string 1 .. 4>

***NUMBER**(...)

| **APPLICATION-NUMBER** = <integer 0 .. 2147483647> / <x-string 1 .. 8>

,**SELECT** = ***ALL** / [***BY-ATTRIBUTES**](...)

[***BY-ATTRIBUTES**](...)

| **JOB-IDENTIFICATION** = ***ANY** / ***TID**(...) / ***TSN**(...)

| ***TID**(...)

| | **TID** = <x-string 1 .. 8>

| ***TSN**(...)

| | **TSN** = <alphanum-name 1 .. 4>

| ,**INTERFACE** = ***ANY** / ***NEA** / ***ISO** / ***STREAMS** / ***SOCKETS**

,**MAX-MSG-NUMBER** = ***STD** / <integer 1 .. 2147483647>

APPLICATION=...
Name of the application for which the information is output.
The information is output with console message BCA08E7.

APPLICATION=*ALL
Information is output for all existing applications.

APPLICATION=[*NEA](...)
Information is output for applications with NEA application names.

NEA-NAME=<text 1..16> / <c-string 1..16>
NEA application name of the application for which information is output.

APPLICATION=*OSI(...)
Information is output for applications with OSI application names.

OSI-NAME=<text 1..78> / <c-string 1..78> / <x-string 1..156>
OSI application name of the application for which information is output.

APPLICATION=*SOCKETS(...)
Information is output for applications with SOCKET application names.

SOCKET-NAME=<text 1..78> / <c-string 1..78> / <x-string 1..156>
SOCKET application name of the application for which information is output.

APPLICATION=*PORT(...)
Information is output for applications which are identified by means of TCP/IP port numbers.

PORT-NUMBER=<integer 1..65535> / <x-string 1..4>
TCP/IP port number of the application for which information is output.

APPLICATION=*NUMBER(...)
Information is output for applications which are identified by means of the BCAM-internal application number.

APPLICATION-NUMBER=<integer 0..2147483647> / <x-string 1..8>
BCAM-internal application number of the application for which information is output.

SELECT=...
Criterion used to search for an application.

SELECT=*ALL
Information is output for all existing applications.

SELECT=[*BY-ATTRIBUTES](...)
Information is output for applications which meet the following criteria.

JOB-IDENTIFICATION=...
Information is output for applications which were logged on under a particular task.

JOB-IDENTIFICATION=*ANY
Information is output for all existing applications.

JOB-IDENTIFICATION=*TID(...)
Information is output for applications which were logged on under a particular task ID.

TID=<x-string 1..8>
Information is output for applications which were logged on under this task ID.

JOB-IDENTIFICATION=*TSN(...)
Information is output for applications which were logged on under a particular TSN.

TSN=<alphanum-name 1..4>
Information is output for applications which were logged on under this TSN.

INTERFACE=...
Information is output for applications which use a particular interface functionality.

INTERFACE=*ANY
Information is output for all existing applications.

INTERFACE=*NEA
Information is output for applications which use the NEA interface functionality.

INTERFACE=*ISO
Information is output for applications which use the ISO interface functionality.

INTERFACE=*STREAMS
Information is output for applications which use the STREAMS (SOCKETS) interface functionality.

INTERFACE=*SOCKETS
Information is output for applications which use the STREAMS (SOCKETS) interface functionality.

MAX-MSG-NUMBER=...
Maximum number of messages which may be output for this command.

MAX-MSG-NUMBER=*STD
A maximum of 50 messages may be output to SYSOUT and a maximum of 10 on the console.

MAX-MSG-NUMBER=<integer 1..2147483647>
Maximum number of messages which may be output for this command.

> The number of messages issued can be exceeded when information is output because of the restricted output length of a message.
> Multiple messages are frequently output for BCAM objects. Within BCAM these messages are counted as just one message.
> In some cases the message BCA0765 is also issued in order to facilitate the assignment of the output information to the specified command.

Command logging

Positive acknowledgments are supplied in news BCA0720 and negative acknowledgments in news BCA0728 followed by the message NBR0740. If processing is positive the message BCA08E2 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
0	1	BCA0768	Syntax error in command
0	64	BCA0791	Anwendung nicht gefunden
0	64	BCA08EF	Nothing found to show
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	128	BCA0766	BCAM is not active

Examples

Show application information

```
/SHOW-TSAP-OPEN
```

Analogous BCSHOW command:

```
/BCSHOW SHOW=TSAP-OPEN
```

SHOW-VLAN-ASSIGNMENT / SHVLA: Show information on VLAN assignments in BCAM

You use the SHOW-VLAN-ASSIGNMENT command to output information on the VLAN assignment in BCAM.

The alias name of SHOW-VLAN-ASSIGNMENT is SHVLA.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-VLAN-ASSIGNMENT / **SHVLA**
SELECT = ***ALL** / list-poss (8): ***IP-ADDRESS-RANGE** / ***IPV6-ADDRESS-RANGE** / ***LIMITS**
,**OUTPUT** = ***SYSOUT** / ***SYSLST**
,**OUTPUT-FORMAT** = ***STD** / ***GENERATING-CMD**

SELECT=...
Selects which information is to be output.

SELECT=*ALL
Shows the IP and IPv6 address ranges of the VLAN assignments.

SELECT=*IP-ADDRESS-RANGE
Shows the IP address ranges which are defined for the VLAN assignments.

SELECT=*IPV6-ADDRESS-RANGE
Shows the IPv6 address ranges which are defined for the VLAN assignments.

SELECT=*LIMITS
Shows the limits for the number of assignments which may be made for IP and IPv6.

OUTPUT=...
Defines the output medium.

OUTPUT=*SYSOUT
Output takes place to SYSOUT.

OUTPUT=*SYSLST
Output takes place to SYSLST.

OUTPUT-FORMAT=...
Defines the output format.

OUTPUT-FORMAT=*STD
The output format corresponds to the standard.

OUTPUT-FORMAT=*GENERATING-CMD
The output format corresponds to the generating commands.

Command logging

A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Operand error
0	32	CMD0221	System error
0	64	CMD0216	Privilege not sufficient
0	64	BCA0203	Interface (&00) supplies the RC (&01)

Examples

Show the access to DNS data in BCAM:

```
/SHOW-VLAN-ASSIGNMENT SELECT=*ALL
/SHOW-VLAN-ASSIGNMENT SELECT=*LIMITS
/SHOW-VLAN-ASSIGNMENT SELECT=*IP-ADDRESS-RANGE,OUTPUT=*SYSLST
/SHOW-VLAN-ASSIGNMENT SELECT=*IPV6-ADDRESS-RANGE,OUTPUT=*SYSLST
```

S variables

The command's SELECT operand defines the S variables to which values are assigned. The possible values for **SELECT** are ***ALL**, ***IP**-ADDRESS-RANGE, ***IPV6**-ADDRESS-RANGE and ***LIM**ITS.

Output information	Name of the S variable	Data type	Content	Condition
Number of possible VLAN assignments per type	var(*LIST).MAX-VLAN-ASS-ENTR	integer	<integer 0..32766>	SEL=*ALL/*LIM O-F=*STD
Permitted IP addresses for the assignment to a VLAN	var(*LIST).IP-ADDR(*LIST).INDICATOR	string	*ADD-TO-VLAN *REMOVE-FROM-VLAN *REMOVE-ALL-FROM-VLAN	SEL=*ALL/*IP O-F=*STD
Start of the permitted range of IP addresses for the assignment to a VLAN	var(*LIST).IP-ADDR(*LIST).RANGE.FROM	string	<c-string 7..15>	SEL=*ALL/*IP O-F=*STD
End of the permitted range of IP addresses for the assignment to a VLAN	var(*LIST).IP-ADDR(*LIST).RANGE.TO	string	<c-string 7..15>	SEL=*ALL/*IP O-F=*STD
Assigned VLAN ID	var(*LIST).IP-ADDR(*LIST).VLAN-ID	string	<integer 2..4094>	SEL=*ALL/*IP O-F=*STD
Permitted IPV6 addresses for the assignment to a VLAN	var(*LIST).IPV6-ADDR(*LIST).INDICATOR	string	*ADD-TO-VLAN *REMOVE-FROM-VLAN *REMOVE-ALL-FROM-VLAN	SEL=*ALL/*IPV6 O-F=*STD
Permitted IPV6 addresses for the assignment to a VLAN	var(*LIST).IPV6-ADDR(*LIST).IPV6-PREFIX	string	<c-string 9..49>	SEL=*ALL/*IPV6 O-F=*STD
Assigned VLAN ID	var(*LIST).IPV6-ADDR(*LIST).VLAN-ID	string	<integer 2..4094>	SEL=*ALL/*IPV6 O-F=*STD
Generating commands	var(*LIST).GENERATING-CMD(*LIST)	string	<text 1..256>	SEL=<any> O-F=*GEN

SHOW-VLAN-DEVICE / SHVLDV: Show VLAN device information

You use the SHOW-VLAN-DEVICE command to show VLAN-device-specific options and attributes.

The alias name SHVLDV exists for SHOW-VLAN-DEVICE in order to provide SNMP support.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
x	x		x	

List of valid command sources

SHOW-VLAN-DEVICE / **SHVLDV**

DEVICE-NAME = **<u>*ALL</u>** / <composed-name 1 .. 8> / ***VIA-AGGREGATION**(...)

***VIA-AGGREGATION**(...)

| **AGGREGATION-NAME** = <composed-name 1 .. 8>

,**INFORMATION** = **<u>*STATE</u>** / ***ALL** /

list-poss (8): ***SLOW-POLL** / ***DEVICES** / ***MAX-LPDU-SIZE** / ***MAX-LPDU-VALUE** / ***STATE**/ ***CHECKSUM** / ***OFFLOAD**

DEVICE-NAME=...
With DEVICE-NAME you specify the VLAN device for which information is shown.

DEVICE-NAME=<u>*ALL</u>
Information is shown for all VLAN devices.

DEVICE-NAME=<composed-name 1..8>
Name of the VLAN device for which information is shown.

DEVICE-NAME=*VIA-AGGREGATION(...)
Information on the VLAN devices which are determined by a link aggregation name.

AGGREGATION-NAME=<composed-name 1..8>
Name of the link aggregation for VLAN devices about which information is to be shown.

INFORMATION=...
With INFORMATION you specify which information is shown.

INFORMATION=<u>*STATE</u>
The status of the VLAN device is shown.
The information is shown with the console messages BCA05D3 and BCA05D9.

INFORMATION=*ALL
All information for the VLAN device is shown.

INFORMATION=*SLOW-POLL
The device-specific SLOW-POLL option is shown.
This option cannot be shown unless the LAN protocol CSMACD is used on the line.
The information is shown with the console message BCA05D2.

INFORMATION=*DEVICES
The mnemonic device names of the VLAN device are shown.
The information is shown with the console message BCA05D4.

INFORMATION=*MAX-LPDU-SIZE
The MAX-LPDU-SIZE set by the administration is shown.
The information is shown with the console message BCA05D2.

INFORMATION=*MAX-LPDU-VALUE
The MAX-LPDU value currently set is shown.
The information is shown with the console message BCA0562.

INFORMATION=*CHECKSUM
The value for CHECKSUM processing set by the administration is shown.
The information for CHECKSUM is shown with the console messages BCA05D2 and BCA0566.

INFORMATION=*OFFLOAD
The value set for (TCP-)OFFLOAD processing is shown.
The information for (TCP-)OFFLOAD is shown with the console message BCA0566.

Command logging

Positive acknowledgments are supplied in news BCA0658, and negative acknowledgments in news BCA06A8. In addition, for positive acknowledgments, the messages BCA05D2, BCA05D3, BCA05D4, BCA05D9 and BCA0562 may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
2	0	BCA06A8	SHOW-VLAN-DEVICE command aborted
0	1	BCA0768	Syntax error in command
0	64	BCA07A5	DEVICE-NAME not found
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Example

Show VLAN device.

```
/SHOW-VLAN-DEVICE DEVICE-NAME=VLANDEV,INFORMATION=(*SLOW-POLL,*DEVICES)
```

SHOW-VLAN-DEVICE-ATTRIBUTES / SHVLDVA: Show information on VLAN device

You use the SHOW-VLAN-DEVICE-ATTRIBUTES command to show device-specific options and attributes for selected VLAN devices.

The alias name of SHOW-VLAN-DEVICE-ATTRIBUTES is SHVLDVA.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-VLAN-DEVICE-ATTRIBUTES / **SHVLDVA**

DEVICE-NAME = ***ALL** / <composed-name 1 .. 8>

,**SELECT** = ***ALL** / ***BY-ATTRIBUTES**(...)

,**AGGREGATION-NAME** = ***ANY** / <composed-name 1 .. 8>

,**INFORMATION** = ***STATE** / ***ALL** / ***DEVICE-NAMES** /

list-poss (8): ***ADDRESS** / ***DEVICES** / ***LIMITS** / ***OPTIONS** / ***STATE**

,**OUTPUT** = ***SYSOUT** / ***SYSLST**

DEVICE-NAME=...
The VLAN devices for which information is shown are selected via the device name.

DEVICE-NAME=*ALL
Shows information on all VLAN devices.

DEVICE-NAME=<composed-name 1..8>
Name of the VLAN device for which information is shown.

SELECT=...
The VLAN devices about which information is shown are restricted by means of a selection criterion.

SELECT=*ALL
All VLAN devices are selected.

SELECT=*BY-ATTRIBUTES(...)
The VLAN device which is to be selected is specified in greater detail.

AGGREGATION-NAME=...
Name of the link aggregation.

AGGREGATION-NAME=*ANY
Arbitrary name of the link aggregation.

AGGREGATION-NAME=<composed-name 1..8>
Name of the link aggregation.

INFORMATION=...
With INFORMATION you specify which information for the selected VLAN devices is shown.

INFORMATION=*STATE
Shows the status of the VLAN device.

INFORMATION=*ALL
Shows all information for the VLAN devices.

INFORMATION=*DEVICE-NAMES
Shows the names of the VLAN devices.

INFORMATION=*ADDRESS
Shows the addresses of the VLAN devices.

INFORMATION=*DEVICES
Shows the mnemonic device names of the VLAN devices.

INFORMATION=*LIMITS
Shows the limits that can be set for the VLAN devices.

INFORMATION=*OPTIONS
Shows the options that can be set for the VLAN devices.

OUTPUT=...
Defines the output medium.

OUTPUT=*SYSOUT
Output takes place to SYSOUT.

OUTPUT=*SYSLST
Output takes place to SYSLST.

Command logging

Positive acknowledgments result in the required information being output.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Operand error
0	32	CMD0221	System error
0	64	CMD0216	Privilege not sufficient
0	64	BCA0203	Interface (&00) supplies the RC (&01).
0	64	BCA0290	VLAN line entry not found

Examples

1. Show VLAN device:

```
/SHOW-VLAN-DEVICE DEVICE-NAME=VLANDEV1,INFORMATION=*STATE
```

2. Show all VLAN devices:

```
/SHOW-VLAN-DEVICE DEVICE-NAME=*ALL,INFORMATION=*STATE
```

S variables

The command's INFORMATION operand defines the S variables to which values are assigned. The possible values for **INF**ORMATION are ***STA**TE, ***ADDR**ESS, ***DEVICES**, ***OPT**IONS, ***LIM**ITS, ***ALL** and ***DEVICE-NAM**ES

Output information	**Name of the S variable**	**Data type**	**Content**	**Condition**
VLAN device name	var(*LIST).DEVICE-NAME	string	<c-string 1..8>	INF= <in any case>
Administrative status	var(*LIST).STA.ADM	string	*EXCLUDE *INCL *ACTIVE	INF= *STA/*ALL
Transfer status	var(*LIST).STA.TRANS	string	*NONE *WORKING	INF= *STA/*ALL
Mnemonic device name for write access	var(*LIST).DEV.WRITE	string	<text 2..4>	INF= *DEVICES /*ALL
Mnemonic device name for read access	var(*LIST).DEV.READ	string	<text 2..4>	INF= *DEVICES/ *ALL
LAN address	var(*LIST).ADDR.LAN-ADDR	string	<text 1..6>	INF= *ADDR/*ALL
Name of the link aggregation	var(*LIST).AGGREGATION-NAME	string	*NONE <c-string 1..8>	INF= *STATE/*OPT /*LIM /*DEVICES /*ADDR/*ALL
Automatic reactivation after a line failure	var(*LIST).SLOW-POLL.TARGET	string	*ON *OFF	INF= *OPT/*ALL
Automatic reactivation after a line failure	var(*LIST).SLOW-POLL.WORK	string	*ON *OFF	INF= *OPT/*ALL
Shows whether CHECKSUM calculation by the device is possible	var(*LIST).CHECKSUM.INDICATOR	string	*YES *NO	INF= *OPT/*ALL

CHECKSUM calculation is to be executed	var(*LIST).CHECKSUM.TARGET	string	*BY-BCAM *BY-DEVICE	INF= *OPT/*ALL
CHECKSUM calculation is executed	var(*LIST).CHECKSUM.WORK	string	*BY-BCAM *BY-DEVICE	INF= *OPT/*ALL
(TCP-)OFFLOAD processing is executed	var(*LIST).OFFLOAD.WORK	string	*BY-BCAM *BY-DEVICE	INF= *OPT/*ALL
Maximum frame data length set by the administration	var(*LIST).MAX-LPDU-SIZE	string	*STD *BY-DEVICE	INF= *LIM/*ALL
Current maximum frame data length	var(*LIST).MAX-LPDU-VALUE	integer	<integer 1514 .. 65535>	INF= *LIM/*ALL
List of the VLAN DEVICE names	var(*LIST).DEVICE-NAMES(*LIST)	string	<c-string 1..8>	INF= *DEVICE-NAM

SHOW-VLAN-LINE / SHVLLN: Show VLAN lines

You use the SHOW-VLAN-LINE command to show the line-specific options and attributes.

The alias name SHVLLN exists for SHOW-VLAN-LINE in order to provide SNMP support.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
x	x		x	

List of valid command sources

SHOW-VLAN-LINE / **SHVLLN**

LINE-NAME = ***ALL** / <composed-name 1 .. 8> / ***VIA-NODE**(...) / ***VIA-DEVICE**(...) /

***VIA-AGGREGATION**(...)

***VIA-NODE**(...)

| **NODE-NAME** = <composed-name 1 .. 8>

***VIA-DEVICE**(...)

| **DEVICE-NAME** = <composed-name 1 .. 8>

***VIA-AGGREGATION**(...)

| **AGGREGATION-NAME** = <composed-name 1 .. 8>

,**INFORMATION** = ***STATE** / ***ALL** /

list-poss (16): ***BROADCAST** / ***MULTICAST** / ***SLOW-POLL** / ***MAX-LPDU-SIZE** /

***MAX-LPDU-VALUE** / ***AUTO-ROUTE-SWITCHING** / ***ROUTE-RESWITCHING** / ***STATE**/

***REDUNDANCY** / ***TIMEOUT-PROCESSING** / ***VLAN** / ***DUP-ADDR-DETECTION** /

***ADDR-CONFLICT-DETECT** / ***OFFLOAD** / ***IPV6-VLAN-AUTO-CONF**

LINE-NAME=...
With LINE-NAME you specify the lines for which information is shown.

LINE-NAME=*ALL
Information is shown for all lines.

LINE-NAME=<composed-name 1..8>
Name of the line for which information is shown.

LINE-NAME=*VIA-NODE(...)
Information about the VLAN lines which are determined by specifying a node.

NODE-NAME=<composed-name 1..8>
Name of the node about whose lines information is to be shown.

LINE-NAME=*VIA-DEVICE(...)
Information about the VLAN lines which are determined by specifying a VLAN device name.

DEVICE-NAME=<composed-name 1..8>
Name of the VLAN device for which information about its VLAN lines is to be shown.

LINE-NAME=*VIA-AGGREGATION(...)
Information on the VLAN lines which are determined by specifying a link aggregation name.

AGGREGATION-NAME=<composed-name 1..8>
Name of the link aggregation about whose VLAN lines information is to be shown.

INFORMATION=...
With INFORMATION you specify which information is shown.

INFORMATION=*STATE
The status of the line is shown.
The information is shown with the console messages BCA05E3, BCA05E9, and BCA05EA.

INFORMATION=*ALL
All information for the line is shown.

INFORMATION=*BROADCAST
The line-specific BROADCAST option is shown.
This option cannot be shown unless the LAN protocol CSMACD is used on the line.
The information is shown with the console message BCA05E2.

INFORMATION=*MULTICAST
The line-specific MULTICAST option is shown.
This option cannot be shown unless the LAN protocol CSMACD is used on the line.
The information is shown with the console message BCA05E2.

INFORMATION=*SLOW-POLL
The line-specific SLOW-POLL option is shown.
This option cannot be shown unless the LAN protocol CSMACD is used on the line.
The information is shown with the console message BCA05E2.

INFORMATION=*OFFLOAD
The value set for (TCP-)OFFLOAD processing is shown.
The information on (TCP-)OFFLOAD is shown with the console message BCA0565.

INFORMATION=*MAX-LPDU-SIZE
The line-specific MAX-LPDU-SIZE attribute is shown.
The information is shown with the console message BCA05E2.

INFORMATION=*MAX-LPDU-VALUE
The line-specific current MAX-LPDU value is shown.
The information is shown with the console message BCA0561.

INFORMATION=*AUTO-ROUTE-SWITCHING
The line-specific AUTO-ROUTE-SWITCHING option is shown.
This option cannot be shown unless the LAN protocol CSMACD is used on the line.
The information is shown with the console message BCA05E2.

INFORMATION=*ROUTE-RESWITCHING
The line-specific ROUTE-RESWITCHING option is shown.
This option cannot be shown unless the LAN protocol CSMACD is used on the line.
The information is shown with the console message BCA05E2.

INFORMATION=*TIMEOUT-PROCESSING
The line-specific TIMEOUT-PROCESSING behavior is shown.
This option cannot be shown unless a LAN protocol (CSMACD) is used on the line.
The information is shown with the console message BCA05E2.

INFORMATION=*REDUNDANCY
Information about redundancy is displayed.
A prerequisite for the display of this information is that LAN protocol CSMACD is used on the line.
The information is displayed using console message BCA05E8.

INFORMATION=*VLAN
The VLAN ID that is used on the line is shown.
The information is shown with the console message BCA05E2.

INFORMATION=*DUP-ADDR-DETECTION
Duplicate Address Detection for IPv6 is shown.
A prerequisite for displaying the behavior is that a LAN protocol (CSMACD) is used on the line.
The information is shown with the console message BCA05E2.

INFORMATION=*ADDR-CONFLICT-DETECT
Address Conflict Detection for IP is shown.
This behavior can only be displayed if a LAN protocol is used on the line (CSMACD).
The information is displayed by means of console message BCA05E2.

INFORMATION=*IPV6-VLAN-AUTO-CONF
The IPv6 autoconfiguration for VLAN lines is shown.
The information is shown with the console message BCA05E2.

Command logging

Positive acknowledgments are supplied in news BCA0659, and negative acknowledgments in news BCA06A9. In addition, for positive acknowledgments, the messages BCA05E2 BCA05E3, BCA05E9, and BCA05EA may also appear.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Error in command
2	0	BCA06A9	SHOW-VLAN-LINE command aborted
0	1	BCA0768	Syntax error in command
0	64	BCA07AA	VLAN line name not found
0	128	BCA0814	BCAM is being terminated abnormally
0	128	BCA0816	BCAM is terminating
0	130	BCA0766	BCAM is not active

Example

Show VLAN line

```
/SHOW-VLAN- LINE LINE-NAME=L#VLAN#1,INFORMATION=(SLOW-POLL,STATE)
```

SHOW-VLAN-LINE-ATTRIBUTES/ SHVLLNA: Show information on VLAN lines

You use the SHOW-VLAN-LINE-ATTRIBUTES command to show line-specific options and attributes for selected VLAN lines.

The alias name of SHOW-VLAN-LINE-ATTRIBUTES is SHVLLNA.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-VLAN-LINE-ATTRIBUTES / **SHVLLNA**

LINE-NAME = **<u>*ALL</u>** / <composed-name 1 .. 8>

,**SEL**ECT = **<u>*ALL</u>** / ***BY-ATTR**IBUTES(**...**)

***BY-ATTR**IBUTES(...)

| **NODE**-NAME = **<u>*ANY</u>** / <composed-name 1 .. 8>

| ,**DEV**ICE-NAME = **<u>*ANY</u>** / <composed-name 1 .. 8>

| ,**AGG**REGATION-NAME = **<u>*ANY</u>** / <composed-name 1 .. 8>

,**INF**ORMATION = **<u>*STA</u>**TE / ***ALL** / ***LINE**-NAMES /

list-poss (8): ***ADDR**ESSES / ***LIM**ITS / ***OPT**IONS / ***RED**UNDANCY / ***STA**TE / ***VLAN**

,**OUTPUT** = **<u>*SYSOUT</u>** / ***SYSLST**,

LINE-NAME=...
The VLAN lines for which information is shown are selected via the line name.

LINE-NAME=<u>*ALL</u>
Shows information on all VLAN lines.

LINE-NAME=<composed-name 1..8>
Name of the VLAN line for which information is shown.

SELECT=...
The VLAN lines for which information is shown are limited by a selected criterion.

SELECT=<u>*ALL</u>
All VLAN lines are selected.

SELECT=*BY-ATTRIBUTES(...)
The VLAN line to be selected is specified precisely.

NODE-NAME=...
Name of the node.

NODE-NAME=*ANY
Arbitrary name of the node.

NODE-NAME=<composed-name 1..8>
Name of the node.

DEVICE-NAME=...
Name of the VLAN device.

DEVICE-NAME=*ANY
Arbitrary name of the VLAN device.

DEVICE-NAME=<composed-name 1..8>
Name of the VLAN device.

AGGREGATION-NAME=...
Name of the link aggregation.

AGGREGATION-NAME=*ANY
Arbitrary name of the link aggregation.

AGGREGATION-NAME=<composed-name 1..8>
Name of the link aggregation.

INFORMATION=...
With INFORMATION you specify which information for the selected VLAN lines is shown.

INFORMATION=*STATE
Shows the status of the VLAN lines.

INFORMATION=*ALL
Shows all information for the VLAN lines.

INFORMATION=*LINE-NAMES
Shows the names of the lines.

INFORMATION=*ADDRESSES
Shows the addresses of the VLAN lines.

INFORMATION=*LIMITS
Shows the limit values that can be set for the VLAN lines.

INFORMATION=*OPTIONS
Shows the options that can be set for the VLAN lines.

INFORMATION=*REDUNDANCY
Shows the redundancy information for the VLAN lines.

INFORMATION=*VLAN
Shows the VLAN-specific values that have been set for the VLAN lines.

OUTPUT=...
Defines the output medium.

OUTPUT=*SYSOUT
Output takes place to SYSOUT.

OUTPUT=*SYSLST
Output takes place to SYSLST.

Command logging

Positive acknowledgments result in the required information being output.
A description of the error messages that may be issued during command processing is provided in the table below.

Command return codes

(SC2)	SC1	Maincode	Meaning
0	0	CMD0001	Command successfully processed
0	1	CMD0202	Operand error
0	32	CMD0221	System error
0	64	CMD0216	Privilege not sufficient
0	64	BCA0203	Interface (&00) supplies the RC (&01).
0	64	BCA0290	VLAN line entry not found
0	64	BCA0292	No VLAN line found for specified selection

Examples

1. Show VLAN line:

```
/SHOW-VLAN-LINE-ATTRIBUTES LINE-NAME=L#VLAN#1,INFORMATION=*STATE
```

2. Show all VLAN lines:

```
/SHOW-VLAN-LINE-ATTRIBUTES LINE-NAME=*ALL,INFORMATION=*STATE
```

S variables

The command's INFORMATION operand defines the S variables to which values are assigned. The possible values for **INF**ORMATION are ***STA**TE, ***ADDR**ESSES, ***LIM**ITS, ***OPT**IONS, ***VLAN**, ***ALL** and ***LIN**E-NAMES.

Output information	Name of the S variable	Data type	Content	Condition
Line name	var(*LIST).LINE-NAME	string	<c-string 1..8>	INF= <in any case>
Host name	var(*LIST).HOST-NAME	string	*STD <c-string 1..8>	INF= *STA/ *DEV/*ALL
Addresses assigned to host	var(*LIST).ADDR(*LIST).ADD-TO-HOST	string	*STD <c-string1..8>	INF= *ADDR/*ALL

IP address	var(*LIST).ADDR(*LIST).IP-ADDR	string	*NONE <text 7..15>	INF= *ADDR/*ALL
IP address status	var(*LIST).ADDR(*LIST).IP-ADDR-STA	string	TENTATIVE VALID INVALID DEACTIVATED DUPLICATE	INF= *ADDR/*ALL
IPv6 address	var(*LIST).ADDR(*LIST).IPV6-ADDR	string	*NONE <text 9..49>	INF= *ADDR/*ALL
IPv6 address status	var(*LIST).ADDR(*LIST).IPV6-ADDR-STA	string	TENTATIVE VALID DEPRICATED INVALID DEACTIVATED DUPLICATE	INF= *ADDR/*ALL
ISO address	var(*LIST).ADDR(*LIST).ISO-ADDR	string	*NONE <text 1..20>	INF= *ADDR/*ALL
ISO address status	var(*LIST).ADDR(*LIST).ISO-ADDR-STA	string	VALID INVALID	INF= *ADDR/*ALL
LAN address	var(*LIST).ADDR(*LIST).LAN-ADDR	string	<text 1..6>	INF= *ADDR/*ALL
LAN address status	var(*LIST).ADDR(*LIST).LAN-ADDR-STA	string	VALID INVALID	INF= *ADDR/*ALL
Administrative status	var(*LIST).STA.ADM	string	*EXCLUDE *INCL *ACTIVE	INF= *STA/*ALL
Transfer status	var(*LIST).STA.TRANS	string	*NONE *WORKING	INF= *STA/*ALL
VLAN node name	var(*LIST).NODE-NAME	string	<c-string 1..8>	INF= *STA/*ALL
VLAN device name	var(*LIST).DEVICE-NAME	string	<c-string 1..8>	INF= *STA/*ALL
VLAN link aggregationname	var(*LIST).AGGREGATION-NAME	string	*NONE <c-string 1..8>	INF= *STA/*ALL
VLAN identification	var(*LIST).VLAN.VLAN-ID	string	*UNTAGGED <integer 2.. 4094>	INF= *VLAN/*ALL
VLAN priority	var(*LIST).VLAN.PRIORITY	string	*STD <integer 2..7>	INF= *VLAN/*ALL

Redundancy indicator	var(*LIST). REDUNDANCY. INDICATOR	string	*STD *NAME *NONE *FIRST	INF= *RED /*ALL
Redundancy for a VLAN line determines the group	var(*LIST). REDUNDANCY.LINE	string	<c-string 1..8>	INF= *RED /*ALL
Redundancy subgroup	var(*LIST). REDUNDANCY. SUBGROUP	string	*NONE <c-string 1..1>	INF= *RED /*ALL
Reception of broadcast messages	var(*LIST). BROADCAST. TARGET	string	*ON *OFF	INF= *OPT /*ALL
Reception of broadcast messages	var(*LIST). BROADCAST.WORK	string	*ON *OFF	INF= *OPT /*ALL
Reception of multicast messages	var(*LIST). MULTICAST.TARGET	string	*ON *OFF	INF= *OPT /*ALL
Reception of multicast messages	var(*LIST). MULTICAST.WORK	string	*ON *OFF	INF= *OPT /*ALL
Automatic reactivation after a line failure	var(*LIST).SLOW- POLL.TARGET	string	*ON *OFF	INF= *OPT /*ALL
Automatic reactivation after a line failure	var(*LIST).SLOW- POLL.WORK	string	*ON *OFF	INF= *OPT /*ALL
(TCP-)OFFLOAD processing is executed	var(*LIST).OFFLOAD. WORK	string	*BY-BCAM *BY-DEVICE	INF= *OPT /*ALL
Alternate line in event of line failure	var(*LIST).AUTO- ROUT-SWITCH	string	*ON *OFF	INF= *OPT /*ALL
Resumption of the original path definition	var(*LIST).ROUT- RESWITCH	string	*ON *OFF	INF= *OPT /*ALL
VLAN line-specific IPv6 autoconfiguration	var(*LIST).IPV6-VAN- AUTO-CONF	string	*ON *OFF	INF= *OPT /*ALL

Line handling after timeout on the line	var(*LIST).TIMEOUT-PROCESS	string	*KEEP-LINE *DEACTIVATE-LINE	INF= *OPT /*ALL
Use of Duplicate Address Detection (DAD) only with L2 protocol CSMACD	var(*LIST).DAD.INDICATOR	string	*ON *OFF *STD	INF= *OPT /*ALL
Duplicate Address Detection (DAD) number of Transmitsonly with L2 protocol CSMACD	var(*LIST).DAD.TRANSMIT-NUM	integer	<integer 1..10>	INF= *OPT /*ALL
Address Conflict Detection (ACD) usedonly with L2 protocol CSMACD	var(*LIST).ACD.INDICATOR	string	*ON *OFF *STD	INF= *OPT /*ALL
Address Conflict Detection (ACD) number of Transmitsonly with L2 protocol CSMACD	var(*LIST).ACD.TRANSMIT-NUM	integer	<integer 1..10>	INF= *OPT /*ALL
Maximum frame data length	var(*LIST).MAX-LPDU-SIZE	string	*STD *BY-DEVICE <integer 1514 .. 65535>	INF= *LIM /*ALL
Maximum frame data length currently set	var(*LIST).MAX-LPDU-VALUE	integer	<integer 1514 .. 65535>	INF= *LIM /*ALL
List of line names	var(*LIST).LINE-NAMES(*LIST)	string	<c-string 1..8>	INF=*LIN

DNS Resolver connection

The BIND-based program LWRESD (Light Weight RESolver Daemon) implements a central DNS Resolver connection for BCAM and SOCKETS(BS2000). SOCKETS(POSIX) is connected indirectly to the DNS Resolver connection via the SOCKETS(BS2000) subsystem.

In the standard configuration, LWRESD can be accessed under the local loopback address and port 921.

> By default, the LWRESD program is started by the DCSTART/DCOPT command (see also section “Configuring LWRESD”).

Installing LWRESD

The following libraries and files are automatically created under the TSOS user ID, where nnn specifies the version (210 stands for LWRESD V21.0A):

SYSDAT.LWRESD.nnn.RESOLV.CONF	Configuration file for the program LWRESD
SYSPRG.LWRESD.nnn	Load library for the program LWRESD
SYSPRG.LWRESD.nnn.DIG	Load library for the program DIG
SYSPRG.LWRESD.nnn.NSLOOKUP	Load library for the program NSLOOKUP
SYSSII.LWRESD.nnn	Installation file for IMON
SYSSDF.LWRESD.nnn	SDF syntax file LWRESD
SYSSPR.LWRESD.nnn	Library of LWRESD procedures

To prevent the Resolver configuration data from being overwritten when a product update is performed, the file SYSDAT.LWRESD.010.RESOLV.CONF with the suffix .NEW is created in the case of an IMON installation if a file with the name SYSDAT.LWRESD.010.RESOLV.CONF is already present.

The IMON installation creates the DNS Resolver configuration file with the file attributes USER-ACC = *ALL-USERS and ACCESS = *READ. To protect these files more efficiently against modification, you can also assign them a write password.

i
- The name of the configuration file can be specified in the (RE)START-LWRESD command (section "(RE)START-LWRESD - (Stopping and) Starting LWRESD").
- The diagnostic program DIG can be used to read out entries on the selected DNS server. This enables you both to check the entered records and to determine whether or not a processor is known in DNS. DIG can be used to check DNS server entries independently of whether or not LWRESD is started.
- The diagnostic program NSLOOKUP enables DNS processor names to be converted to IP/IPv6 addresses and vice versa. Naturally a check then also takes place to determine whether the processor name is known in DNS.
- The diagnostic programs PING4/PING6 are used primarily to check whether a processor can be addressed. If a processor name is specified instead of an IP/IPv6 address, the entry is checked indirectly in DNS as a result of the necessary conversion of the name to an address.

By default LWRESD is started under TSOS and directly when the DCSTART command is executed. At every automatic startup LWRESD uses the standard configuration file.

If you have installed SECOS it is also possible to install and start LWRESD under an ID other than TSOS. Proceed as follows to do this:

- Use the ADD-USER command to set up a user ID with an account number and a password. The name of the user ID should contain a reference to LWRESD, for example UIDLWRES.

  Caution: set a high enough value for the ADDRESS-SPACE-LIMIT of the ID as the default value for an ID is too low. Select a minimum value of at least 128.

- Under the SYSPRIV ID assign the NET-ADMINISTRATION privilege:

  ```
  /SET-PRIVILEGE PRIVILEGE=*NET-ADMINISTRATION,USER-IDENTIFICATION=UIDLWRES.
  ```

- Install LWRESD under this user ID.

- Start LWRESD under this user ID using the START-LWRESD command.

Configuring LWRESD

The statements in the configuration file control the DNS Resolver.

The statements consist of the keywords *nameserver*, *domain*, *search*, followed by the specific operands. The keywords start in the first column of the line and must be written in lowercase.

A semicolon (;) or hash character (#) in the first column means that the line in question is treated as a comment line.

The following statements are possible:

nameserver IPv4 or IPv6 address

A *nameserver* entry informs LWRESD of the IPv4 or IPv6 address of a DNS server. In other words, both IP and IPv6 addresses are permitted. You must specify a minimum of one and a maximum of three *nameserver* entries in the configuration file.
Even if the local LWRESD is not active, it makes sense to enter a valid DNS server. It is then not essential to specify a server address when using DIG and NSLOOKUP.

As the DNS server resides on a partner processor, it must either be made known to BCAM by means of CREATE commands or be entered in the processor file.

In order to maintain compatibility with the previous version, a *nameserver* entry with the IP address 127.0.0.1 is entered in the configuration file supplied. This serves only to enable LWRESD to be started if no DNS server is to be used. You must delete this entry as soon as a DNS server which is actually used is entered.

If more than one DNS server is specified, it is not possible to define the order in which they are used. An algorithm in the program defines the order according to the accessibility of the DNS servers.

It is therefore necessary that the other DNS servers are always redundant and can always process every query.

Example with nameserver entries

```
nameserver 15.32.16.4
nameserver 16.63.31.5
nameserver FEDC:BA98:7654:3210:FEDC:BA98:7654:3210
```

domain domain

The *domain* entry defines a default domain for queries by the DNS Resolver daemon to the DNS name server or servers. It should be noted that a maximum of one *domain* entry is valid; *domain* and *search* entries are mutually exclusive.

i
- If the configuration file contains multiple *domain* entries but no *search* entries, then the last *domain* entry applies.
- If both statements are used then the last specified statement is evaluated.

The mode of operation of the *domain* entry depends on whether or not the DNS name specified in a DNS query contains a period (.). The following description applies to the default setting of the LWRESD options

- The specified DNS name contains a period:
  If the DNS server is not able to reply successfully to a DNS query for a name *name.domain* then the DNS Resolver daemon sends a new DNS query with *name* to the DNS server.
- The specified DNS name does not contain a period:
  If the DNS server is not able to reply successfully to a DNS query for a name *name* then the DNS Resolver daemon sends a new DNS query for *name.domain* to the DNS server.

The examples below illustrate the names generated by the DNS Resolver daemon in the case of queries to a DNS server.

Example for a DNS name with a period

Entry in the configuration file:

```
domain part.my-company.com
```

Name specified by the user

```
my.host
```

Name generated by the DNS Resolver daemon:

```
my.host
my.host.part.my-company.com
my.host.my-company.com
```

Example for a DNS name without a period

Entry in the configuration file:

```
domain part.my-company.com
```

Name specified by the user

```
myhost
```

Name generated by the DNS Resolver daemon:

```
myhost.part.my-company.com
myhost.my-company.com
myhost
```

search domain1[domain2[.... [domain8]...]

The *search* entry defines multiple domain names for the DNS Resolver daemon in the event of queries to the DNS name server or servers. It should be noted that a maximum of one *search* entry is valid; *domain* and *search* entries are mutually exclusive.

- Up to eight *search* entries are valid.
- *domain* and *search* entries are mutually exclusive.
- If both statements are used then the last specified statement is evaluated.

The mode of operation of the *search* entry depends on whether or not the DNS name specified in a DNS query contains a period (.).

- The specified DNS name contains a period:

  A DNS query with *name.domain1* is sent to the DNS server. If this is not responded to successfully then the DNS Resolver daemon repeats the DNS query with the next domain name *domaini* (i = 2 ... 8) defined in the *search* entry. This process is continued until either the DNS query has been successfully answered by the DNS server or until no further domain names are defined in the *search* entry.

  If, after all the domain names defined in the *search* statement have been worked through, no DNS query has been successfully answered by the DNS server then a DNS query with *name* is sent.
- The specified DNS name does not contain a period:

  If the DNS server is not able to reply successfully to a DNS query for a name *name* then the DNS Resolver daemon sends a new query with *name.domain1* to the DNS server. If this DNS query is also not successfully responded to by the DNS server then the DNS Resolver daemon repeats the DNS query with the next domain name *domaini* (i = 2 ... 8) defined in the *search* entry. This process is continued until either the DNS query has been successfully answered by the DNS server or until no further domain names are defined in the *search* entry.

The examples below indicate the names generated by the DNS Resolver daemon for queries to a DNS server:

Example for a DNS name with a period

Entry in the configuration file:

```
search part-1.my-company.com part-2.my-company.com
```

Name specified by user:

```
my.host
```

Name generated by the DNS Resolver daemon:

```
my.host
my.host.part-1.my-company.com
my.host.part-2.my-company.com
```

Example for a DNS name without a period

Entry in the configuration file:

```
search part-1.my-company.com part-2.my-company.com
```

Name specified by user:

```
myhost
```

Name generated by the DNS Resolver daemon:

```
myhost.part-1.my-company.com
myhost.part-2.my-company.com
myhost
```

lwserver : IPv4 or IPv6 address

The list socket of LWRESD is opened at this address so that is can be accessed by the LWRES client.

lwlport Port number

The list socket of LWRESD is opened at this port number.

destport Port number

A port which differs from the default port number 53 can be specified here for the name servers entered. This enables tests of name servers to be performed which were started for this purpose under a non-default port number.

Changes with the keywords lwserver, lwlport and destport only become effective when LWRESD is restarted, in other words the command sequence STOP-LWRESD/START-LWRESD or RESTART-LWRESD is required.

Note

The specifications relating to the accessibility of LWRESD should comply with the default information in BCAM (IPv4 loopback address and default port 921) or the addressing data changed by the BCAM command MODIFY-DNS-ACCESS (IPv4 or IPv6 addresses, port number) (see section "MODIFY-DNS-ACCESS / MDDNA: Modify DNS access in BCAM")!

```
Default name of the configuration file:
SYSDAT.LWRESD.nnn.RESOLV.CONF
```

Controlling LWRESD

This section describes the LWRESD commands that are used to control the LWRESD program.

The ASTI service is used to control LWRESD.

For reasons of compatibility, provided the JV subsystem is available the MONJV.LWRESD.210 will be created and supplied with values when LWRESD is started.

(RE)START-LWRESD - (Stopping and) Starting LWRESD

You use the (RE)START-LWRESD command to (stop and) start LWRESD processing. The DNS Resolver daemon is started.

The standard case of starting LWRESD under TSOS can also be controlled using the DCOPT or DCSTART command.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
	x			

List of valid command sources

(RE)START-LWRESD
,**RESOLV-FILE** = ***STD** / <filename 1..54>
,**DUMP-FILE** = ***STD** / <filename 1..54>

RESOLV-FILE=...
Name of the LWRESD configuration file.

RESOLV-FILE=*STD
Default name of the LWRESD configuration file: SYSDAT.LWRESD.nnn.RESOLV.CONF

RESOLV-FILE=<filename 1..54>
Use of a RESOLV-FILE with a non-standard name is not recommended.
When an LWRESD configuration file without a standard name is used, the functionality of the specified DNS settings can no longer be guaranteed by commands and procedures.

DUMP-FILE=...
The name of the dump file can be specified when LWRESD is started.
The file contents are generated with the DUMP-LWRESD-CACHE command.

DUMP-FILE=*STD
Default name of the dump file: SYSOUT.LWRESD.nnn.DUMP.DB

DUMP-FILE=<filename 1..54>
Specify the name you wish to give the dump file.

Notes

When LWRESD is started, the procedure which processes the command generates the SYSOUT.LWRESD.nnn file under the execution ID of LWRESD. The start of LWRESD is logged in this file. Further useful diagnostic data can be found in the log files with the names SYSLOG.LWRESD.<tsn>.<date>.<time>.

If the JV subsystem is available, information is stored in the following job variable which the commands described below use (in particular the SHOW-LWRESD-PARAMETERS command):
`SYS.PARAM.LWRESD.nnn`
`SYS.PARAM.LWRESD.nnn.DUMP.DB`

STOP-LWRESD - Stopping LWRESD

You use the STOP-LWRESD command to stop LWRESD processing. The Resolver server is terminated.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
	x			

List of valid command sources

STOP-LWRESD

DUMP-LWRESD-CACHE - Outputting LWRESD cache to a file

You use the DUMP-LWRESD-CACHE command to output the LWRESD cache to the dump file defined in the (RE) START-LWRESD command. If a dump file already exists for the cache, this is deleted first. LWRESD then regenerates the file and locks it.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
	x			

List of valid command sources

DUMP-LWRESD-CACHE

FLUSH-LWRESD-CACHE - Emptying the LWRESD cache

You use the FLUSH-LWRESD-CACHE command to empty the LWRESD cache.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

FLUSH-LWRESD-CACHE

MODIFY-LWRESD-OPTIONS - Setting LWRESD options

You use MODIFY-LWRESD-OPTIONS to set options for LWRESD processing.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

MODIFY-LWRESD-OPTIONS
,TRACE-OPTION = *OFF / *ON

TRACE-OPTION=...
Controls the TRACE function

TRACE-OPTION=*OFF
The trace information is not stored in the log file.
Default: *OFF

TRACE-OPTION=*ON
The trace information is stored in the SYSLOG.LWRESD.<tsn>.<date>.<time> file.

RELOAD-LWRESD - Loading LWRESD with new configuration data

You use the RELOAD-LWRESD command to read in the configuration file anew and to empty the LWRESD cache.

> i If entries have been introduced or modified with the keyword lwlport or destport, these do not become active. LWRESD must be restarted to activate them.

BS2000 console	BS2000 SDF command	Command/ SOF file	SNMP management	Parameter service
	x			

List of valid command sources

RELOAD-LWRESD

SHOW-LWRESD-PARAMETERS - Displaying LWRESD operating parameters

The SHOW-LWRESD-PARAMETERS command displays the LWRESD operating parameters. The output information consists of thestatus of the trace function, the control files, the status of the service . .

The SHOW-LWRESD-PARAMETERS command requires the JV subsystem. The administrative information is stored internally in the job variables SYS.PARAM.LWRESD.nnn und SYS.PARAM.LWRESD.nnn.DUMP.DB under the appropriate LWRESD runtime ID.

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

SHOW-LWRESD-PARAMETERS

Controlling LWRESD with ASTI

Enable trace function with trace level 98

```
/SEND-ORDER LWRESD,DATA='-d 98',WAIT-FOR-RESULT=*YES(TIME-LIMIT=15)
```

Disable trace function

```
/SEND-ORDER LWRESD,DATA='-d 0',WAIT-FOR-RESULT=*YES(TIME-LIMIT=15)
```

Output LWRESD cache to the dump file

```
/SEND-ORDER LWRESD,DATA='-D all',WAIT-FOR-RESULT=*YES(TIME-LIMIT=15)
```

Define the name of the dump file

```
/SEND-ORDER LWRESD,DATA='-o <file-name>',WAIT-FOR-RESULT=*YES(TIME-LIMIT=15)
```

Empty LWRESD cache

```
/SEND-ORDER LWRESD,DATA='-F',WAIT-FOR-RESULT=*YES(TIME-LIMIT=15)
```

Read in new configuration file (LWRESD cache is emptied implicitly)

```
/SEND-ORDER LWRESD,DATA='-a',WAIT-FOR-RESULT=*YES(TIME-LIMIT=15)
```

Switch over SYSLOG file

```
/SEND-ORDER LWRESD,DATA='-L',WAIT-FOR-RESULT=*YES(TIME-LIMIT=15)
```

An LWRESD for the real host and virtual hosts

LWRESD can be used for the real host and all virtual hosts. This means that LWRESD need only be started once for all active BCAM hosts and only exists once.

Irrespective of any entries in the application file, the list port of LWRESD is always opened on the real host. This ensures that constant monitoring is no longer required to recognize a newly started virtual host. This is because each LWRESD client sends its queries directly to the list port on the real host.

LWRESD client in BCAM

The LWRESD client in BCAM sends queries to the DNS Resolver daemon if all the following conditions are met:

- In the case of partner systems with L3 profile IPv4 or IPv6, automatic end system creation must have been performed.
- BCAM is set for automatic end system adoption in controlled server operation (processor file set with ACCESS=READ).
- The relevant processor name or the relevant partner IP address must not be present in the processor file.
- The use of DNS must be permitted:
  /MODIFY-BCAM-OPTION DNS-OPTIONS=*PARAMETERS(DNS-USAGE=*ON)
- The corresponding namespace or IP address range (both IPv4 and IPv6) must be permitted for DNS queries:
  /MODIFY-DNS-ACCESS

Required DNS entries

If they are to be used by BCAM, the following DNS entries (Resource Records, RR) are required for each partner system:

- An “A RR” for forward lookup (conversion of name to IPv4 address), e.g.
  PC123456.MY-COMPANY.COM. IN A 10.0.0.44
- A “PTR RR” for reverse lookup (conversion of IPv4 address to name), e.g.
  44.0.0.10.IN-ADDR.ARPA. IN PTR PC123456.MY-COMPANY.COM
  (note: this record type is not obligatory in DNS)
- Records must be defined in the same way for IPv6 addresses.

> The diagnostic program DIG can be used to check for the existence of the required entries (see section “DIG diagnostic program”).

Name mapping in BCAM

If BCAM receives name information from DNS (reverse lookup), then BCAM maps the delivered domain names (up to 255 bytes in length) as follows to the BCAM processor names which have a maximum length of 8 bytes:

The characters as of the first period are truncated from the domain name. The host name (lowest level in the name hierarchy) is used as the processor name. If the resulting received names are longer than 8 bytes, BCAM is not able to use them.

If the name received is longer than 8 bytes, BCAM truncates the name to a length of 8 bytes. Depending on the sequence of calls, the name obtained first is used. If a name conflict subsequently occurs during this processing, BCAM assigns a name of the type @@xxxxxx (000001 . xxxxxx . 999999).

Example

`PC123456.MY-COMPANY.COM` becomes `PC123456`

`PC54321.MY-COMPANY.COM` becomes `PC54321`

`PC7654321.MY-COMPANY.COM` becomes `PC765432`

`PC76543210.MY-COMPANY.COM` becomes `@@yyyyyy`

ℹ The definition sequence in this example also corresponds to the sequence of the information request.

LWRESD client in SOCKETS(BS2000)

In SOCKETS(BS2000) all supported DNS functions are forwarded as a query to LWRESD.

If LWRESD cannot return a positive response of a DNS server, SOCKETS(BS2000) attempts to obtain the required information from the BCAM-internal management structures.

DIG diagnostic program

Using the diagnostic program DIG (Domain Information Groper), you can determine available DNS entries from within BS2000 without using the DNS Resolver connection in BCAM.

Starting DIG

The DIG program can be started with START-DIG under any user id (with the exception of some system user ids).

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

START-DIG / **DIG**
ARGUMENTS = <text 0..1800 with lower case>
,RESOLV-FILE = ***STD** / <file-name 1..54>

ARGUMENTS=...
Arguments of the DIG program

ARGUMENTS=<text 0..1800 with lower case>
Specify the arguments for the DIG program.

RESOLV-FILE=...
Name of the LWRESD configuration file

RESOLV-FILE=*STD
Default name of the LWRESD configuration file.
Default name: SYSDAT.LWRESD.nnn.RESOLV.CONF
(nnn=210 stands for LWRESD V21.0)

RESOLV-FILE=<file-name 1..54>
Specify the name of the LWRESD configuration file.

Example (displaying the help functions)

```
/START-DIG ARGUMENTS=-h
/dig -h (short form)
```

DIG statements

Queries to a name server may be formulated as follows:

/**dig @server name type**

server Name or IP address of the name server that is to be used;
if nothing is specified then the corresponding information is taken from the Resolver configuration file

name Name of the resource record for which the desired information is to be obtained

type Type of query;
all defined resource record types are permitted, such as "A", "PTR", "ANY";
if nothing is specified then type "A" is used;

DIG provides a help function which displays a detailed list of the possible arguments (see example 3).

Example 1

```
/dig mgp4711a.mgp.example.net a
:
mgp4711a.mgp.example.net.   10800   IN      A       171.10.11.12
/dig mgp4711a.mgp.example.net aaaa
:
mgp4711a.mgp.example.net 10800 IN AAAA 3ffe:1:1000:2000:260:6dff:fe93:8c15
```

Example 2

`/dig -x 171.10.11.12` (short form of the following command)

```
/dig 12.11.10.171.IN-ADDR.ARPA. PTR
:
171.12.11.10.IN-ADDR.ARPA. 10800 IN   PTR     mgp4711a.mgp.example.net.
```

`/dig -x 3ffe:1:1000:2000:260:6dff:fe93:8c15` (short form of the following command)

```
/dig
5.1.c.8.3.9.e.f.f.f.d.6.0.6.2.0.0.0.0.2.0.0.0.1.1.0.0.0.e.f.f.3.ip6.arpa. PTR
:
5.1.c.8.3.9.e.f.f.f.d.6.0.6.2.0.0.0.0.2.0.0.0.1.1.0.0.0.e.f.f.3.ip6.arpa.
10800 IN PTR mtp4711a.mgp.example.net
```

Example 3

dig -h supplies the help information for the dig program:

```
/dig -h
:
Usage:   dig [@global-server] [domain] [q-type] [q-class] {q-opt}
             {global-d-opt} host [@local-server] {local-d-opt}
             [ host [@local-server] {local-d-opt} [...]]
Where:   domain   is in the Domain Name System
         q-class  is one of (in,hs,ch,...) [default: in]
         q-type   is one of (a,any,mx,ns,soa,hinfo,axfr,txt,...) [default:a]
                  (Use ixfr=version for type ixfr)
         q-opt    is one of:
                  -x dot-notation     (shortcut for reverse lookups)
                  -i                  (use IP6.INT for IPv6 reverse lookups)
                  -f filename         (batch mode)
                  -b address[#port]   (bind to source address/port)
                  -p port             (specify port number)
                  -q name             (specify query name)
                  -t type             (specify query type)
                  -c class            (specify query class)
                  -k keyfile          (specify tsig key file)
                  -y [hmac:]name:key  (specify named base64 tsig key)
                  -4                  (use IPv4 query transport only)
                  -6                  (use IPv6 query transport only)
         d-opt    is of the form +keyword[=value], where keyword is:
                  +[no]vc             (TCP mode)
                  +[no]tcp            (TCP mode, alternate syntax)
                  +time=###           (Set query timeout) [5]
                  +tries=###          (Set number of UDP attempts) [3]
                  +retry=###          (Set number of UDP retries) [2]
                  +domain=###         (Set default domainname)
                  +bufsize=###        (Set EDNS0 Max UDP packet size)
                  +ndots=###          (Set NDOTS value)
                  +edns=###           (Set EDNS version)
                  +[no]search         (Set whether to use searchlist)
                  +[no]showsearch     (Search with intermediate results)
                  +[no]defname        (Ditto)
                  +[no]recurse        (Recursive mode)
                  +[no]ignore         (Don't revert to TCP for TC responses.)
                  +[no]fail           (Don't try next server on SERVFAIL)
                  +[no]besteffort     (Try to parse even illegal messages)
                  +[no]aaonly         (Set AA flag in query (+[no]aaflag))
                  +[no]adflag         (Set AD flag in query)
                  +[no]cdflag         (Set CD flag in query)
                  +[no]cl             (Control display of class in records)
                  +[no]cmd            (Control display of command line)

                  +[no]comments       (Control display of comment lines)
                  +[no]question       (Control display of question)
                  +[no]answer         (Control display of answer)
                  +[no]authority      (Control display of authority)
                  +[no]additional     (Control display of additional)
                  +[no]stats          (Control display of statistics)
                  +[no]short          (Disable everything except short form of answer)
                  +[no]ttlid          (Control display of ttls in records)
                  +[no]all            (Set or clear all display flags)
```

```
            +[no]qr             (Print question before sending)
            +[no]nssearch       (Search all authoritative nameservers)
            +[no]identify       (ID responders in short answers)
            +[no]trace          (Trace delegation down from root)
            +[no]dnssec         (Request DNSSEC records)
            +[no]multiline      (Print records in an expanded format)
        global d-opts and servers (before host name) affect all queries.
        local d-opts and servers (after host name) affect only that lookup.
        -h                          (print help and exit)
        -v                          (print version and exit)
```

Diagnostic program NSLOOKUP

Autonomous program for converting DNS names to IP/IPv6 addresses (lookup) and vice versa (reverse lookup).

Starting NSLOOKUP

The NSLOOKUP program can be started with START-NSLOOKUP under any user id (with the exception of some system user ids).

BS2000 console	BS2000 SDF command	Command/SOF file	SNMP management	Parameter service
	x			

List of valid command sources

START-NSLOOKUP / **NSLOOKUP**
ARGUMENTS = <text 0..1800 with lower case>
,RESOLV-FILE = ***STD** / <file-name 1..54>

ARGUMENTS=...
Arguments of the NSLOOKUP program

> **ARGUMENTS=<text 0..1800 with lower case>**
> Specify the arguments for the NSLOOKUP program.

RESOLV-FILE=...
Name of the LWRESD configuration file

> **RESOLV-FILE=*STD**
> Default name of the LWRESD configuration file.
> Default name: SYSDAT.LWRESD.nnn.RESOLV.CONF
> (nnn=210 stands for LWRESD V21.0)
>
> **RESOLV-FILE=<file-name 1..54>**
> Specify the name of the LWRESD configuration file.

Example (displaying the help functions)

```
/START-NSLOOKUP ARGUMENTS=-h
/nslookup -h (short form)
```

NSLOOKUP statements

Starting nslookup

```
start-nslookup [-server address | name] address | name
```

or

```
nslookup [-server address | name] address | name
```

Online help: `nslookup -h`

```
Usage: [-server address | name] address | name
```

You can use the server option to define the DNS name or IP/IPv6 address of the name server which is to be used. If this option is not specified, nslookup uses the default name server defined in the configuration file SYSDAT.LWRESD.<vvv>.RESOLV.CONF or in the RESOLV-FILE, if declared.

When DNS names are converted to addresses, nslookup outputs both IP and IPv6 addresses, if any exists.

nslookup can also be executed in interactive mode. This can be useful when multiple queries have to be started because the waiting time for the program startup will only occur once.

If nslookup is called without an operand, it runs in interactive mode, i.e. queries can be entered until the program is terminated with the exit command.

Messages

The BCAM messages are determined by the message class BCA, i.e. all BCAM messages begin with BCA followed by a four-character ID with leading zeros. A complete list of the messages is not provided here.

Individual messages whose IDs are known can be displayed as follows:

HELP-MSG-INFORMATION MSG-IDENTIFICATION=BCAnnnn

A complete list of all messages of the message class BCA can be created using the MSGMAKER program. This list then shows the current contents of the BCAM message file:

```
SYSMES.BCAM.nnn
```

The MSGMAKER program is called as follows:

```
/START-MSGMAKER
```

How to create the list of BCAM messages is shown by the prompts of the MSGMAKER program.

> You will find all system messages of openNet Server on the internet at http://bs2manuals.ts.fujitsu.com. Consequently, they are no longer described in this manual.

Examples

This chapter contains examples of static and dynamic generation and of the BCAM functions.

Examples of dynamic generation

Examples of both static and dynamic generation using BCIN and CREATE commands are provided below. Dynamic BCIN and CREATE commands differ in their default values as well as in the generation of auxiliary routes.

i
- In a dynamic BCIN command, multiple objects must also be implicitly created as in the CREATE commands. This results in slightly different default values.
- When a dynamic BCIN command is issued, activation is performed unless this is explicitly prohibited by the operand ACT=NO. In the examples, the prevention of activation is specified. After a CREATE command, activation must be initiated separately.

It is generally advisable to use the CREATE commands which precisely describe the individual objects such as hosts, nodes, lines, VLAN devices, VLAN lines, link aggregations, processors, and routes.

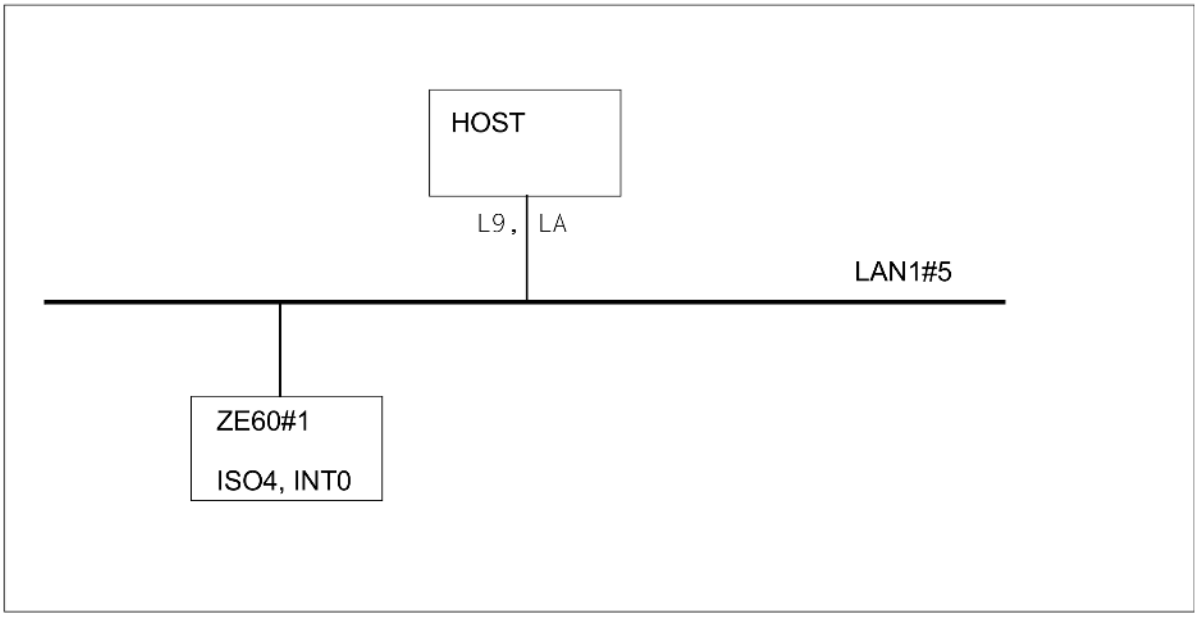
Standard host HOST

This configuration involves the standard host HOST.

Host definition in non-RDF mode

```
/DCSTART HOST=HOST,DCRDF=*NONE                -
/ MAXTSDU=65530, ..........
```

ISO end system connected directly to a LAN (LAN1#5)



Note

The generation of both LAN addresses is absolutely necessary, because no routing protocol is applicated.

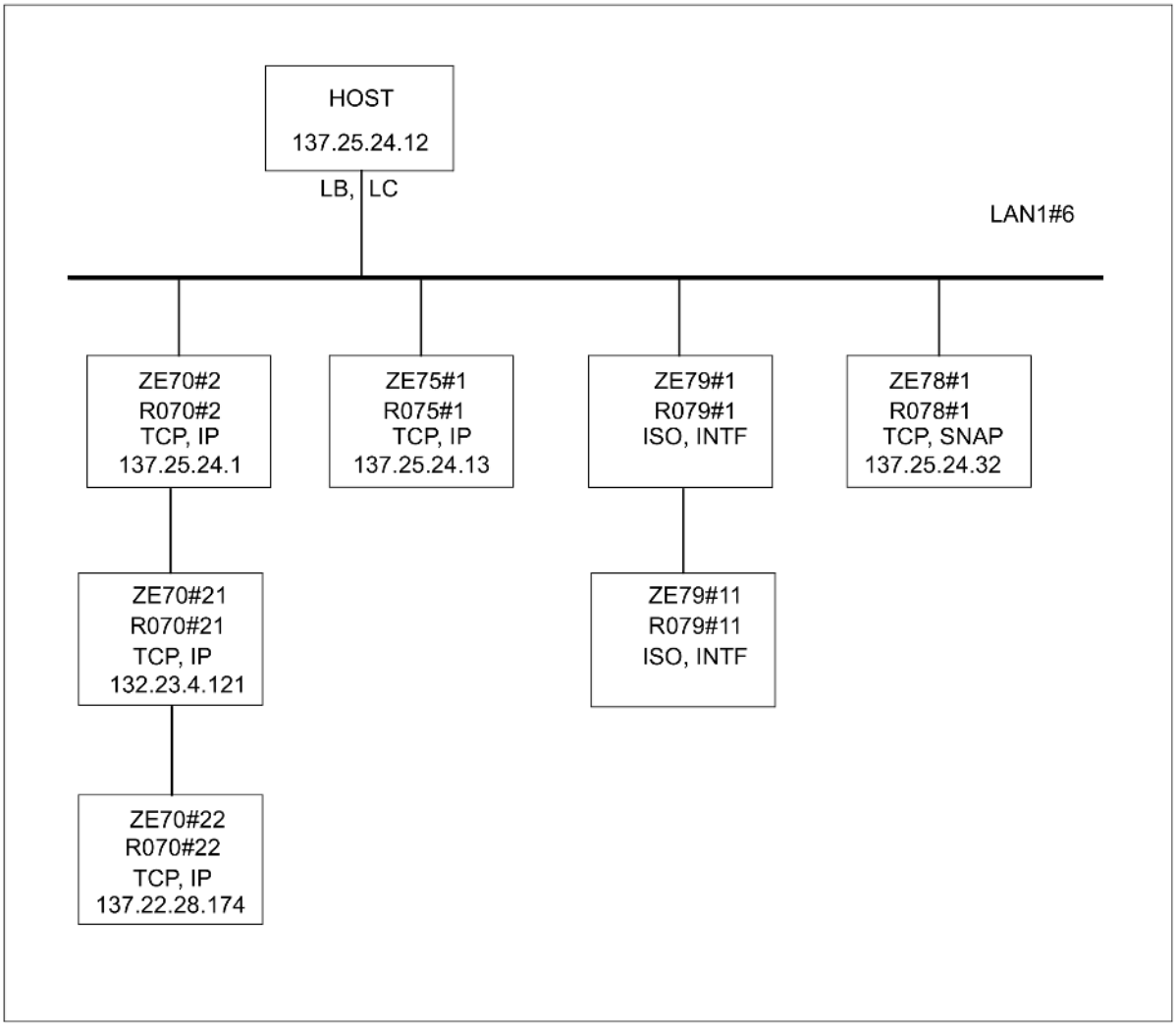
Dynamic generation using BCIN commands

```
/BCIN LAN1#5,GEN=LOCAL,DEV=(L9,LA),PROFIL=(,,CSMACD),                -
/      LANADR=X'50C1D5001005',ACT=NO
/BCIN ZE60#1,GEN=NODE,ROUTE=LAN1#5,LANADR=X'50C1D5060101',           -
/      ADM=BCAM,PROFIL=(ISO4,INT0),ACT=NO
```

Dynamic generation using CREATE commands

```
/CREATE-NODE NODE-NAME=LAN1#5

/CREATE-LINE LINE-NAME=LAN1#5,L2-PROTOCOL=*CSMACD                    -
/       (NODE-NAME=LAN1#5,WRITE-DEVICE=L9,READ-DEVICE=LA,            -
/       LAN-ADDRESS=X'50C1D5001005')

/CREATE-PROCESSOR PROCESSOR-NAME=ZE60#1,ADMINISTRATION-TYPE=*BCAM

/CREATE-ROUTE ROUTE-NAME=ZE60#1,PATH=*NODE(NODE-NAME=LAN1#5,         -
/        L3-PROTOCOL=*INT0(LAN-ADDRESS=X'50C1D5060101'))
```

Local and remotely accessible end systems (LAN1#6)



The two IP partner end systems ZE70#2 and ZE75#1 are generated without LANADR parameters. ARP is used to obtain the valid LAN address.
Consequently, the following command is required:

```
/BCOPTION ARP=ON,BROADCAST=ON
```

Instead of ARP=ON, ARP=QUIET is also permissible.

The partner end system ZE79#1 is generated without the LAN address. This means that the LAN address is acquired via the "Query Configuration" and "Record Configuration" function of the ISO8473 and ISO9542 routing protocols:

```
/BCOPTION ISO9542=ON
```

Dynamic generation using BCIN commands

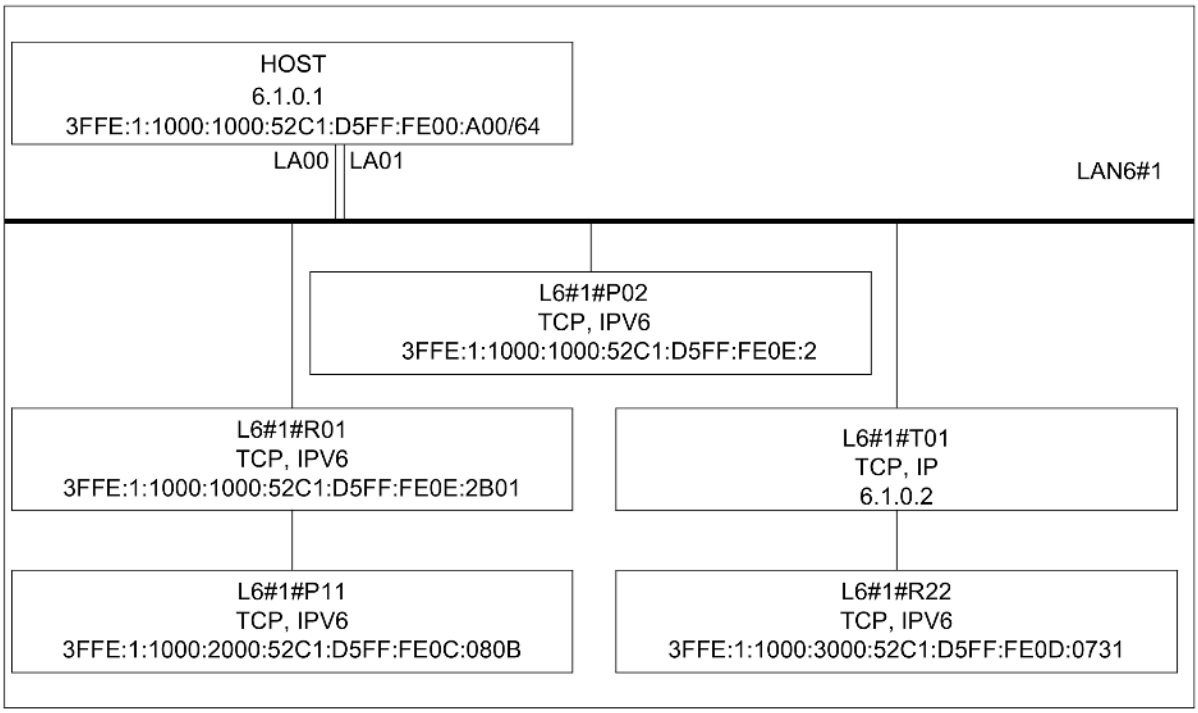
```
/BCIN LAN1#6,GEN=LOCAL,DEV=(LB,LC),                                -
/         PROFIL=(,(INTF,IP),CSMACD),IPADR=137.25.24.12,           -
/         INTADR=X'49006C080006089A6100',                          -
/         IPSNMASK=255.255.255.192,ACT=NO

/BCIN ZE70#2,NAME-OF-ROUTE=RO70#2,GEN=NODE,ROUTE=LAN1#6,           -
/         ADM=BCAM,PROFIL=(TCP,IP),IPADR=137.25.24.1,ACT=NO

/BCIN ZE70#21,NAME-OF-ROUTE=RO70#21,GEN=REMOTE,                    -
/         ROUTE=ZE70#2,PROFIL=(TCP,IP),                            -
/         IPADR=132.23.4.121,ADM=BCAM,ACT=NO

/BCIN ZE70#22,NAME-OF-ROUTE=RO70#22,GEN=REMOTE,                    -
/         ROUTE=ZE70#2,PROFIL=(TCP,IP,),                           -
/         IPADR=137.22.28.174,ADM=BCAM,ACT=NO

/BCIN ZE75#1,NAME-OF-ROUTE=RO75#1,GEN=NODE,ROUTE=LAN1#6,           -
/         ADM=BCAM,PROFIL=(TCP,IP),IPADR=137.25.24.13,ACT=NO

/BCIN ZE79#1,NAME-OF-ROUTE=RO79#1,GEN=NODE,ROUTE=LAN1#6,           -
/         ADM=BCAM,INTADR=X'49006C080006089A6200',                 -
/         PROFIL=(ISO4,INTF),ACT=NO

/BCIN ZE79#11,NAME-OF-ROUTE=RO79#11,GEN=REMOTE,                    -
/         ROUTE=ZE79#1,PROFIL=(ISO4,INTF,),                        -
/         ADM=BCAM,INTADR=X'49007D08000603597900',ACT=NO

/BCIN ZE78#1,NAME-OF-ROUTE=RO78#1,GEN=NODE,                        -
/         ROUTE=LAN1#6,IPADR=137.25.24.32,                         -
/         ADM=BCAM,PROFIL=(TCP,IP,SNAP),ACT=NO
```

Dynamic generation using CREATE commands

```
/CREATE-NODE NODE-NAME=LAN1#6,                                     -
/       IP-SUBNET-MASK=255.255.255.192

/CREATE-LINE LINE-NAME=LAN1#6,                                     -
/       IP-ADDRESS=137.25.24.12,                                   -
/       ISO-ADDRESS= X'49006C080006089A6100',                      -
/       L2-PROTOCOL=*CSMACD(NODE-NAME=LAN1#6,                      -
/       WRITE-DEVICE=LB,READ-DEVICE=LC)

/CREATE-PROCESSOR PROCESSOR-NAME=ZE70#2,                           -
/       ADMINISTRATION-TYPE=*BCAM

/CREATE-ROUTE ROUTE-NAME=RO70#2,                                   -
/       PROCESSOR-NAME=ZE70#2,                                     -
/       PATH=*NODE(NODE-NAME=LAN1#6,                               -
/       L3-PROTOCOL=*IP(IP-ADDRESS=137.25.24.1))

/CREATE-PROCESSOR PROCESSOR-NAME=ZE70#21,                          -
/       ADMINISTRATION-TYPE=*BCAM
```

```
/CREATE-ROUTE ROUTE-NAME=RO70#21,                                    -
/       PROCESSOR-NAME=ZE70#21,                                      -
/       PATH=*VIA-ROUTER(ROUTER-ROUTE-NAME=RO70#2,                   -
/       L3-PROTOCOL=*IP(IP-ADDRESS=132.23.4.121))

/CREATE-PROCESSOR PROCESSOR-NAME=ZE70#22,                            -
/       ADMINISTRATION-TYPE=*BCAM

/CREATE-ROUTE ROUTE-NAME=RO70#22,                                    -
/       PROCESSOR-NAME=ZE70#22,                                      -
/       PATH=*VIA-ROUTER(ROUTER-ROUTE-NAME=RO70#2,                   -
/       L3-PROTOCOL=*IP(IP-ADDRESS=137.22.28.174))

/CREATE-PROCESSOR PROCESSOR-NAME=ZE75#1,                             -
/       ADMINISTRATION-TYPE=*BCAM

/CREATE-ROUTE ROUTE-NAME=RO75#1,                                     -
/       PROCESSOR-NAME=ZE75#1,                                       -
/       PATH=*NODE(NODE-NAME=LAN1#6,                                 -
/       L3-PROTOCOL=*IP(IP-ADDRESS=137.25.24.13))

/CREATE-PROCESSOR PROCESSOR-NAME=ZE79#1,                             -
/       ADMINISTRATION-TYPE=*BCAM

/CREATE-ROUTE ROUTE-NAME=RO79#1,                                     -
/       PROCESSOR-NAME=ZE79#1,                                       -
/       PATH=*NODE(NODE-NAME=LAN1#6,                                 -
/       L3-PROTOCOL=*INTF(                                           -
/       ISO-ADDRESS=X'49006C080006089A6200'))

/CREATE-PROCESSOR PROCESSOR-NAME=ZE79#11,                            -
/       ADMINISTRATION-TYPE=*BCAM

/CREATE-ROUTE ROUTE-NAME=RO79#11,                                    -
/       PROCESSOR-NAME=ZE79#11,                                      -
/       PATH=*VIA-ROUTER(ROUTER-ROUTE-NAME=RO79#1,                   -
/       L3-PROTOCOL=*INTF(ISO-ADDRESS=X'49007D08000603597900'))

/CREATE-PROCESSOR PROCESSOR-NAME=ZE78#1,                             -
/       ADMINISTRATION-TYPE=*BCAM

/CREATE-ROUTE ROUTE-NAME=RO78#1,                                     -
/       PROCESSOR-NAME=ZE78#1,                                       -
/       PATH=*NODE(NODE-NAME=LAN1#6,                                 -
/       L3-PROTOCOL=*IP(IP-ADDRESS=137.25.24.32,                     -
/       L3-SUBPROTOCOL=*SNAP))
```

Local and remote IPv6, and IPv6 systems accessible via an IPv4 tunnel (LAN6#1)



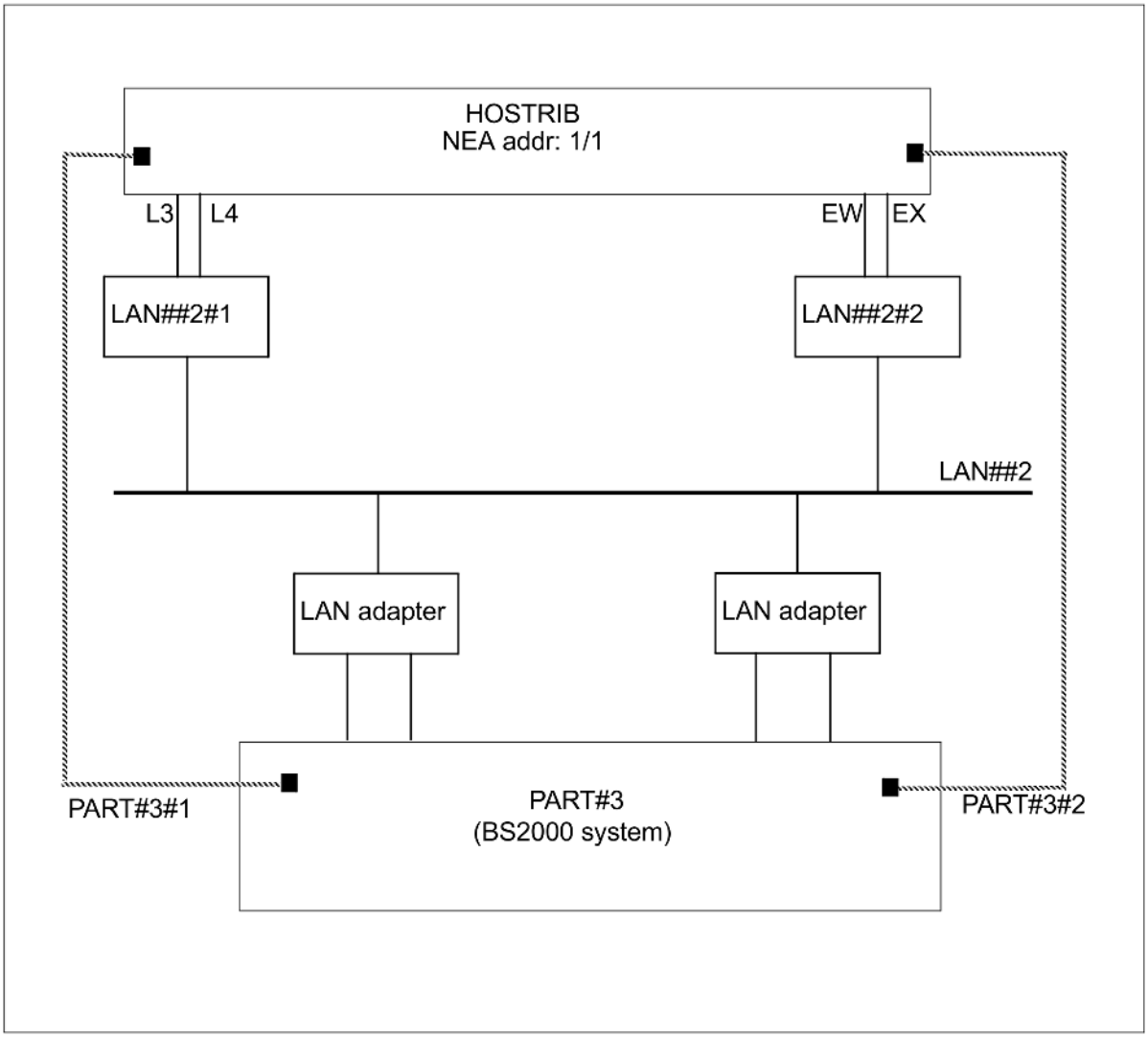
Dynamic generation using BCIN commands

```
/BCIN LAN6#1,GEN=LOCAL,DEV=(LA00,LA01),                          -
/     PROFIL=(,(IPV6,IP),CSMACD),IPADR=6.1.0.1,                  -
/     I6-ADDRESS='3FFE:1:1000:1000:52C1:D5FF:FE00:A00/64',       -
/     LANADR=X'50C1D5000A00',ACT=NO

/BCIN L6#1#R01,GEN=NODE,ROUTE=LAN6#1,                            -
/     PROFIL=(TCP,IPV6),                                         -
/     I6-ADDRESS='3FFE:1:1000:1000:52C1:D5FF:FE0E:2B01',ACT=NO

/BCIN L6#1#P11,GEN=REMOTE,ROUTE=L6#1#R01,PROFIL=(TCP,IPV6),      -
/     I6-ADDRESS='3FFE:1:1000:2000:52C1:D5FF:FE0C:080B',ACT=NO

/BCIN L6#1#P02,GEN=NODE,ROUTE=LAN6#1,                            -
/     PROFIL=(TCP,IPV6),                                         -
/     I6-ADDRESS='3FFE:1:1000:1000:52C1:D5FF:FE0E:2',ACT=NO

/BCIN L6#1#T01,GEN=NODE,ROUTE=LAN6#1,PROFIL=(TCP,IP),            -
/     IPADR=6.1.0.2,ACT=NO

/BCIN L6#1#R22,GEN=REMOTE,TUNNEL-ROUTE=L6#1#T01,                 -
/     PROFIL=(TCP,IPV6),                                         -
/     I6-ADDRESS='3FFE:1:1000:3000:52C1:D5FF:FE0D:0731',ACT=NO
```

Dynamic generation using CREATE commands

```
/CREATE-NODE NODE-NAME=LAN6#1

/CREATE-LINE LINE-NAME=LAN6#1,                                        -
/       IP-ADDRESS=6.1.0.1,                                           -
/       IPV6-ADDRESS='3FFE:1:1000:1000:52C1:D5FF:FE00:A00/64',        -
/       L2-PROTOCOL=*CSMACD(NODE-NAME=LAN6#1,                         -
/       WRITE-DEVICE=LA00,READ-DEVICE=LA01,                           -
/       LAN-ADDRESS=X'50C1D5000A00')

/CREATE-PROCESSOR PROCESSOR-NAME=L6#1#R01

/CREATE-ROUTE ROUTE-NAME=L6#1#R01,                                    -
/       PATH=*NODE(NODE-NAME=LAN6#1,                                  -
/       L3-PROTOCOL=*IPV6(                                            -
/       IPV6-ADDRESS='3FFE:1:1000:1000:52C1:D5FF:FE0E:2B01'))

/CREATE-PROCESSOR PROCESSOR-NAME=L6#1#P11

/CREATE-ROUTE ROUTE-NAME=L6#1#P11,                                    -
/       PATH=*VIA-ROUTER(ROUTER-ROUTE-NAME=L6#1#R01,                  -
/       L3-PROTOCOL=*IPV6(                                            -
/       IPV6-ADDRESS='3FFE:1:1000:2000:52C1:D5FF:FE0C:080B'))

/CREATE-PROCESSOR PROCESSOR-NAME=L6#1#P02

/CREATE-ROUTE ROUTE-NAME=L6#1#P02,                                    -
/       PATH=*NODE(NODE-NAME=LAN6#1,                                  -
/       L3-PROTOCOL=*IPV6(                                            -
/       IPV6-ADDRESS='3FFE:1:1000:1000:52C1:D5FF:FE0E:2'))

/CREATE-PROCESSOR PROCESSOR-NAME=L6#1#T01

/CREATE-ROUTE ROUTE-NAME=L6#1#T01,                                    -
/       PATH=*NODE(NODE-NAME=LAN6#1,                                  -
/       L3-PROTOCOL=*IP(IP-ADDRESS=6.1.0.2))

/CREATE-PROCESSOR PROCESSOR-NAME=L6#1#R22

/CREATE-ROUTE ROUTE-NAME=L6#1#R22,                                    -
/       PATH=*VIA-TUNNEL(TUNNEL-ROUTE-NAME=L6#1#T01,                  -
/       L3-PROTOCOL=*IPV6(                                            -
/       IPV6-ADDRESS='3FFE:1:1000:3000:52C1:D5FF:FE0D:0731'))
```

Several routes via a LAN



Dynamic generation using CREATE commands

```
/CREATE-NODE NODE-NAME=LAN##2,IP-SUBNET-MASK=255.0.0.0

/CREATE-LINE LINE-NAME=LAN##2#1,IP-ADDRESS=1.10.0.1,                    -
/       L2-PROTOCOL=*CSMACD(NODE-NAME=LAN##2,                           -
/       WRITE-DEVICE=L3,READ-DEVICE=L4)

/CREATE-LINE LINE-NAME=LAN##2#2,IP-ADDRESS=1.10.0.2,                    -
/       L2-PROTOCOL=*CSMACD(NODE-NAME=LAN##2,                           -
/       WRITE-DEVICE=EW,READ-DEVICE=EX)

/CREATE-PROCESSOR PROCESSOR-NAME=PART#3

/CREATE-ROUTE ROUTE-NAME=PART#3#1,PROCESSOR-NAME=PART#3,                 -
/ PATH=*NODE                                                            -
/       (NODE-NAME=LAN##2,LINE-NAME=LAN##2#1,                           -
```

```
/ L3-PROTOCOL=*IP                                                    -
/       (IP-ADDRESS=1.10.0.3,OWN-IP-ADDRESS=1.10.0.1)),              -
/       ATTTRIBUTES=*PARAMETERS(ROUTE-SEQUENCE-NUM=1)

/CREATE-ROUTE ROUTE-NAME=PART#3#2,PROCESSOR-NAME=PART#3,              -
/ PATH=*NODE                                                         -
/       (NODE-NAME=LAN##2,LINE-NAME=LAN##2#2,                        -
/ L3-PROTOCOL=*IP                                                    -
/       (IP-ADDRESS=1.10.0.3,OWN-IP-ADDRESS=1.10.0.2)),              -
/       ATTTRIBUTES=*PARAMETERS(ROUTE-SEQUENCE-NUM=2)
```

Dynamic generation using BCIN commands

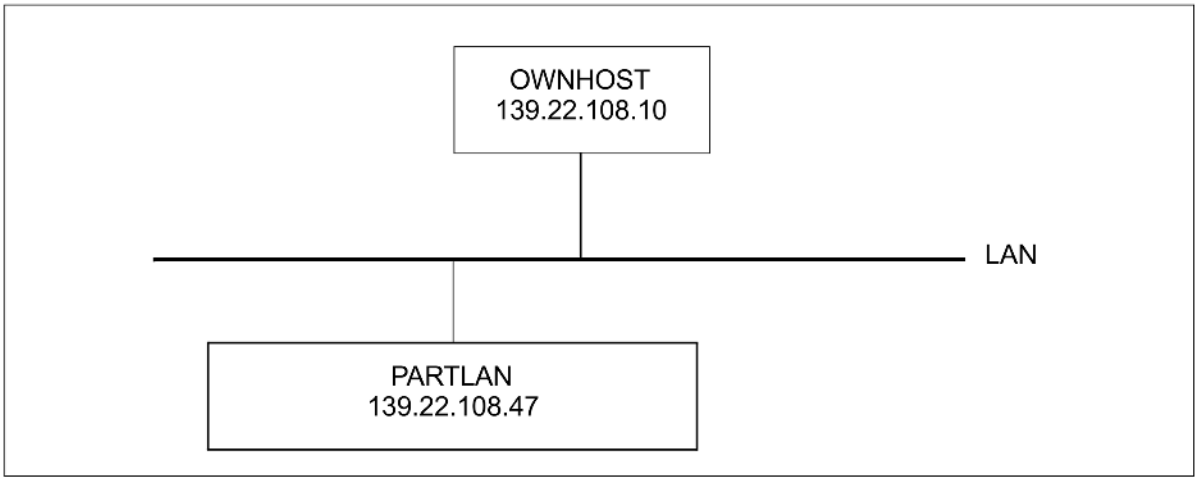
```
/BCIN LAN##2,LINE=LAN##2#1,GEN=LOCAL,DEV=(L3,L4),PROFIL=(,IP,CSMACD),  -
/         IPADR=1.10.0.1,ACT=NO

/BCIN LAN##2,LINE=LAN##2#2,GEN=LOCAL,DEV=(EW,EX),PROFIL=(,IP,CSMACD),  -
/         IPADR=1.10.0.2,ACT=NO

/BCIN PART#3,NAME-OF-ROUTE=PART#3#1,GEN=NODE,                        -
/         ROUTE=LAN##2,PROFIL=(TCP,IP),                              -
/         OWN-IPADR=1.10.0.1,IPADR=1.10.0.3,                         -
/         ROUTE-SEQUENCE-NUM=1,                                      -
/         ACT=NO

/BCIN PART#3,NAME-OF-ROUTE=PART#3#2,GEN=NODE,                        -
/         ROUTE=LAN##2,PROFIL=(TCP,IP),                              -
/         OWN-IPADR=1.10.0.2,IPADR=1.10.0.3,                         -
/         ROUTE-SEQUENCE-NUM=2,                                      -
/         ACT=NO
```

Examples of automatic end system creation

The following sample configurations illustrate areas in which this function can be applied.

The required local definitions are indicated in each case.

End system on a local LAN segment



Setting options

```
/BCOPTION A-E-C=ON
```

Dynamic generation using BCIN commands

```
/BCIN LAN,GEN=L,DEV=(WG,WH),PROFIL=(TCP,IP,CSMACD),        -
/     IPSNMASK=255.255.252.0,IPADR=139.22.108.10,ACT=NO
```

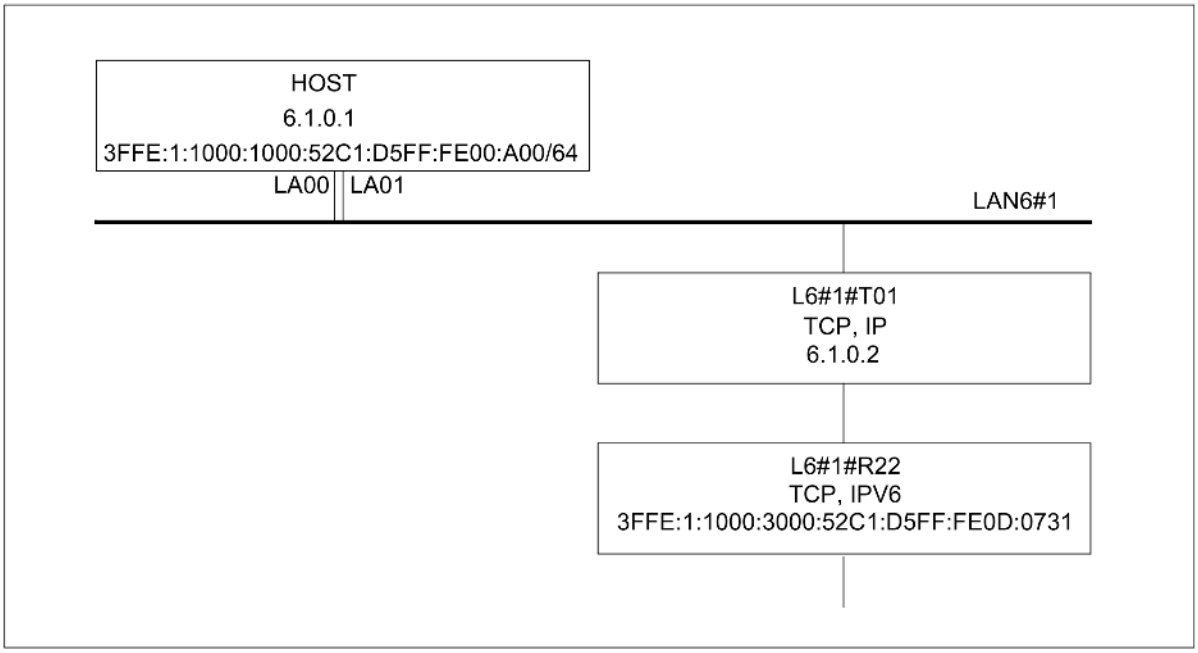
Dynamic generation using CREATE commands

```
/CREATE-NODE NODE-NAME=LAN,IP-SUBNET-MASK=255.255.252.0

/CREATE-LINE LINE-NAME=LAN,IP-ADDRESS=139.22.108.10,       -
/       L2-PROTOCOL=*CSMACD(NODE-NAME=LAN,WRITE-DEVICE=WG, -
/       READ-DEVICE=WH)
```

Entry in the processor file

```
    PARTLAN IP 139.22.108.47
```

Automatic IPv6 end system creation (LAN6#1)



See also section "Local and remote IPv6, and IPv6 systems accessible via an IPv4 tunnel (LAN6#1)".

Setting options

```
/BCOPTION A-E-C=ON
/BCOPTION IPV6-AUTO-CONFIG=ON
```

Dynamic generation with BCIN commands

```
/BCIN LAN6#1,GEN=LOCAL,DEV=(LA00,LA01),                                -
/     PROFIL=(,(IPV6,IP),CSMACD),IPADR=6.1.0.1,                        -
/     LANADR=X'50C1D5000A00',ACT=NO

/BCIN L6#1#T01,GEN=NODE,ROUTE=LAN6#1,PROFIL=(TCP,IP),                  -
/     IPADR=6.1.0.2,ACT=NO

/BCIN L6#1#R22,GEN=REMOTE,TUNNEL-ROUTE=L6#1#T01,PROFIL=(TCP,IPV6),     -
/     I6-ADDRESS='3FFE:1:1000:3000:52C1:D5FF:FE0D:0731',ACT=NO
```

Dynamic generation with CREATE commands

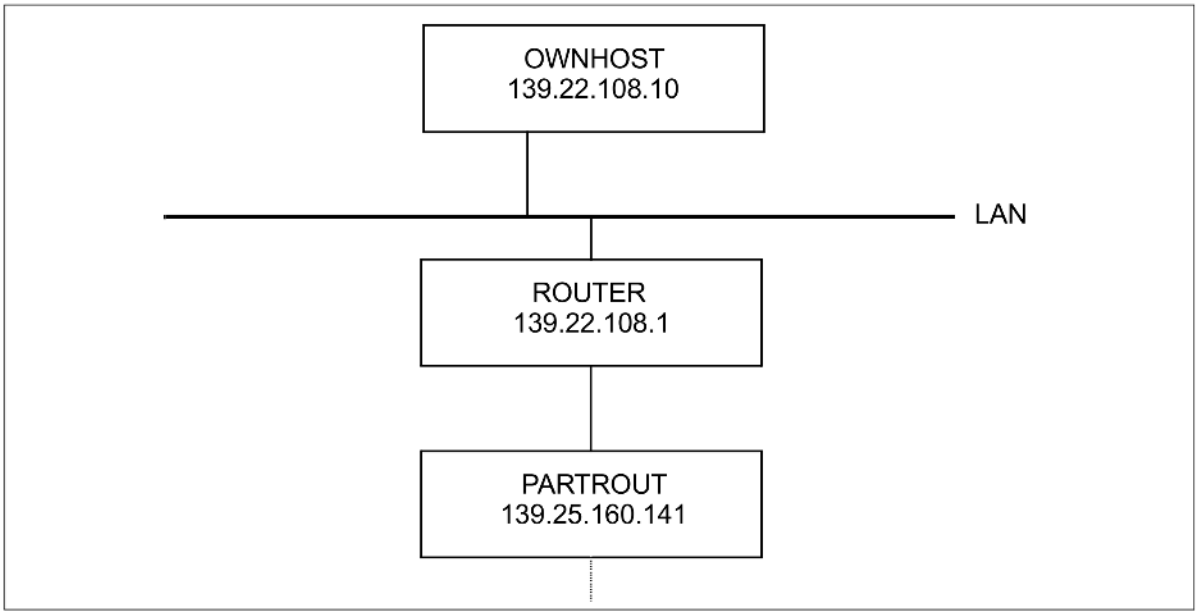
```
/CREATE-NODE NODE-NAME=LAN6#1

/CREATE-LINE LINE-NAME=LAN6#1,                                         -
/     IP-ADDRESS=6.1.0.1,                                              -
/     L2-PROTOCOL=*CSMACD(NODE-NAME=LAN6#1,                            -
/     WRITE-DEVICE=LA00,READ-DEVICE=LA01,                              -
/     LAN-ADDRESS=X'50C1D5000A00')
```

```
/CREATE-PROCESSOR PROCESSOR-NAME=L6#1#T01
/CREATE-ROUTE ROUTE-NAME=L6#1#T01,                                    -
/    PATH=*NODE(NODE-NAME=LAN6#1,                                     -
/    L3-PROTOCOL=*IP(IP-ADDRESS=6.1.0.2))

/CREATE-PROCESSOR PROCESSOR-NAME=L6#1#R22

/CREATE-ROUTE ROUTE-NAME=L6#1#R22,                                    -
/    PATH=*VIA-TUNNEL(TUNNEL-ROUTE-NAME=L6#1#T01,                     -
/    L3-PROTOCOL=*IPV6(                                               -
/    IPV6-ADDRESS='3FFE:1:1000:3000:52C1:D5FF:FE0D:0731'))
```

Entry in the processor file

```
L6#1#R01 IPV6 3FFE:1:1000:1000:52C1:D5FF:FE0E:2B01
L6#1#P11 IPV6 3FFE:1:1000:2000:52C1:D5FF:FE0C:080B
L6#1#P02 IPV6 3FFE:1:1000:1000:52C1:D5FF:FE0E:2
```

End systems on a subnetwork which are accessible via a router



Setting options

```
/BCOPTION A-E-C=ON
```

Dynamic generation using BCIN commands

```
/BCIN LAN,GEN=LOCAL,DEV=(WG,WH),PROFIL=(,IP,CSMACD),        -
/     IPSNMASK=255.255.252.0,IPADR=139.22.108.10,ACT=NO

/BCIN ROUTER,GEN=NODE,ROUTE=LAN,PROFIL=(TCP,IP),            -
/     IPADR=139.22.108.1,ACT=NO
```

Dynamic generation using CREATE commands

```
/CREATE-NODE NODE-NAME=LAN,IP-SUBNET-MASK=255.255.252.0

/CREATE-LINE LINE-NAME=LAN,IP-ADDRESS=139.22.108.10,        -
/       L2-PROTOCOL=*CSMACD(NODE-NAME=LAN,WRITE-DEVICE=WG,  -
/       READ-DEVICE=WH)

/CREATE-PROCESSOR PROCESSOR-NAME=ROUTER

/CREATE-ROUTE ROUTE-NAME=ROUTER,PATH=*NODE(NODE-NAME=LAN,   -
/       L3-PROTOCOL=*IP(IP-ADDRESS=139.22.108.1))
```

Entry in the processor file

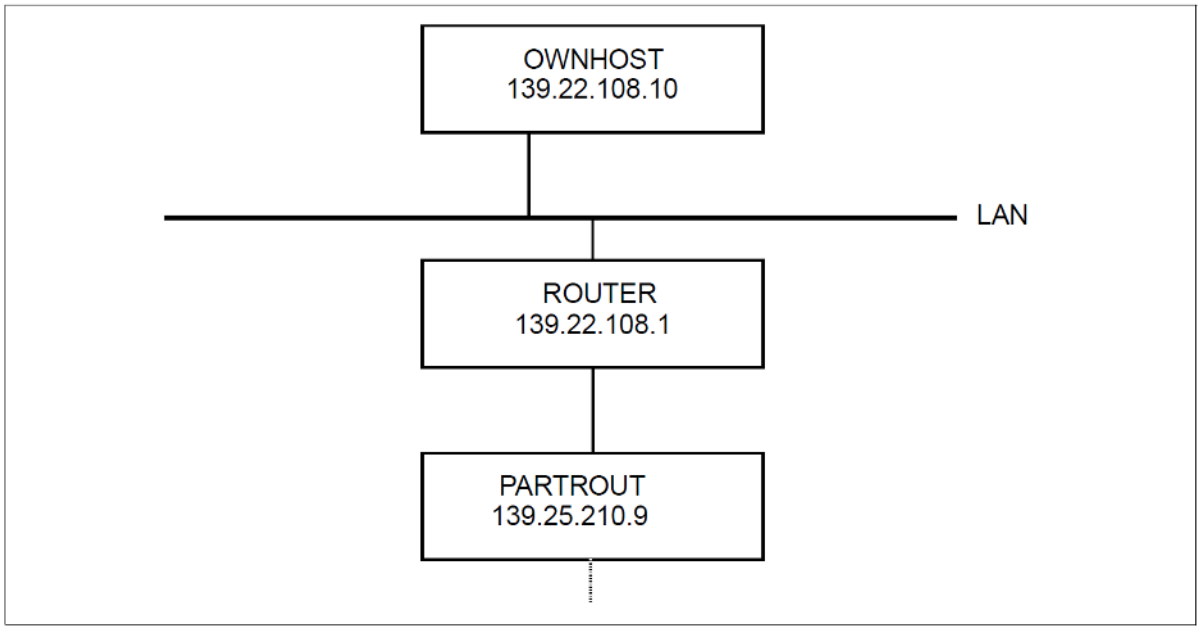
```
    PARTROUT IP 139.25.160.141
```

It is also necessary to define the router function:

```
    /MODIFY-ADDRESS-ASSIGNMENT ROUTE-NAME=ROUTER(ADD-IP-NET=139.25.160.0)
```

End systems accessible via the default router

In BCAM, a default router is a router system that can forward any IP datagram whose destination IP address cannot be assigned to the local subnetwork, or to another subnetwork that is accessed via a (different) router.



Note

AEC options must be set separately with the BCOPTION option after start-up with an RDF.

Setting options

```
/BCOPTION A-E-C=ON
```

Dynamic generation using BCIN commands

```
/BCIN LAN,GEN=LOCAL,DEV=(WG,WH),PROFIL=(,IP,CSMACD),          -
/     IPSNMASK=255.255.252.0,IPADR=139.22.108.10

/BCIN ROUTER,GEN=NODE,ROUTE=LAN,PROFIL=(TCP,IP),              -
/     IPADR=139.22.108.1
```

Dynamic generation using CREATE commands

```
/CREATE-NODE NODE-NAME=LAN,IP-SUBNET-MASK=255.255.252.0

/CREATE-LINE LINE-NAME=LAN,IP-ADDRESS=139.22.108.10,          -
/       L2-PROTOCOL=*CSMACD(NODE-NAME=LAN,WRITE-DEVICE=WG,    -
/       READ-DEVICE=WH)

/CREATE-PROCESSOR PROCESSOR-NAME=ROUTER

/CREATE-ROUTE ROUTE-NAME=ROUTER,PATH=*NODE(NODE-NAME=LAN,     -
/       L3-PROTOCOL=*IP(IP-ADDRESS=139.22.108.1))
```

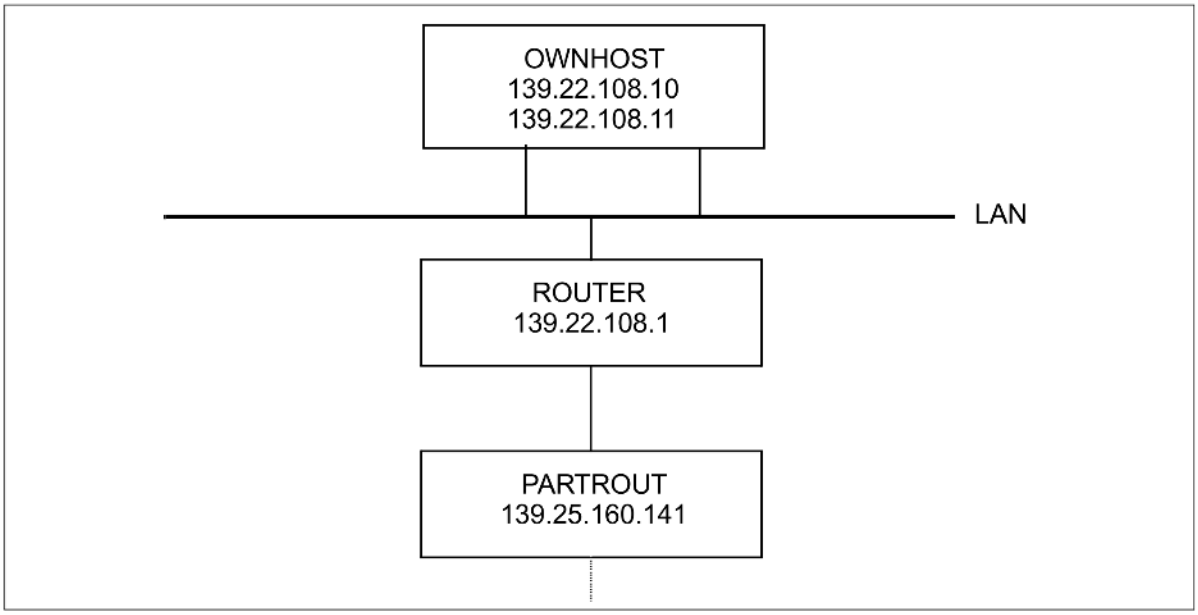
Entry in the processor file

```
PARTROUT IP 139.25.210.9
```

It is also necessary to define the router function:

```
/MODIFY-ADDRESS-ASSIGNMENT ROUTE-NAME=ROUTER(ADD-IP-NET=*UNKNOWN)
```

Channel adapter redundancy



Setting options

```
/BCOPTION A-E-C=ON
```

Dynamic generation using BCIN commands

```
/BCIN LAN,GEN=LOCAL,DEV=(WG,WH),PROFIL=(,IP,CSMACD),          -
/     IPSNMASK=255.255.252.0,LINE=LAN1,IPADR=139.22.108.10,   -
/      CONFIGURATION=PRIMARY,ACT=NO

/BCIN LAN,GEN=LOCAL,DEV=(WI,WJ),PROFIL=(,IP,CSMACD),          -
/     IPSNMASK=255.255.252.0,LINE=LAN2,IPADR=139.22.108.11,   -
/      CONFIGURATION=PRIMARY,ACT=NO

/BCIN ROUTER,GEN=NODE,ROUTE=LAN,PROFIL=(TCP,IP),              -
/     NAME-OF-ROUTE=ROUTE1,OWN-IPADR=139.22.108.10,           -
/     IPADR=139.22.108.1,ACT=NO

/BCIN ROUTER,GEN=NODE,ROUTE=LAN,PROFIL=(TCP,IP),              -
/     NAME-OF-ROUTE=ROUTE2,OWN-IPADR=139.22.108.11,           -
/     IPADR=139.22.108.1,ACT=NO
```

Dynamic generation using CREATE commands

```
/CREATE-NODE NODE-NAME=LAN,IP-SUBNET-MASK=255.255.252.0

/CREATE-LINE LINE-NAME=LAN1,IP-ADDRESS=139.22.108.10,         -
/       L2-PROTOCOL=*CSMACD(NODE-NAME=LAN,WRITE-DEVICE=WG,    -
/       READ-DEVICE=WH),ROUTE-RESWITCHING=*ON

/CREATE-LINE LINE-NAME=LAN2,IP-ADDRESS=139.22.108.11,         -
/       L2-PROTOCOL=*CSMACD(NODE-NAME=LAN,WRITE-DEVICE=WI,    -
/       READ-DEVICE=WJ),ROUTE-RESWITCHING=*ON
```

```
/CREATE-PROCESSOR PROCESSOR-NAME=ROUTER

/CREATE-ROUTE ROUTE-NAME=ROUTE1,                              -
/      PROCESSOR-NAME=ROUTER,                                 -
/      PATH=*NODE(NODE-NAME=LAN,LINE-NAME=LAN1,               -
/      L3-PROTOCOL=*IP(IP-ADDRESS=139.22.108.1,               -
/      OWN-IP-ADDRESS=139.22.108.10))

/CREATE-ROUTE ROUTE-NAME=ROUTE2,                              -
/      PROCESSOR-NAME=ROUTER,                                 -
/      PATH=*NODE(NODE-NAME=LAN,LINE-NAME=LAN2,               -
/      L3-PROTOCOL=*IP(IP-ADDRESS=139.22.108.1,               -
/      OWN-IP-ADDRESS=139.22.108.11))
```

Entry in the processor file

```
PARTROUT IP 139.25.160.141 OWN-ADDR 139.22.108.11
```

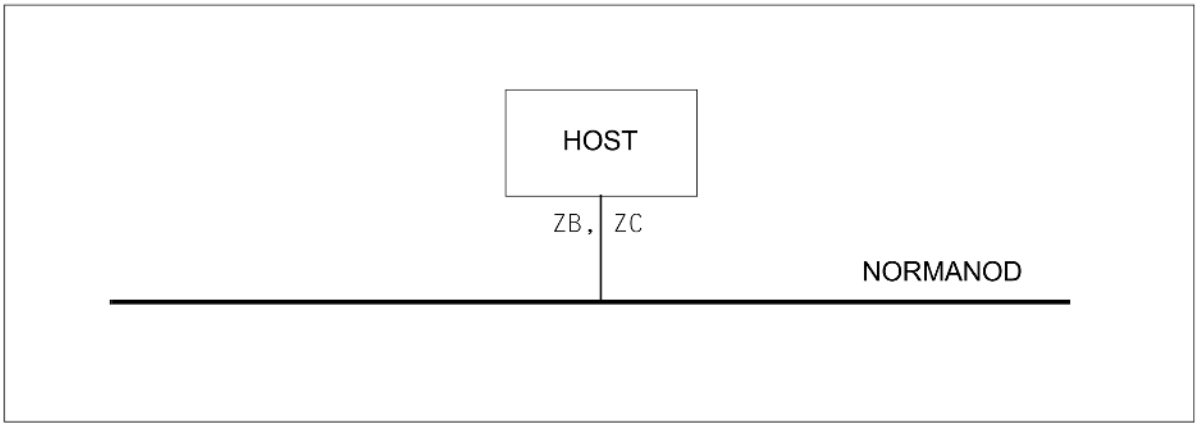
Distribution of the two end systems on the two channel adapters can be carried out by the additional specification of “OWN-ADDR”. This specification is only required if “PARTROUT” is used due to a the “OWNHOST” establishing a connection.
However, if “PARTROUT” is used due to “PARTROUT” establishing a connection, the channel adapter is specified by the destination IP address used by “PARTROUT”.

It is also necessary to define the router functions:

```
/MODIFY-ADDRESS-ASSIGNMENT ROUTE-NAME=ROUTE2(ADD-IP-NET=139.25.160.0)
```

Example for CIDR

Definition of a node and a line with specification of the subnet mask and the local IP address.



The two sample definitions below lead to the same result. The class C network can only be further restricted by specifying the subnet mask. The standard subnet mask of a class C network is 255.255.255.0. Specifying a faulty subnet mask (e.g. 255.255.255.244) leads to the standard subnet mask.

```
/CREATE-NODE NODE-NAME=NORMANOD,                        -
/            IP-SUBNET-MASK=255.255.255.244

/CREATE-LINE LINE-NAME=NORMALAN,                        -
/            IP-ADDRESS=192.168.200.5,                  -
/            L2-PROTOCOL=*CSMACD(NODE-NAME=NORMANOD,    -
/            WRITE-DEVICE=ZC,READ-DEVICE=ZB)
```

In the following, BCAM ignores the specification of the subnet mask in this initial configuration because it does not fit in with the classful routing of a class C network (IP address 192.168.200.5). BCAM assumes the appropriate standard subnet mask of a class C network (255.255.255.0 instead of 255.255.252.0). An “enlargement of the network” is, as could be assumed, excluded with this definition method.

```
/CREATE-NODE NODE-NAME=NORMANOD,                        -
/            IP-SUBNET-MASK=255.255.252.0

/CREATE-LINE LINE-NAME=NORMALAN,                        -
/            IP-ADDRESS=192.168.200.5,                  -
/            L2-PROTOCOL=*CSMACD(NODE-NAME=NORMANOD,    -
/            WRITE-DEVICE=ZC,READ-DEVICE=ZB)
```

A new result compared to the definition which could be specified with previous BCAM means is obtained by slightly modifying the existing definition.

The adjusted CIDR notation of the subnet mask for the node and specifying the prefix length in the IP address can also enable an “enlargement of the network which is to be operated” to be achieved:

```
/CREATE-NODE NODE-NAME=NORMANOD,                        -
/            IP-SUBNET-MASK=255.255.252.0/22
```

```
/CREATE-LINE LINE-NAME=NORMALAN,                        -
/            IP-ADDRESS=192.168.200.5/22,               -
/            L2-PROTOCOL=*CSMACD(NODE-NAME=NORMANOD,    -
/            WRITE-DEVICE=ZC,READ-DEVICE=ZB)
```

Diagnosis

The control block information generated can in all cases be displayed using the ASTRID program.

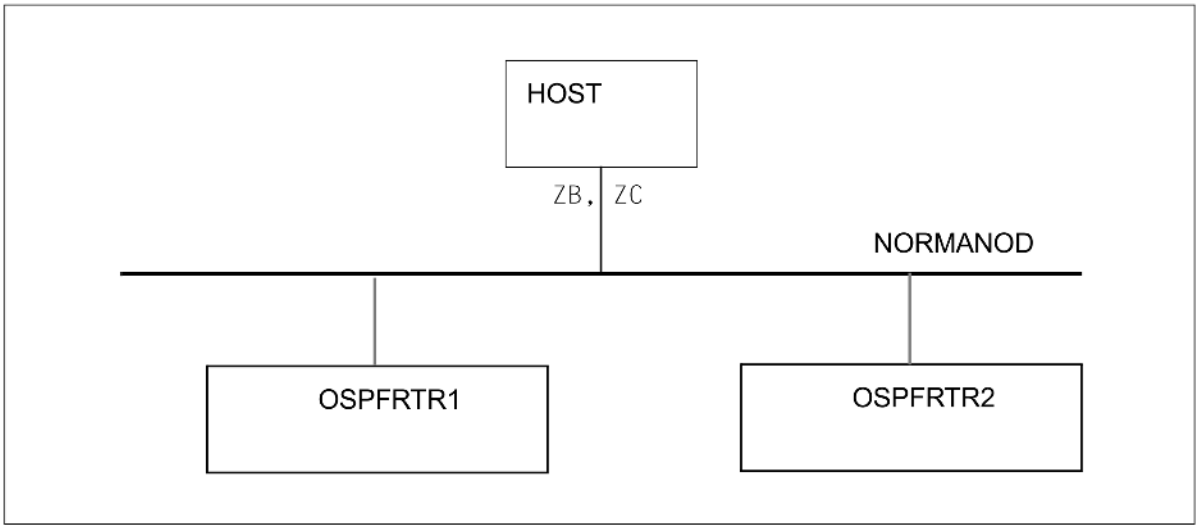
```
/START-ASTRID
SO
RS CB=(NODE,LINK)
```

Example of a minimum configuration for OSPF

BCAM V20.0A permits lines / a VLAN line to be defined initially without any address being specified. The addresses can subsequently be assigned to these lines using the ADD-OWN-ADDRESS command.

The definition of a minimum configuration with one node and one line shows the benefit of this procedure. Two networks,172.25.92.73/25 and 199.19.22.25/24, are to be accessible via this one line. Each network is operated via an OSPF router. The routers are no longer defined explicitly. Automatic end system creation is enabled.

After the following configuration has been activated and after reception of both routers' "OSPF hellos", the OSPF routers are each automatically assigned the appropriate local address.




```
/BCOPTION A-E-C=ON

/CREATE-NODE NODE-NAME=NORMANOD

/CREATE-LINE LINE-NAME=LA#SHNE6,                        -
/       IP-ADDRESS=172.25.92.73/25,                     -
/       L2-PROTOCOL=*CSMACD(NODE-NAME=NORMANOD,         -
/       WRITE-DEVICE=ZC,READ-DEVICE=ZB)

/ADD-OWN-ADDRESS LINE-NAME=LA#SHNE6,                    -
/       IP-ADDRESS=199.19.22.25/24
```

Advantages compared to older BCAM versions

Up to BCAM V19.0A it was only possible to assign another local address to a line indirectly, for example using a CREATE-ROUTE command.
The ADD-OWN-ADDRESS command permits direct assignment.

It is no longer necessary to define the OSPF routers explicitly; they are recognized as default routers for the specified networks. The routers are also assigned to the relevant local address, which is the result of the interplay of OSPF and CIDR support.

Diagnosis

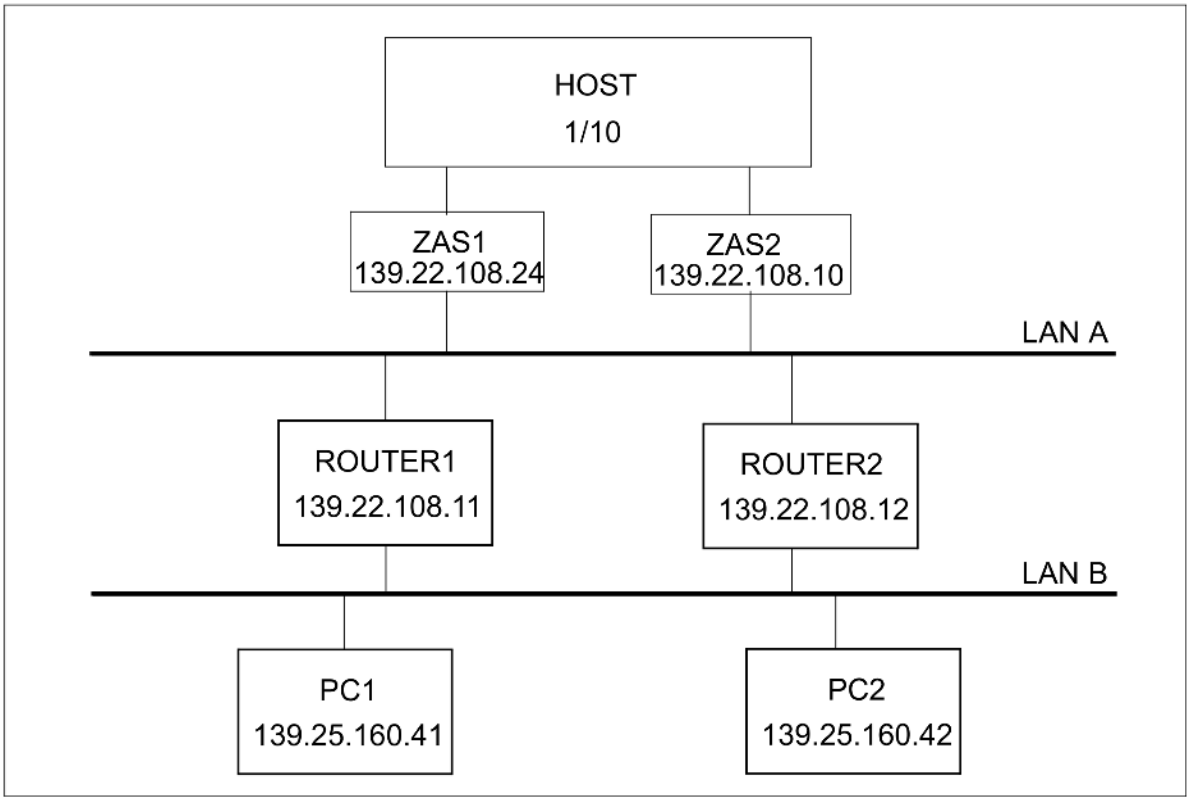
The information about the OSPF routers stored in BCAM can be displayed as follows.

```
/START-ASTRID
SO
RD
RS SI=QUEUE,QUEUE=OSPF
```

Examples of redundancy

- Example of channel adapter and router redundancy
- Example of redundancy with the group concept
- Example of host redundancy

Example of channel adapter and router redundancy



Channel adapter and router redundancy

Dynamic generation using BCIN commands

```
/BCIN LAN,LINE=ZAS1,GEN=L,PROFIL=(,IP,CSMACD),DEV=(W1,W2),  -
/     IPADR=139.22.108.24,IPSNMASK=255.255.252.0,ACT=NO

/BCIN ROUTER1,GEN=N,ROUTE=LAN,LINE=ZAS1,                    -
/     PROFIL=(TCP,IP),                                      -
/     OWN-IPADR=139.22.108.24,                              -
/     IPADR=139.22.108.11,ACT=NO

/BCIN PC1,GEN=R,ROUTE=ROUTER1,PROFIL=(TCP,IP),              -
/     IPADR=139.25.160.41,ACT=NO

/BCIN ROUTER2,GEN=N,ROUTE=LAN,LINE=ZAS1,                    -
/     PROFIL=(TCP,IP),                                      -
/     OWN-IPADR=139.22.108.24,                              -
/     IPADR=139.22.108.12,ACT=NO

/BCIN PC2,GEN=R,ROUTE=ROUTER2,PROFIL=(TCP,IP),              -
/     IPADR=139.25.160.42,ACT=NO

/BCIN LAN,LINE=ZAS2,GEN=L,PROFIL=(,IP,CSMACD),DEV=(WG,WH),  -
/     IPADR=139.22.108.10,IPSNMASK=255.255.252.0,ACT=NO
```

Dynamic generation using CREATE commands

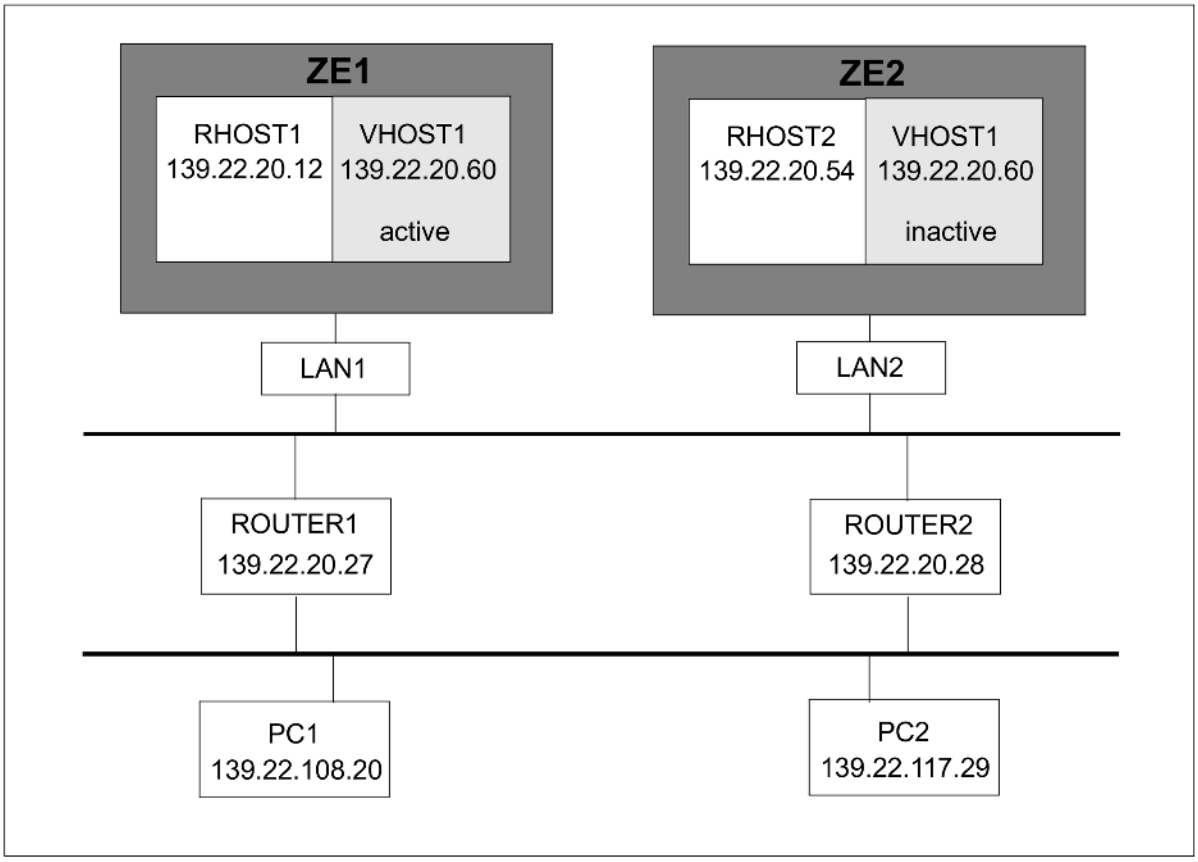
```
/CREATE-NODE NODE-NAME=LAN,                                    -
/            IP-SUBNET-MASK=255.255.252.0

/CREATE-LINE LINE-NAME=ZAS1,                                   -
/            IP-ADDRESS=139.22.108.24,                         -
/            L2-PROTOCOL=*CSMACD(NODE-NAME=LAN,                -
/            WRITE-DEVICE=W1,READ-DEVICE=W2)

/CREATE-PROCESSOR PROCESSOR-NAME=ROUTER1

/CREATE-ROUTE ROUTE-NAME=ROUTER1,                              -
/            PATH=*NODE(NODE-NAME=LAN,                         -
/            L3-PROTOCOL=*IP(IP-ADDRESS=139.22.108.11))

/CREATE-PROCESSOR PROCESSOR-NAME=PC1

/CREATE-ROUTE ROUTE-NAME=PC1,                                  -
/            PATH=*VIA-ROUTER(ROUTER-ROUTE-NAME=ROUTER1,       -
/            L3-PROTOCOL=*IP(IP-ADDRESS=139.25.160.41))

/CREATE-PROCESSOR PROCESSOR-NAME=ROUTER2

/CREATE-ROUTE ROUTE-NAME=ROUTER2,                              -
/            PATH=*NODE(NODE-NAME=LAN,                         -
/            L3-PROTOCOL=*IP(IP-ADDRESS=139.22.108.12))

/CREATE-PROCESSOR PROCESSOR-NAME=PC2

/CREATE-ROUTE ROUTE-NAME=PC2,                                  -
/            PATH=*VIA-ROUTER(ROUTER-ROUTE-NAME=ROUTER2,       -
/            L3-PROTOCOL=*IP(IP-ADDRESS=139.25.160.42))

/CREATE-LINE LINE-NAME=ZAS2,                                   -
/            IP-ADDRESS=139.22.108.10,                         -
/            L2-PROTOCOL=*CSMACD(NODE-NAME=LAN,                -
/            WRITE-DEVICE=WG,READ-DEVICE=WH)
```

Example of redundancy with the group concept

```
******** Define virtual hosts ********************
/CREATE-VIRTUAL-HOST HOST-NAME=VBCAVM39,
/ ATTRIBUTES=*PARAMETERS(SOCKETHOST-NAME=*HOST-NAME)
******** Define nodes ******************************
/CREATE-NODE NODE-NAME=NODREDV1,
/ IP-SUBNET-MASK=255.255.255.128
******** Define lines on host VBCAVM39 ***********
/CREATE-LINE LINE-NAME=LINREDV1,
/ HOST-NAME=VBCAVM39,
/ IP-ADDRESS=172.25.90.188,
/ L2-PROTOCOL=*CSMACD(
/ NODE-NAME=NODREDV1,
/ REDUNDANT-LINE=*FIRST,
/ REDUNDANT-SUBGROUP=V,
/ WRITE-DEVICE=60BC,READ-DEVICE=60BD)
/CREATE-LINE LINE-NAME=LINREDV2,
/ HOST-NAME=VBCAVM39,
/ IP-ADDRESS=10.0.0.188,
/ L2-PROTOCOL=*CSMACD(
/ NODE-NAME=NODREDV1,
/ REDUNDANT-LINE=LINREDV1,
/ REDUNDANT-SUBGROUP=V,
/ WRITE-DEVICE=60EA,READ-DEVICE=60EB)
******** Define lines on host BCAMVM03 ***********
/CREATE-LINE LINE-NAME=LINREDN1,
/ HOST-NAME=BCAMVM03,
/ IP-ADDRESS=172.25.90.189,
/ L2-PROTOCOL=*CSMACD(
/ NODE-NAME=NODREDV1,
/ REDUNDANT-LINE=*FIRST,
/ REDUNDANT-SUBGROUP=N,
/ WRITE-DEVICE=60AA,READ-DEVICE=60AB)
/CREATE-LINE LINE-NAME=LINREDN2,
/ IP-ADDRESS=10.0.0.189,
/ L2-PROTOCOL=*CSMACD(
/ NODE-NAME=NODREDV1,
/ REDUNDANT-LINE=LINREDN1,
/ REDUNDANT-SUBGROUP=N,
/ WRITE-DEVICE=60CC,READ-DEVICE=60CD)
/CREATE-LINE LINE-NAME=LINREDN3,
/ IP-ADDRESS=172.25.90.181,
/ L2-PROTOCOL=*CSMACD(
/ NODE-NAME=NODREDV1,
/ REDUNDANT-LINE=*STD,
/ WRITE-DEVICE=60A6,READ-DEVICE=60A7)
/CREATE-LINE LINE-NAME=LINREDN4,
/ IP-ADDRESS=172.25.90.133,
/ L2-PROTOCOL=*CSMACD(
/ NODE-NAME=NODREDV1,
/ REDUNDANT-LINE=*NONE,
/ WRITE-DEVICE=60B0,READ-DEVICE=60B1)
******** Define routes ******************************
******** Define routes to BCAMVM05 ******************
********   Routes to BCAMVM05 from BCAMVM03 **********
/CREATE-ROUTE ROUTE-NAME=RO#RV#N1,PROCESSOR-NAME=BCAMVM05,
/ PATH=*NODE(NODE-NAME=NODREDV1,LINE-NAME=LINREDN1,
```

```
/ HOST-NAME=BCAMVM03,
/ L3-PROTOCOL=*IP(IP-ADDRESS=172.25.90.190,
/ OWN-IP-ADDRESS=172.25.90.189))
/CREATE-ROUTE ROUTE-NAME=RO#RV#N2,PROCESSOR-NAME=BCAMVM05,
/ PATH=*NODE(NODE-NAME=NODREDV1,LINE-NAME=LINREDN2,
/ HOST-NAME=BCAMVM03,
/ L3-PROTOCOL=*IP(IP-ADDRESS=10.0.0.190,
/ OWN-IP-ADDRESS=10.0.0.189))
********   Routes to BCAMVM05 from BCAMVM03 **********
/CREATE-ROUTE ROUTE-NAME=RO#071#5,PROCESSOR-NAME=BCAMVM05,
/ PATH=*NODE(NODE-NAME=NODREDV1,LINE-NAME=LINREDN3,
/ L3-PROTOCOL=*IP(IP-ADDRESS=172.25.90.171)),
/ ATTRIBUTES=*PAR(ROUT-SEQ-NUM=71)
/CREATE-ROUTE ROUTE-NAME=RO#071#9,PROCESSOR-NAME=BCAMVM11,
/ PATH=*NODE(NODE-NAME=NODREDV1,LINE-NAME=LINREDN4,
/ L3-PROTOCOL=*IP(IP-ADDRESS=172.25.90.179)),
/ ATTRIBUTES=*PAR(ROUT-SEQ-NUM=71)
********   Routes to BCAMVM05 from VBCAVM39 **********
/CREATE-ROUTE ROUTE-NAME=RO#RV#V1,PROCESSOR-NAME=BCAMVM05,
/ PATH=*NODE(NODE-NAME=NODREDV1,LINE-NAME=LINREDV1,
/ HOST-NAME=VBCAVM39,
/ L3-PROTOCOL=*IP(IP-ADDRESS=172.25.90.190,
/ OWN-IP-ADDRESS=172.25.90.188))
/CREATE-ROUTE ROUTE-NAME=RO#RV#V2,PROCESSOR-NAME=BCAMVM05,
/ PATH=*NODE(NODE-NAME=NODREDV1,LINE-NAME=LINREDV2,
/ HOST-NAME=VBCAVM39,
/ L3-PROTOCOL=*IP(IP-ADDRESS=10.0.0.190,
/ OWN-IP-ADDRESS=10.0.0.188))
******** Modify lines *************************
/MODIFY-LINE LINE-NAME=LINREDV1,SLOW-POLL=*ON,AUTO-ROUTE-SWITCHING=*ON,
/ ROUTE-RESWITCHING=*ON,TIMEOUT-PROCESSING=*DEACTIVATE-LINE
/MODIFY-LINE LINE-NAME=LINREDV2,SLOW-POLL=*ON,AUTO-ROUTE-SWITCHING=*ON,
/ ROUTE-RESWITCHING=*ON,TIMEOUT-PROCESSING=*DEACTIVATE-LINE
/MODIFY-LINE LINE-NAME=LINREDN1,SLOW-POLL=*ON,AUTO-ROUTE-SWITCHING=*ON,
/ ROUTE-RESWITCHING=*ON,TIMEOUT-PROCESSING=*DEACTIVATE-LINE
/MODIFY-LINE LINE-NAME=LINREDN2,SLOW-POLL=*ON,AUTO-ROUTE-SWITCHING=*ON,
/ ROUTE-RESWITCHING=*ON,TIMEOUT-PROCESSING=*DEACTIVATE-LINE
******** Activate ************************************
******** Activate hosts ******************************
/BCIN HOST=VBCAVM39,INI=ALL,ACT=N
******** Activate lines ***************************
/ACTIVATE-LINE LINE-NAME=LINREDN4
/ACTIVATE-LINE LINE-NAME=LINREDN3
/ACTIVATE-LINE LINE-NAME=LINREDN2
/ACTIVATE-LINE LINE-NAME=LINREDN1
/ACTIVATE-LINE LINE-NAME=LINREDV1
/ACTIVATE-LINE LINE-NAME=LINREDV2
******** Activate nodes + all routes *****************
/BCIN NODE=NODREDV1,INI=ALL,ACT=ALL
```

Example of host redundancy



Redundancy of host

Dynamic generation using CREATE commands

SOF file RHOST1

```
/DCOPT HOST=RHOST1,                                                    -
/    DCRDF=*NONE,

/CREATE-NODE NODE-NAME=LAN,IP-SUBNET-MASK=255.255.252.0

/CREATE-LINE LINE-NAME=LAN1,                                           -
/    IP-ADDRESS=139.22.20.12,                                          -
/    IPV6-ADDRESS=*NONE,                                               -
/    L2-PROTOCOL=*CSMACD(                                              -
/    NODE-NAME=LAN,WRITE-DEVICE=W8,READ-DEVICE=W9)

/CREATE-PROCESSOR PROCESSOR-NAME=ROUTER1,                              -
/    MAX-TSDU-SIZE=65530,                                              -
/    ADMINISTRATION-TYPE=*BCAM
/    CREATE-ROUTE ROUTE-NAME=R1ROUT1,                                  -
/    PROCESSOR-NAME=ROUTER1,PATH=*NODE(                                -
/    NODE-NAME=LAN,                                                    -
/    HOST-NAME=RHOST1,                                                 -
/    LINE-NAME=LAN1,                                                   -
```

```
/    L3-PROTOCOL=*IP(IP-ADDRESS=139.22.20.27))
/CREATE-PROCESSOR PROCESSOR-NAME=PC1,                                    -
/    MAX-TSDU-SIZE=4096,                                                 -
/    ADMINISTRATION-TYPE=*UNKNOWN /CREATE-ROUTE ROUTE-NAME=R1PC1,        -
/    PROCESSOR-NAME=PC1,                                                 -
/    PATH=*VIA-ROUTER(                                                   -
/    ROUTER-ROUTE-NAME=R1ROUT1,                                          -
/    L3-PROTOCOL=*IP(IP-ADDRESS=139.22.108.20))
```

CALL-BCAM-COMMAND file for VHOST1 at RHOST1

```
/CREATE-VIRTUAL-HOST HOST-NAME=VHOST1,                                   -
/ ATTRIBUTES=*PARAMETERS                                                 -
/ (SOCKETHOST-NAME=VHOST1,                                               -
/ MAX-TSDU-SIZE=65530)
/ STATUS-JV=*NONE
*node LAN already defined (RHOST1)
*line LAN1 already defined (RHOST1)
/CREATE-PROCESSOR PROCESSOR-NAME=ROUTER2,                                -
/ MAX-TSDU-SIZE=65530,                                                   -
/ ADMINISTRATION-TYPE=*BCAM
/CREATE-ROUTE ROUTE-NAME=V1ROUT2,                                        -
/ PROCESSOR-NAME=ROUTER2,                                                -
/ PATH=*NODE(                                                            -
/ NODE-NAME=LAN,                                                         -
/ HOST-NAME=VHOST1,                                                      -
/ LINE-NAME=LAN1,                                                        -
/ L3-PROTOCOL=*IP(                                                       -
/ IP-ADDRESS=139.22.20.28,OWN-IP-ADDR=139.22.20.60))
/CREATE-PROCESSOR PROCESSOR-NAME=PC2,                                    -
/ MAX-TSDU-SIZE=4096,                                                    -
/ ADMINISTRATION-TYPE=*UNKNOWN
/CREATE-ROUTE ROUTE-NAME=V1PC2,                                          -
/ PROCESSOR-NAME=PC1,PATH=*VIA-ROUTER(                                   -
/ ROUTER-ROUTE-NAME=V1ROUT2,                                             -
/ L3-PROTOCOL=*IP(IP-ADDRESS=139.22.117.29))
```

> Similarly, you can derive the dynamic generation for host 2 from the above example since it is almost identical. To do this, you must adapt the names and be careful of the devices.

Example with branching instructions

- Example of multiple VMs in one SOF

Example of multiple VMs in one SOF

```
*
*------------------   DEFINE BS2-DATA LAN DANPU01      -------------*
*
*#####################################################################
*#        DEFINE DEVICES FOR BS2-DATA LAN DANPU01                    #
*#####################################################################
*
*---------------------------------------------------------------------
*-----  Change  WRITE-DEVICE,READ-DEVICE        if necessary     -----
*---------------------------------------------------------------------
*-----------------------------------------------------
/IF-BCAM-SYSINF SYSINF=*VMID(VM-ID= 0),CONDITION=EQ
/  CREATE-VLAN-DEVICE DEVICE-NAME=DEVICE#1,-
/     WRITE-DEVICE=CC20,-
/     READ-DEVICE=CC21,-
/     SLOW-POLL=*ON,-
/     MAX-LPDU-SIZE=*BY-DEVICE
*
/  CREATE-VLAN-DEVICE DEVICE-NAME=DEVICE#2,-
/     WRITE-DEVICE=CD20,-
/     READ-DEVICE=CD21,-
/     SLOW-POLL=*ON,-
/     MAX-LPDU-SIZE=*BY-DEVICE
/END-IF-BCAM-SYSINF
*
*-----------------------------------------------------
/IF-BCAM-SYSINF SYSINF=*VMID(VM-ID= 1),CONDITION=EQ
/  CREATE-VLAN-DEVICE DEVICE-NAME=DEVICE#1,-
/     WRITE-DEVICE=CC20,-
/     READ-DEVICE=CC21,-
/     SLOW-POLL=*ON,-
/     MAX-LPDU-SIZE=*BY-DEVICE
*
/  CREATE-VLAN-DEVICE DEVICE-NAME=DEVICE#2,-
/     WRITE-DEVICE=CD20,-
/     READ-DEVICE=CD21,-
/     SLOW-POLL=*ON,-
/     MAX-LPDU-SIZE=*BY-DEVICE
/END-IF-BCAM-SYSINF
*
*-----------------------------------------------------
/IF-BCAM-SYSINF SYSINF=*VMID(VM-ID= 2),CONDITION=EQ
/  CREATE-VLAN-DEVICE DEVICE-NAME=DEVICE#1,-
/     WRITE-DEVICE=CC22,-
/     READ-DEVICE=CC23,-
/     SLOW-POLL=*ON,-
/     MAX-LPDU-SIZE=*BY-DEVICE
*
/  CREATE-VLAN-DEVICE DEVICE-NAME=DEVICE#2,-
/     WRITE-DEVICE=CD22,-
/     READ-DEVICE=CD23,-
/     SLOW-POLL=*ON,-
/     MAX-LPDU-SIZE=*BY-DEVICE
/END-IF-BCAM-SYSINF
*
*-----------------------------------------------------
```

```
/IF-BCAM-SYSINF SYSINF=*VMID(VM-ID= 3),CONDITION=EQ
/  CREATE-VLAN-DEVICE DEVICE-NAME=DEVICE#1,-
/     WRITE-DEVICE=CC24,-
/     READ-DEVICE=CC25,-
/     SLOW-POLL=*ON,-
/     MAX-LPDU-SIZE=*BY-DEVICE
*
/  CREATE-VLAN-DEVICE DEVICE-NAME=DEVICE#2,-
/     WRITE-DEVICE=CD24,-
/     READ-DEVICE=CD25,-
/     SLOW-POLL=*ON,-
/     MAX-LPDU-SIZE=*BY-DEVICE
/END-IF-BCAM-SYSINF
*
*#####################################################################
*#       ACTIVATE DEVICES FOR BS2-DATA LAN DANPU01                   #
*#####################################################################
*
/ACTIVATE-VLAN-DEVICE DEVICE-NAME=DEVICE#1
/
/ACTIVATE-VLAN-DEVICE DEVICE-NAME=DEVICE#2
*
*#####################################################################
*#       DEFINE NODE FOR BS2-DATA LAN DANPU01                        #
*#####################################################################
*
/CREATE-NODE NODE-NAME=NODE#1,-
/   LAN-TYPE=*VIRTUAL(VLAN-ID=*UNTAGGED),-
/   TYPE-OF-NODE=*NORMAL
*
*#####################################################################
*#       DEFINE LINES FOR BS2-DATA LAN DANPU01                       #
*#####################################################################
*
*---------------------------------------------------------------------
*-----  Change  HOST-NAME,IP-ADDRESS            if necessary     -----
*---------------------------------------------------------------------
*-----------------------------------------------------
/IF-BCAM-HOST HOST-NAME=HOST#MON
/  CREATE-VLAN-LINE LINE-NAME=LINE#1,-
/     NODE-NAME=NODE#1,-
/     IP-ADDRESS=172.0.1.1/22,-
/     DEVICE-NAME=DEVICE#1,-
/     MAX-LPDU-SIZE=*STD,-
/     AUTO-ROUTE-SWITCHING=OFF,-
/     ROUTE-RESWITCHING=OFF
*
/  CREATE-VLAN-LINE LINE-NAME=LINE#2,-
/     NODE-NAME=NODE#1,-
/     IP-ADDRESS=1.0.1.1/22,-
/     DEVICE-NAME=DEVICE#2,-
/     MAX-LPDU-SIZE=*STD,-
/     AUTO-ROUTE-SWITCHING=OFF,-
/     ROUTE-RESWITCHING=OFF
/END-IF-BCAM-HOST
*
*-----------------------------------------------------
/IF-BCAM-HOST HOST-NAME=HOST#2
/  CREATE-VLAN-LINE LINE-NAME=LINE#1,-
```

```
/     NODE-NAME=NODE#1,-
/     IP-ADDRESS=172.0.1.2/22,-
/     DEVICE-NAME=DEVICE#1,-
/     MAX-LPDU-SIZE=*STD,-
/     AUTO-ROUTE-SWITCHING=OFF,-
/     ROUTE-RESWITCHING=OFF
*
/  CREATE-VLAN-LINE LINE-NAME=LINE#2,-
/     NODE-NAME=NODE#1,-
/     IP-ADDRESS=1.0.1.2/22,-
/     DEVICE-NAME=DEVICE#2,-
/     MAX-LPDU-SIZE=*STD,-
/     AUTO-ROUTE-SWITCHING=OFF,-
/     ROUTE-RESWITCHING=OFF
/END-IF-BCAM-HOST
*
*-------------------------------------------------
/IF-BCAM-HOST HOST-NAME=HOST#3
/  CREATE-VLAN-LINE LINE-NAME=LINE#1,-
/     NODE-NAME=NODE#1,-
/     IP-ADDRESS=172.0.1.3/22,-
/     DEVICE-NAME=DEVICE#1,-
/     MAX-LPDU-SIZE=*STD,-
/     AUTO-ROUTE-SWITCHING=OFF,-
/     ROUTE-RESWITCHING=OFF
*
/  CREATE-VLAN-LINE LINE-NAME=LINE#2,-
/     NODE-NAME=NODE#1,-
/     IP-ADDRESS=1.0.1.3/22,-
/     DEVICE-NAME=DEVICE#2,-
/     MAX-LPDU-SIZE=*STD,-
/     AUTO-ROUTE-SWITCHING=OFF,-
/     ROUTE-RESWITCHING=OFF
/END-IF-BCAM-HOST
*-------------------------------------------------
/IF-BCAM-HOST HOST-NAME=HOST#4
/  CREATE-VLAN-LINE LINE-NAME=LINE#1,-
/     NODE-NAME=NODE#1,-
/     IP-ADDRESS=172.0.1.4/22,-
/     DEVICE-NAME=DEVICE#1,-
/     MAX-LPDU-SIZE=*STD,-
/     AUTO-ROUTE-SWITCHING=OFF,-
/     ROUTE-RESWITCHING=OFF
*
/  CREATE-VLAN-LINE LINE-NAME=LINE#2,-
/     NODE-NAME=NODE#1,-
/     IP-ADDRESS=1.0.1.4/22,-
/     DEVICE-NAME=DEVICE#2,-
/     MAX-LPDU-SIZE=*STD,-
/     AUTO-ROUTE-SWITCHING=OFF,-
/     ROUTE-RESWITCHING=OFF
/END-IF-BCAM-HOST
*
*#####################################################################
*#        ROUTING FOR DATA LAN DANPU01                               #
*#####################################################################
*
*-------------------------------------------------------------------
*-----  Change  IP-ADDRESS                      if necessary     -----
```

```
*-------------------------------------------------------------------
/CREATE-PROCESSOR PROCESSOR-NAME=PROC#1,-
/   MAX-TSDU-SIZE=65530
*
/CREATE-ROUTE ROUTE-NAME=PROC#1,PROCESSOR-NAME=PROC#1,-
/   PATH=*NODE(NODE-NAME=NODE#1,LINE-NAME=LINE#1,-
/   L3-PROTOCOL=*IP(IP-ADDRESS=172.0.0.1))
*
/MODIFY-ADDRESS-ASSIGNMENT ROUTE-NAME=PROC#1(-
/   ADD-IP-NET=*UNKNOWN)
*
*####################################################################
*#       ACTIVATE LINES FOR BS2-DATA LAN DANPU01                    #
*####################################################################
*
/ACTIVATE-VLAN-LINE LINE-NAME=LINE#1
/
/ACTIVATE-VLAN-LINE LINE-NAME=LINE#2
*
*####################################################################
*#       REDUNDANCY                                                 #
*####################################################################
*
/MODIFY-VLAN-LINE LINE-NAME=LINE#1,-
/   AUTO-ROUTE-SWITCHING=*ON,-
/   ROUTE-RESWITCHING=*ON
/
/MODIFY-VLAN-LINE LINE-NAME=LINE#2,-
/   AUTO-ROUTE-SWITCHING=*ON,-
/   ROUTE-RESWITCHING=*ON
*
*####################################################################
*#       ACTIVATE BS2-DATA LAN DANPU01                              #
*####################################################################
*
/BCACT NODE=NODE#1,ACT=ALL
*
************************   E N D   ********************************
```

Examples of VLAN support in BCAM

A few simple examples of VLAN configurations are provided below. The starting point taken is a normal LAN configuration in order to illustrate the differences to a VLAN configuration and to derive the VLAN configuration on a step-by-step basis. These examples show what new VLAN commands are required for definition purposes and in how far analogies can be drawn between a LAN and a VLAN configuration.

In the examples in the sections below some abbreviations are used in the names of the various objects. Combinations of these abbreviations are also used.

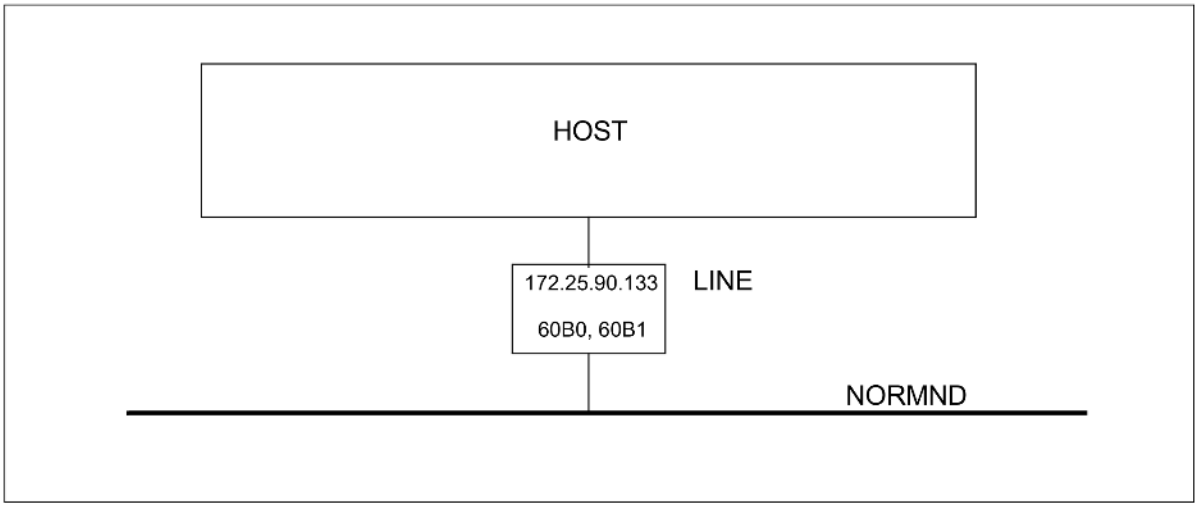
DEVICE DV
NODE ND
LINE LN
VLAN VL

All examples are implemented with BCAM commands.

Definition of a LAN

- Definition of a LAN node
- Definition of a local processor on the LAN
- Definition of a router on the LAN
- Definition of a remote processor on the LAN

Definition of a LAN node



In this example a node is defined together with a line.

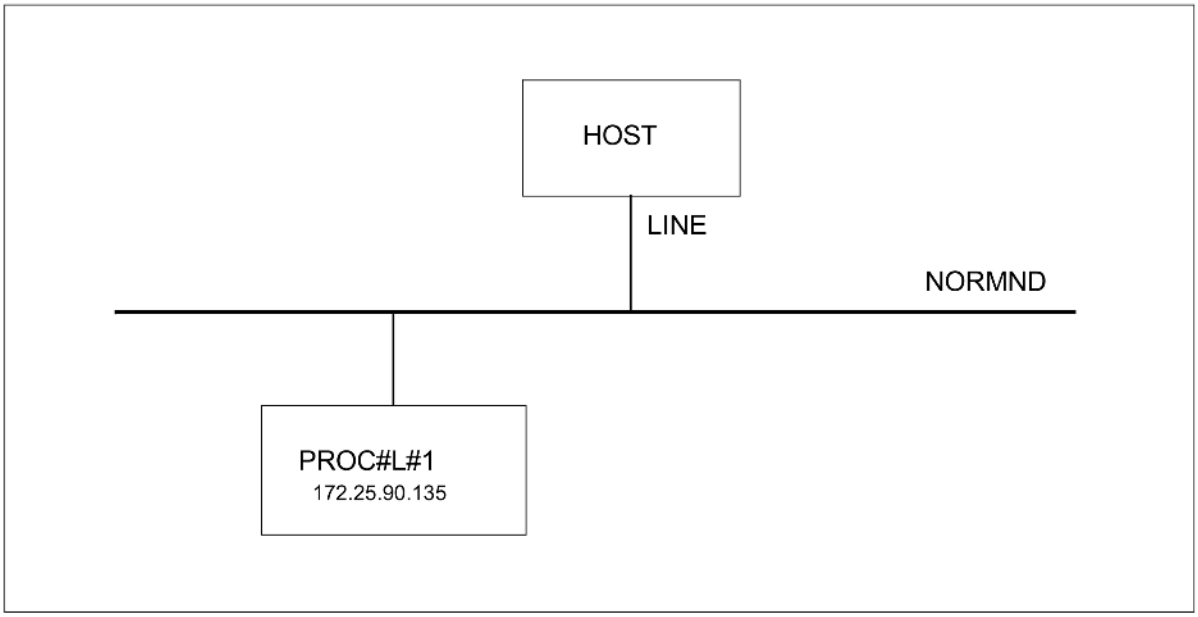
Dynamic generation

```
/CREATE-NODE NODE-NAME=NORMND

/CREATE-LINE LINE-NAME=LINE                                    -
/ ,IP-ADDRESS= 172.25.90.133                                   -
/ ,L2-PROTOCOL=*CSMACD                                         -
/ (NODE-NAME=NORMND,WRITE-DEVICE=60B0,READ-DEVICE=60B1         -
/ ,LAN-ADDRESS=*DYNAMIC                                        -
/ ,MAX-LPDU-SIZE=*BY-DEVICE)
```

Note

The addresses which begin with 172.* belong to a subnet of class B. The default subnet mask is therefore 255.255.0.0. The subnet mask is not specified in the examples below.

Definition of a local processor on the LAN



In this example a local processor is defined with a route. In BCAM there are three ways of doing this.

Dynamic generation

```
/REMARK Definition of the LAN node NORMND

/CREATE-PROCESSOR PROCESSOR-NAME=PROC#L#1,ADMINISTRATION-TYPE=*BCAM

/CREATE-ROUTE ROUTE-NAME=PROC#L#1,PATH=*NODE(NODE-NAME=NORMND, -
/ L3-PROTOCOL=*IP(IP-ADDRESS=172.25.90.135))
```

Definition through AEC (automatic end system creation)

The local processor PROC#L#1 shown in the figure can alternately be specified in the processor file and generated by automatic end system creation. To do this the “automatic end system creation” option must be specified. In addition, the system must be included in the processor file.

Setting options

```
/BCOPTION A-E-C=ON
```

Entry in the processor file

```
PROC#L#1 IP 172.25.90.135
```

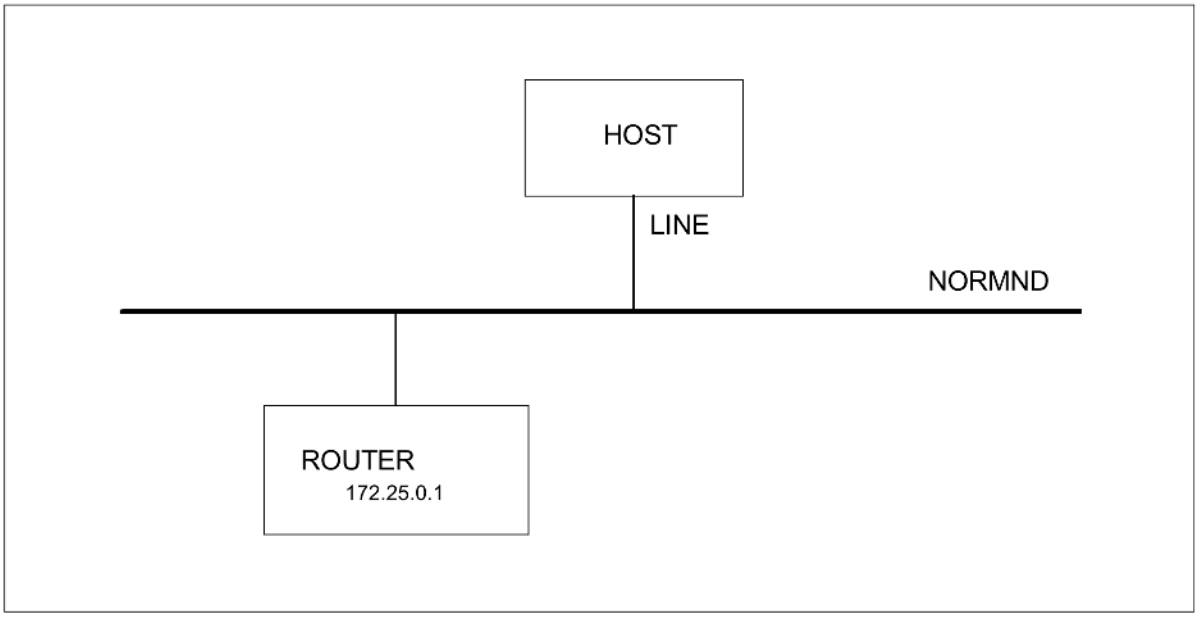
Definition through DNS

Another way of defining the local processor PROC#L#1 is to use DNS. To do this you must start the LWRESD utility routine (by default this is already possible in the DCOPT/ DCSTART command) and specify the option for DNS. DNS accesses can be restricted using the MODIFY-DNS-ACCESS command.

Entries in the SOF file

```
/MODIFY-BCAM-OPTIONS DNS-OPTIONS=*PARAMETERS(DNS-USAGE=*ON)

/MODIFY-DNS-ACCESS IP-ADDRESS-RANGE= -
/ *ADD(FROM=172.25.90.135,TO=172.25.90.135)

/MODIFY-DNS-ACCESS IPV6-ADDRESS-RANGE=*NONE

/MODIFY-DNS-ACCESS NAMES=PROC#L#1
```

Definition of a router on the LAN



In this example the router is defined with a route. A router is initially defined as a local processor. It is then assigned the router attribute.

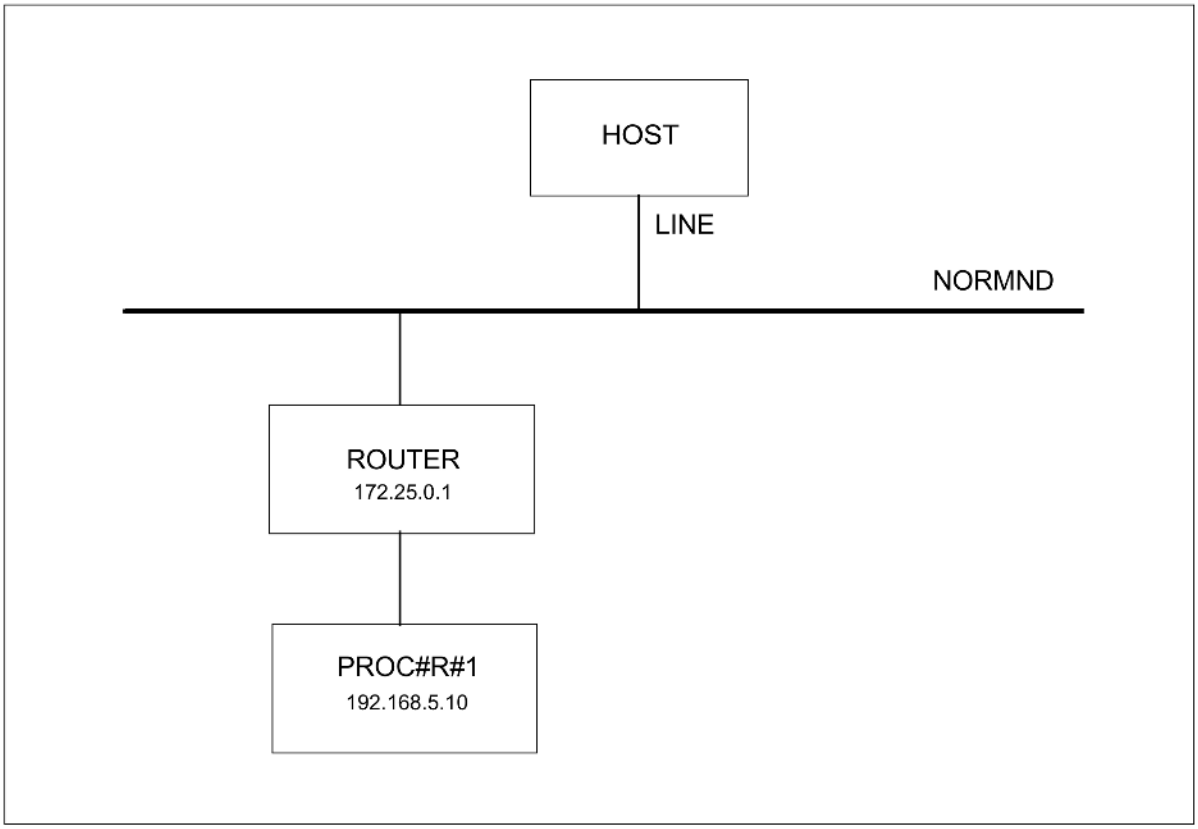
Dynamic generation

```
/REMARK Definition of the LAN node NORMND

/CREATE-PROCESSOR PROCESSOR-NAME=ROUTER,ADMINISTRATION-TYPE=*BCAM

/CREATE-ROUTE ROUTE-NAME=ROUTER,PATH=*NODE(NODE-NAME=NORMND (-
/ L3-PROTOCOL=*IP(IP-ADDRESS=172.25.0.1))

/MODIFY-ADDRESS-ASSIGNMENT ROUTE-NAME=ROUTER(ADD-IP-NET=*UNKNOWN)
```

Note

A router must be defined using SDF commands. Neither an AEC nor an DNS definition is permissible as the assignment of the router attribute is then not possible.

Definition of a remote processor on the LAN



In this example the remote processor PROC#R#1 behind the router ROUTER is examined.

Dynamic generation

```
/REMARK Definition of the LAN node NORMND

/REMARK Definition of the router ROUTER

/CREATE-PROCESSOR PROCESSOR-NAME=PROC#R#1,ADMINISTRATION-TYPE=*BCAM

/CREATE-ROUTE ROUTE-NAME=PROC#R#1,PATH=*VIA-ROUTER(-
/ROUTER-ROUTE-NAME=ROUTER,L3-PROTOCOL=*IP(IP-ADDRESS= 192.168.5.10))
```

Definition through AEC (automatic end system creation)

The remote processor PROC#R#1 shown in the figure can alternately be specified in the processor file and generated by automatic end system creation. To do this the “automatic end system creation” option must be specified. In addition, the system must be included in the processor file.

Setting options

```
/BCOPTION A-E-C=ON
```

Entry in the processor file

```
PROC#R#1 IP 192.168.5.10
```

Definition through DNS

Another way of defining the remote processor PROC#R#1 is to use DNS. To do this you must start the LWRESD utility routine (by default this is already possible in the DCOPT/ DCSTART command) and specify the option for DNS. DNS accesses can be restricted using the MODIFY-DNS-ACCESS command.

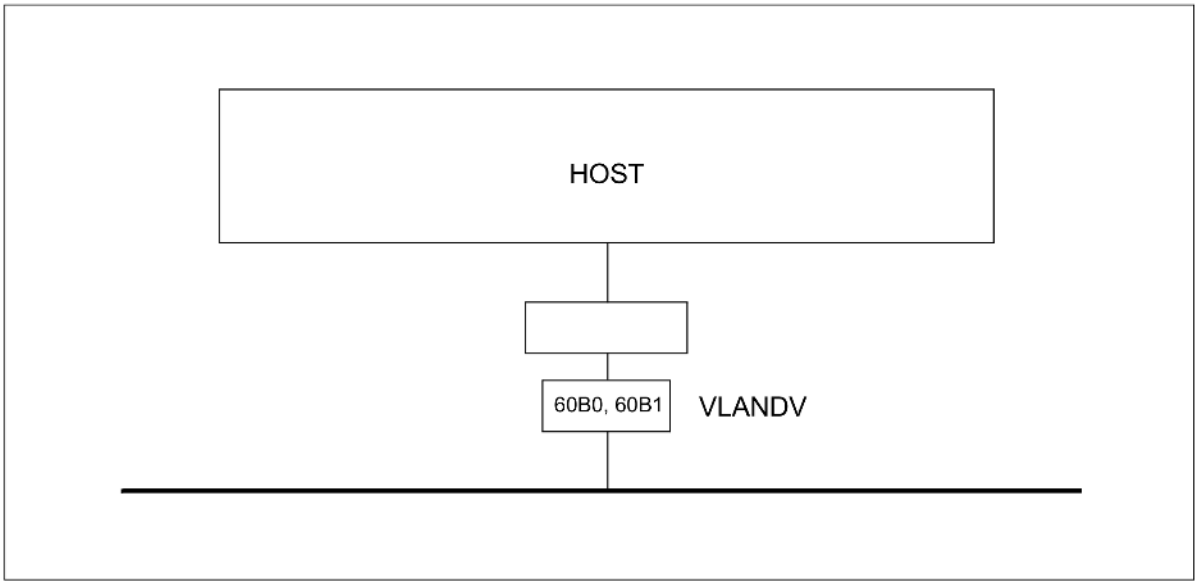
Entries in the SOF file

```
/MODIFY-BCAM-OPTIONS DNS-OPTIONS=*PARAMETERS(DNS-USAGE=*ON)

/MODIFY-DNS-ACCESS IP-ADDRESS-RANGE= -
/ *ADD(FROM= 192.168.5.10,TO= 192.168.5.10)

/MODIFY-DNS-ACCESS IPV6-ADDRESS-RANGE=*NONE

/MODIFY-DNS-ACCESS NAMES=PROC#R#1
```

Definition of a VLAN

A simple case of a VLAN definition viewed from different aspects is illustrated below.

Definition of a VLAN device

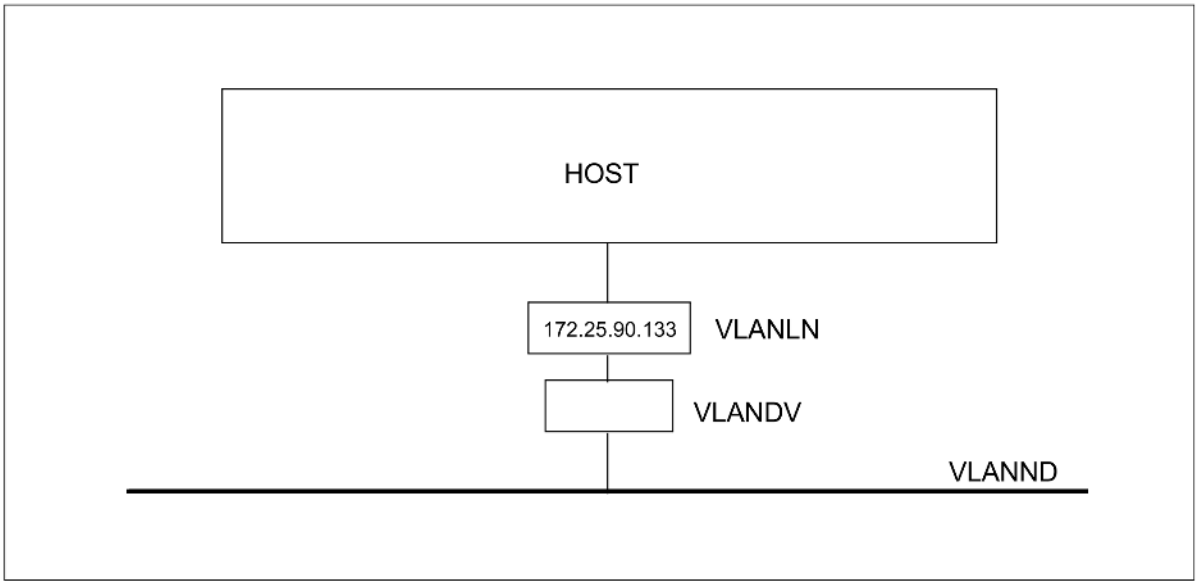


A prerequisite for VLAN definition is always that a VLAN device has been defined. This is done using the CREATE-VLAN-DEVICE command. In contrast to a normal LAN this is a new BCAM object which cancels the intermixing of the line and the device definition.

Dynamic generation of the VLAN device

```
/CREATE-VLAN-DEVICE DEVICE-NAME=VLANDV-
/ ,WRITE-DEVICE=60B0-
/ ,READ-DEVICE=60B1-
/ ,SLOW-POLL=*OFF-
/ ,LAN-ADDRESS=*DYNAMIC-
/ ,MAX-LPDU-SIZE=*BY-DEVICE
```

Definition of a VLAN node

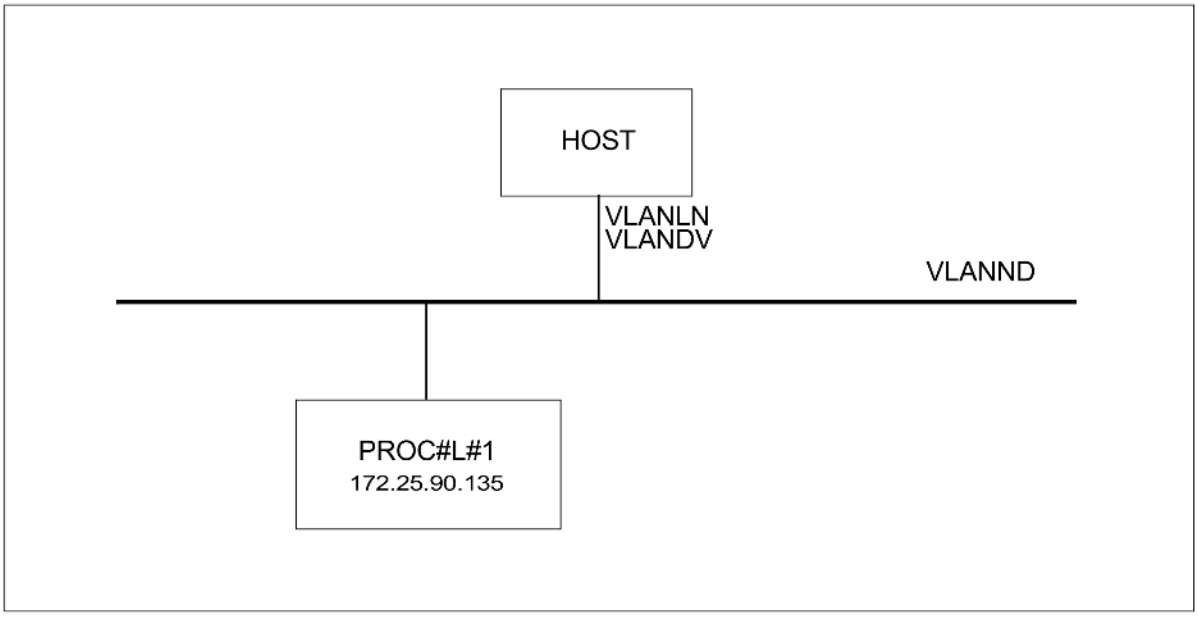


A VLAN node VLANND with the VLAN-ID=4 is defined using the CREATE-NODE command. When the VLAN line is defined using the CREATE-VLAN-LINE command the reference between the node and the device is established.

Dynamic generation of the VLAN node

```
/REMARK Definition of the VLAN device VLANDV
/CREATE-NODE NODE-NAME=VLANND-
/ ,IP-SUBNET-MASK=255.255.255.128-
/ ,LAN-TYPE=*VIRTUAL(-
/   VLAN-ID=4-
/   ,PRIORITY=*STD)

/CREATE-VLAN-LINE LINE-NAME=VLANLN-
/ ,HOST-NAME=*STD-
/ ,NODE-NAME=VLANND-
/ ,DEVICE-NAME=VLANDV-
/ ,IP-ADDRESS=172.25.90.133, -
/ ,MAX-LPDU-SIZE=*BY-DEVICE
```

Definition of a local processor on the VLAN



The local processor PROC#L#1 specified in the figure can now be defined by specifying further commands.

Dynamic generation

```
/REMARK Definition of the VLAN device VLANDV

/REMARK Definition of the VLAN node VLANLN

/CREATE-PROCESSOR PROCESSOR-NAME=PROC#L#1-
/ ,ADMINISTRATION-TYPE=*BCAM

/CREATE-ROUTE ROUTE-NAME=PROC#L#1-
/ ,PROCESSOR-NAME=PROC#L#1-
/ ,PATH=*NODE(-
/   NODE-NAME=VLANND-
/   ,HOST-NAME=*STD-
/   ,LINE-NAME=VLANLN-
/   ,L3-PROTOCOL=*IP(-
/   L4-PROTOCOL=*TCP-
/   ,IP-ADDRESS=172.25.90.135-
/   ,OWN-IP-ADDRESS=172.25.90.133-
/   ,LAN-ADDRESS=*DYNAMIC))-
```

Note

In contrast to the previous examples for normal LANs the CREATE-ROUTE command is specified with almost all the parameter values. As before abbreviated notation is possible.

Definition through AEC (automatic end system creation)

The local processor PROC#L#1 shown in the figure can alternately be specified in the processor file and generated by automatic end system creation. To do this the “automatic end system creation” option must be specified. In

addition, the system must be included in the processor file and in the SOF file a MODIFY-VLAN-ASSIGNMENT command must be issued.

Setting options

```
/BCOPTION A-E-C=ON
```

Entry in the processor file

```
PROC#L#1 IP 172.25.90.135
```

Entries in the SOF file

```
/MODIFY-VLAN-ASSIGNMENT IP-ADDRESS-RANGE=*ADD-TO-VLAN (-
/FROM=172.25.90.135, TO=172.25.90.139, VLAN-ID=4)
```

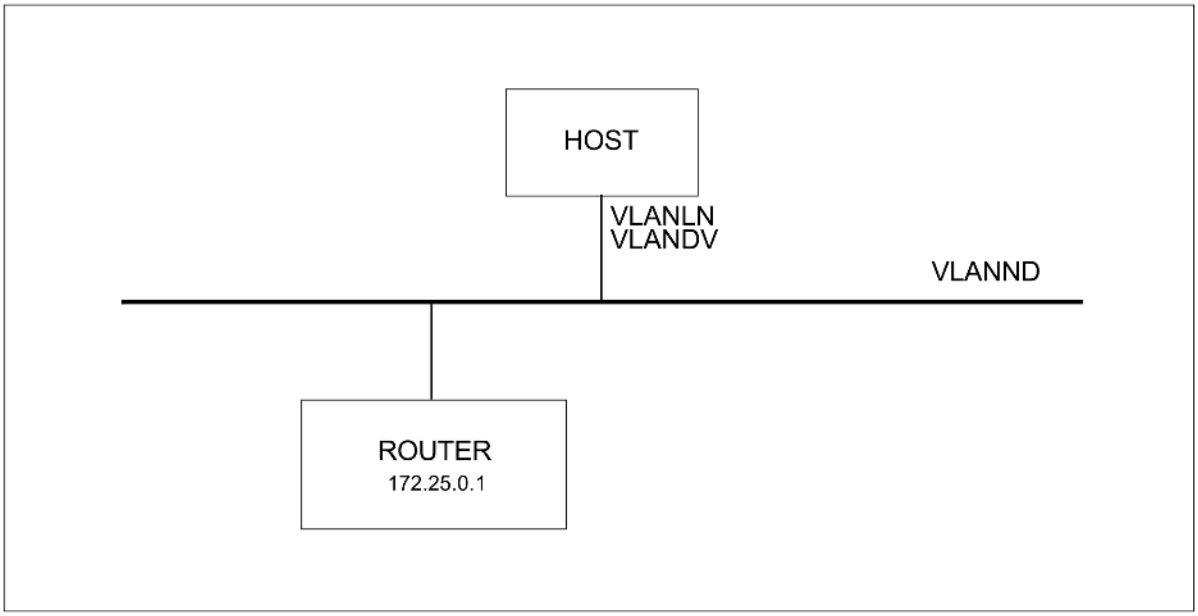
Definition through DNS

Another way of defining the local processor PROC#L#1 is to use DNS. To do this you must start the LWRESD utility routine (by default this is already possible in the DCOPT/ DCSTART command) and specify the option for DNS. DNS accesses can be restricted using the MODIFY-DNS-ACCESS command.

Entries in the SOF file

```
/MODIFY-BCAM-OPTIONS DNS-OPTIONS=*PARAMETERS(DNS-USAGE=*ON)

/MODIFY-DNS-ACCESS IP-ADDRESS-RANGE= -
/*ADD(FROM=172.25.90.135,TO=172.25.90.135)

/MODIFY-DNS-ACCESS IPV6-ADDRESS-RANGE=*NONE
/MODIFY-DNS-ACCESS NAMES=PROC#L#1

/MODIFY-VLAN-ASSIGNMENT IP-ADDRESS-RANGE=*ADD-TO-VLAN (-
/FROM=172.25.90.135, TO=172.25.90.139, VLAN-ID=4)
```

Definition of a router on the VLAN



In this example the router is defined with a route. A router is initially defined as a local processor. The router attribute is then assigned to it.

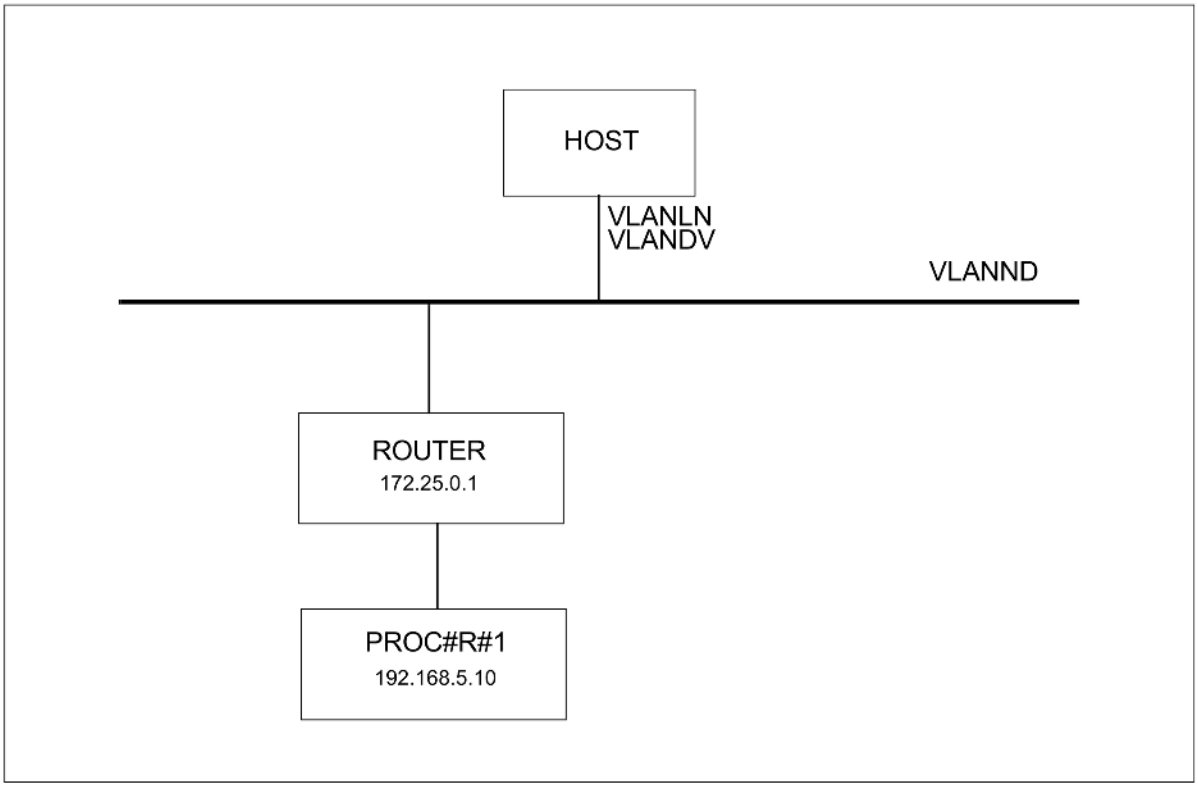
Dynamic generation

```
/REMARK Definition of the VLAN device VLANDV

/REMARK Definition of the VLAN node VLANLN

/CREATE-PROCESSOR PROCESSOR-NAME=ROUTER-
/ ,ADMINISTRATION-TYPE=*BCAM

/CREATE-ROUTE ROUTE-NAME=ROUTER-
/ ,PROCESSOR-NAME=ROUTER-
/ ,PATH=*NODE(-
/   NODE-NAME=VLANND-
/   ,HOST-NAME=*STD-
/   ,LINE-NAME=VLANLN-
/   ,L3-PROTOCOL=*IP(-
/   L4-PROTOCOL=*TCP-
/   ,IP-ADDRESS= 172.25.0.1-
/   ,OWN-IP-ADDRESS=172.25.90.133-
/   ,LAN-ADDRESS=*DYNAMIC))

/MODIFY-ADDRESS-ASSIGNMENT ROUTE-NAME=ROUTER(ADD-IP-NET=*UNKNOWN)
```

Note

A router must be defined using SDF commands. Neither an AEC nor an DNS definition is permissible as the assignment of the router attribute is then not possible.

Definition of a remote processor on the VLAN



The remote processor PROC#R#1 shown in the figure can now be defined using further commands.

Dynamic generation

```
/REMARK Definition of the VLAN device VLANDV

/REMARK Definition of the VLAN node VLANLN

/REMARK Definition of the router ROUTER

/CREATE-PROCESSOR PROCESSOR-NAME=PROC#R#1,ADMINISTRATION-TYPE=*BCAM

/CREATE-ROUTE ROUTE-NAME=PROC#R#1,PATH=*VIA-ROUTER(-
/ROUTER-ROUTE-NAME=ROUTER,L3-PROTOCOL=*IP(IP-ADDRESS= 192.168.5.10))
```

Definition through AEC (automatic end system creation)

The remote processor PROC#R#1 shown in the figure can alternately be specified in the processor file and generated by automatic end system creation. To do this the “automatic end system creation” option must be specified. In addition, the system must be included in the processor file.

Setting options

```
/BCOPTION A-E-C=ON
```

Entry in the processor file

```
PROC#R#1 IP 192.168.5.10
```

Definition through DNS

Another way of defining the remote processor PROC#R#1 is to use DNS. To do this you must start the LWRESD utility routine (by default this is already possible in the DCOPT/ DCSTART command) and specify the option for DNS. DNS accesses can be restricted using the MODIFY-DNS-ACCESS command.

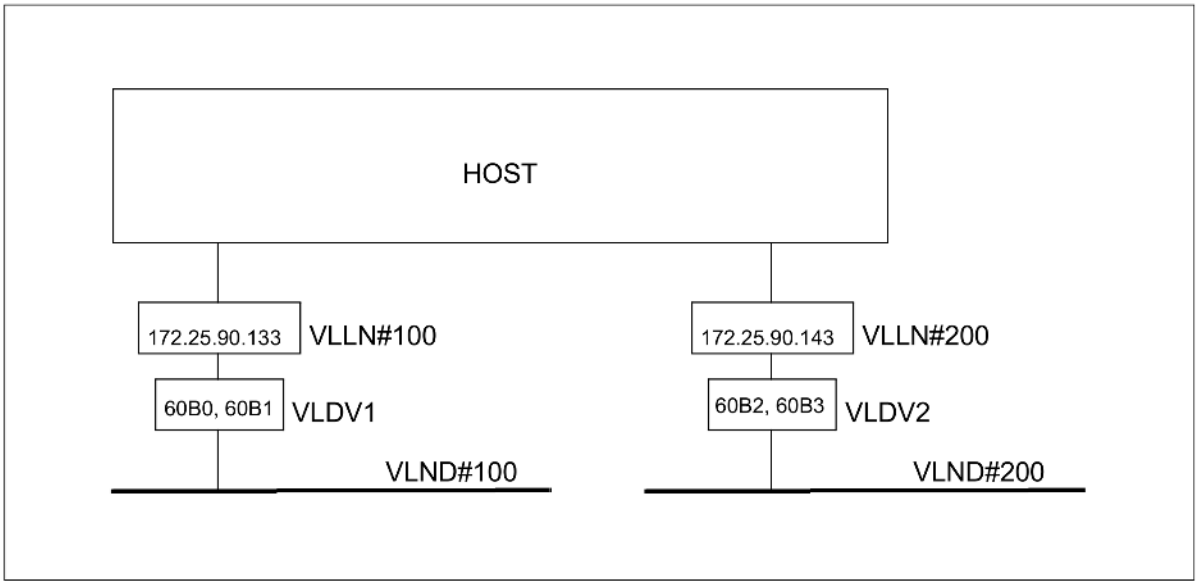
Entries in the SOF file

```
/MODIFY-BCAM-OPTIONS DNS-OPTIONS=*PARAMETERS(DNS-USAGE=*ON)

/MODIFY-DNS-ACCESS IP-ADDRESS-RANGE= -
/ *ADD(FROM= 192.168.5.10,TO= 192.168.5.10)

/MODIFY-DNS-ACCESS IPV6-ADDRESS-RANGE=*NONE

/MODIFY-DNS-ACCESS NAMES=PROC#R#1
```

Definition of multiple VLANs

- Definition of two VLANs with different VLAN devices
- Definition of two VLANs on one VLAN device

Definition of two VLANs with different VLAN devices



If a configuration is expanded through “automatic end system creation”, e.g. by a local processor, without previous definition using CREATE commands and an IP subnet extends over multiple VLANs, the host can address this system only if additional information is available.

Dynamic generation

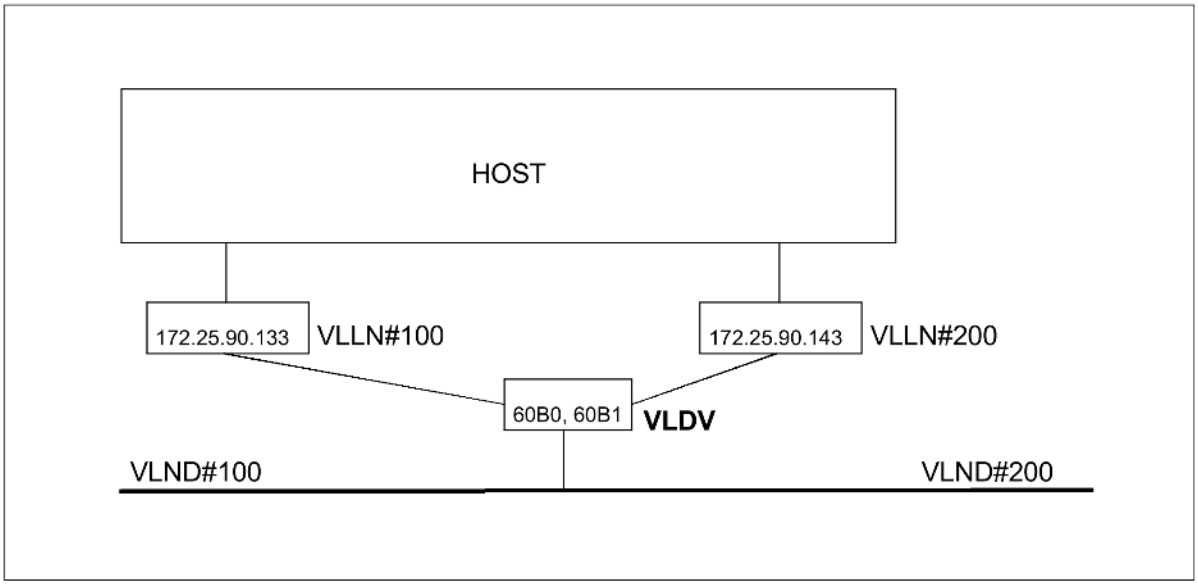
```
/REMARK Definition of the VLAN devices

/CREATE-VLAN-DEVICE DEVICE-NAME=VLDV1-
/ ,WRITE-DEVICE=60B0-
/ ,READ-DEVICE=60B1-
/ ,LAN-ADDRESS=*DYNAMIC-
/ ,MAX-LPDU-SIZE=*STD

/CREATE-VLAN-DEVICE DEVICE-NAME=VLDV2-
/ ,WRITE-DEVICE=60B2-
/ ,READ-DEVICE=60B3-
/ ,LAN-ADDRESS=*DYNAMIC-
/ ,MAX-LPDU-SIZE=*STD

/REMARK Definition of the VLAN nodes and lines

/CREATE-NODE NODE-NAME=VLND#100-
/ ,IP-SUBNET-MASK=255.255.255.128-
/ ,LAN-TYPE=*VIRTUAL(-
/   VLAN-ID=100-
/   ,PRIORITY=*STD)

/CREATE-VLAN-LINE LINE-NAME=VLLN#100-
/ ,HOST-NAME=*STD-
/ ,NODE-NAME=VLND#100-
/ ,DEVICE-NAME=VLDV1-
/ ,IP-ADDRESS=172.25.90.133
```

```
/CREATE-NODE NODE-NAME=VLND#200-
/ ,IP-SUBNET-MASK=255.255.255.128-
/ ,LAN-TYPE=*VIRTUAL(-
/   VLAN-ID=200-
/   ,PRIORITY=*STD)

/CREATE-VLAN-LINE LINE-NAME=VLLN#200-
/ ,HOST-NAME=*STD-
/ ,NODE-NAME=VLND#200-
/ ,DEVICE-NAME=VLDV2-
/ ,IP-ADDRESS=172.25.90.143

/REMARK Definition of the VLAN assignment

/MODIFY-VLAN-ASSIGNMENT IP-ADDRESS-RANGE=*ADD-TO-VLAN(-
/FROM=172.25.90.135,TO=172.25.90.139,VLAN-ID=100)

/MODIFY-VLAN-ASSIGNMENT IP-ADDRESS-RANGE=*ADD-TO-VLAN(-
/FROM=172.25.90.145,TO=172.25.90.149,VLAN-ID=200)
```

Note

As in the preceding examples the local processors, routers and remote processors can be defined.

Definition of two VLANs on one VLAN device



If a configuration is expanded through “automatic end system creation”, e.g. by a local processor, without previous definition using CREATE commands and an IP subnet extends over multiple VLANs, the host can address this system only if additional information is available.

Dynamic generation

```
/REMARK Definition of the VLAN devices VLDV

/CREATE-VLAN-DEVICE DEVICE-NAME=VLDV-
/ ,WRITE-DEVICE=60B0-
/ ,READ-DEVICE=60B1-
/,LAN-ADDRESS=*DYNAMIC-
/ ,MAX-LPDU-SIZE=*BY-DEVICE

/REMARK Definition of the VLAN nodes and lines

/CREATE-NODE NODE-NAME=VLND#100-
/ ,IP-SUBNET-MASK=255.255.255.128-
/ ,LAN-TYPE=*VIRTUAL(-
/   VLAN-ID=100-
/   ,PRIORITY=*STD)

/CREATE-VLAN-LINE LINE-NAME=VLLN#100-
/ ,HOST-NAME=*STD-
/ ,NODE-NAME=VLND#100-
/ ,DEVICE-NAME=VLDV-
/ ,IP-ADDRESS=172.25.90.133

/CREATE-NODE NODE-NAME=VLND#200-
/ ,IP-SUBNET-MASK=255.255.255.128-
/ ,LAN-TYPE=*VIRTUAL(-
/   VLAN-ID=200-
/   ,PRIORITY=*STD)
```

```
/CREATE-VLAN-LINE LINE-NAME=VLLN#200-
/ ,HOST-NAME=*STD-
/ ,NODE-NAME=VLND#200-
/ ,DEVICE-NAME=VLDV-
/ ,IP-ADDRESS=172.25.90.143

/REMARK Definition of the VLAN assignment

/MODIFY-VLAN-ASSIGNMENT IP-ADDRESS-RANGE=*ADD-TO-VLAN(-
/FROM=172.25.90.135,TO=172.25.90.139,VLAN-ID=100)

/MODIFY-VLAN-ASSIGNMENT IP-ADDRESS-RANGE=*ADD-TO-VLAN(-
/FROM=172.25.90.145,TO=172.25.90.149,VLAN-ID=200)
```

Notes

The MAX-LPDU-SIZE=*BY-DEVICE specification in the CREATE-VLAN-DEVICE command means that the first value reported by the real device is adopted as the maximum frame size. Lower values can be set for a VLAN using the MODIFY-VLAN-LINE command.

Example:

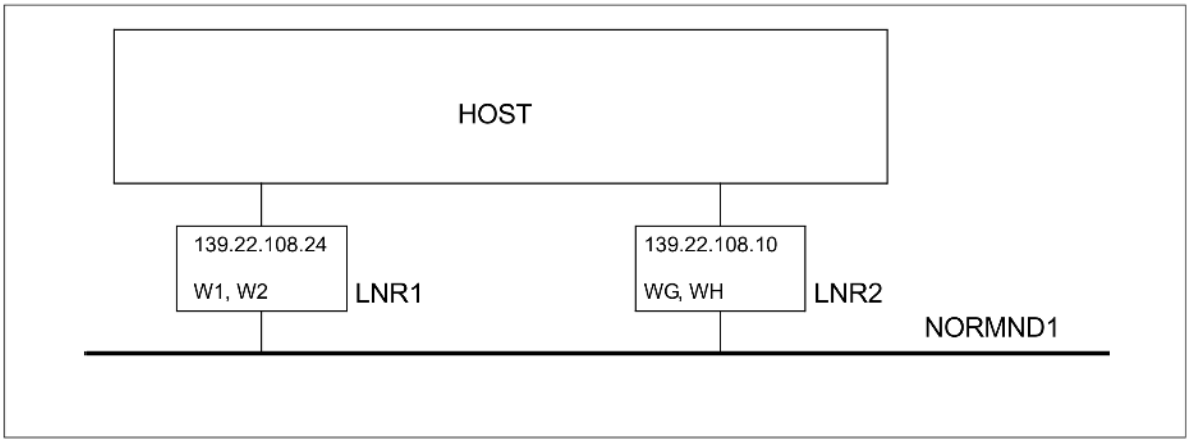
```
/MODIFY-VLAN-LINE LINE-NAME=VLLN#200,-
/MAX-LPDU-SIZE=*STD
```

Consequently, for example, it is possible to group a processor with jumbo frame capability in a VLAN and to assign processors which do not have this capability to another VLAN.

Definition of redundant configurations

In the following first of all a redundant configuration is presented with BCAM commands, and this will then serve as a starting point for the examples of redundant VLAN configurations in order to illustrate differences and similarities in the definitions.

Definition of channel adapter redundancy for a normal LAN



Dynamic generation

```
/CREATE-NODE NODE-NAME=NORMND1,-
/            IP-SUBNET-MASK=255.255.252.0

/CREATE-LINE LINE-NAME=LNR1,-
/            IP-ADDRESS=139.22.108.24,-
/            L2-PROTOCOL=*CSMACD(NODE-NAME=NORMND1,-
/            WRITE-DEVICE=W1,READ-DEVICE=W2)

/CREATE-LINE LINE-NAME=LNR2,-
/            IP-ADDRESS=139.22.108.10,-
/            L2-PROTOCOL=*CSMACD(NODE-NAME=NORMND1,-
/            WRITE-DEVICE=WG,READ-DEVICE=WH)
```

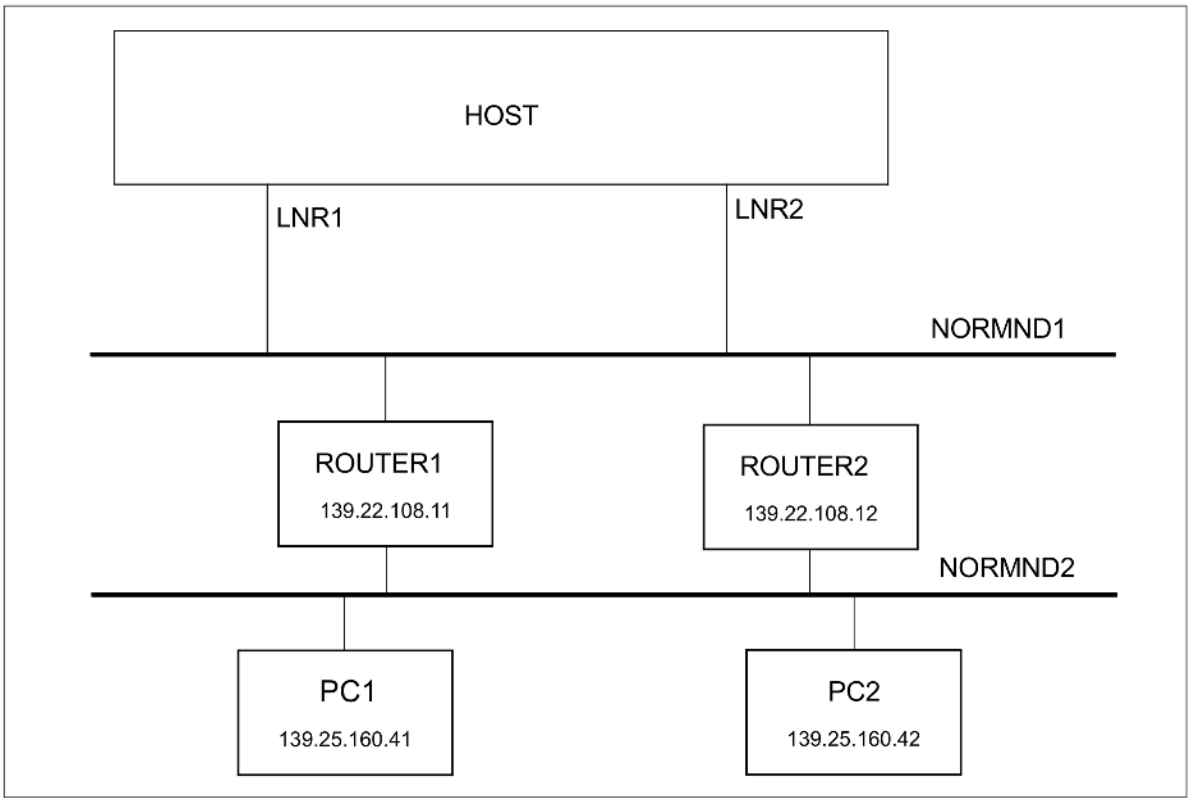
Note

The switching behavior is determined by the default values of the AUTO-ROUTE-SWITCH=*ON and ROUTE-RESWITCHING=*OFF operands when the line is activated. If you subsequently wish to change the behavior this can be done using appropriate MODIFY-LINE commands.

If BCAM is to monitor line failures, this can be set in the SOF file using the LINE-SUPERVISION option.

```
/MODIFY-BCAM-OPTIONS AVAILABILITY-OPTIONS=*PARAMETERS(-
/LINE-SUPERVISION=*ON)
```

Definition of channel adapter and router redundancy for a normal LAN



The example provided above has been extended by the routers, processors and route definitions for remote processors.

Dynamic generation

```
/REMARK Nodes and lines as in preceding example

/CREATE-PROCESSOR PROCESSOR-NAME=ROUTER1

/CREATE-ROUTE ROUTE-NAME=ROUTER1,-
/                  PATH=*NODE(NODE-NAME=NORMND1,-
/                  L3-PROTOCOL=*IP(IP-ADDRESS=139.22.108.11))

/CREATE-PROCESSOR PROCESSOR-NAME=PC1

/CREATE-ROUTE ROUTE-NAME=PC1,-
/                  PATH=*VIA-ROUTER(ROUTER-ROUTE-NAME=ROUTER1,-
/                  L3-PROTOCOL=*IP(IP-ADDRESS=139.25.160.41))

/CREATE-PROCESSOR PROCESSOR-NAME=ROUTER2

/CREATE-ROUTE ROUTE-NAME=ROUTER2,-
/                  PATH=*NODE(NODE-NAME=NORMND1,-
/                  L3-PROTOCOL=*IP(IP-ADDRESS=139.22.108.12))

/CREATE-PROCESSOR PROCESSOR-NAME=PC2
```

```
/CREATE-ROUTE ROUTE-NAME=PC2,-
/                  PATH=*VIA-ROUTER(ROUTER-ROUTE-NAME=ROUTER2,-
/                  L3-PROTOCOL=*IP(IP-ADDRESS=139.25.160.42))
```

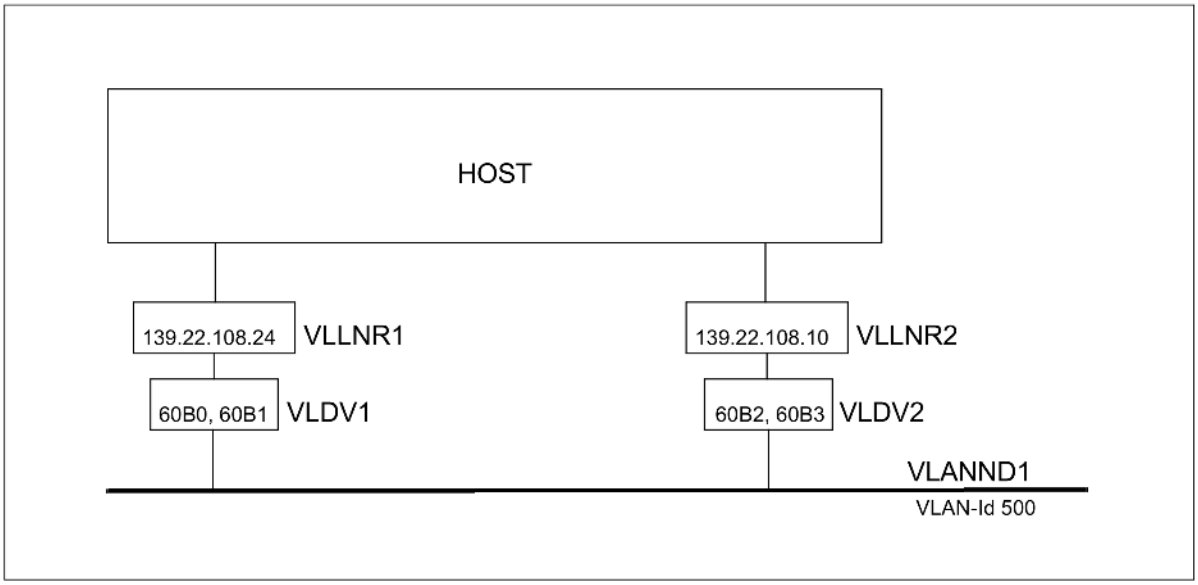
Note

The switching behavior is determined by the default values of the AUTO-ROUTE-SWITCH=*ON and ROUTE-RESWITCHING=*OFF operands when the line is activated. If you subsequently wish to change the behavior this can be done using appropriate MODIFY-LINE commands.

```
/MODIFY-LINE LINE-NAME=LNR1,-
/ ,AUTO-ROUTE-SWITCHING=*ON-
/ ,ROUTE-RESWITCHING=*ON
```

```
/MODIFY-LINE LINE-NAME=LNR2,-
/ ,AUTO-ROUTE-SWITCHING=*ON-
/ ,ROUTE-RESWITCHING=*ON
```

Definition of channel adapter redundancy for a tagged VLAN



In the following a redundant VLAN configuration is presented using only BCAM commands. For this purpose two VLAN-capable device connections are available which are to be operated with tagged frame. The VLAN node is defined with VLAN-ID=500.

Dynamic generation with SDF commands

```
/REMARK Definition of the VLAN devices VLDV1 and VLDV2

/CREATE-VLAN-DEVICE DEVICE-NAME=VLDV1-
/ ,WRITE-DEVICE=60B0-
/ ,READ-DEVICE=60B1-
/ ,LAN-ADDRESS=*DYNAMIC-
/ ,MAX-LPDU-SIZE=*BY-DEVICE-

/CREATE-VLAN-DEVICE DEVICE-NAME=VLDV2-
/ ,WRITE-DEVICE=60B2-
/ ,READ-DEVICE=60B3-
/ ,LAN-ADDRESS=*DYNAMIC-
/ ,MAX-LPDU-SIZE=*BY-DEVICE

/REMARK Definition of the VLAN node VLANND1

/CREATE-NODE NODE-NAME=VLANND1-
/ ,IP-SUBNET-MASK=255.255.255.128-
/ ,LAN-TYPE=*VIRTUAL(-
/   VLAN-ID=500-
/   ,PRIORITY=*STD)

/REMARK Definition of the VLAN lines VLLNR1, VLLNR2
```

```
/CREATE-VLAN-LINE LINE-NAME=VLLNR1-
/ ,HOST-NAME=*STD-
/ ,NODE-NAME=VLANND1-
/ ,DEVICE-NAME=VLDV1-
/ ,IP-ADDRESS=139.22.108.24 -
/ ,AUTO-ROUTE-SWITCHING=*OFF-
/ ,ROUTE-RESWITCHING=*OFF

/CREATE-VLAN-LINE LINE-NAME=VLLNR2-
/ ,HOST-NAME=*STD-
/ ,NODE-NAME=VLANND1-
/ ,DEVICE-NAME=VLDV2-
/ ,IP-ADDRESS=139.22.108.10-
/ ,AUTO-ROUTE-SWITCHING=*OFF-
/ ,ROUTE-RESWITCHING=*OFF
```

Note

The definitions of the VLAN lines permit switching operations to be controlled by the AUTO-ROUTE-SWITCHING and ROUTE-RESWITCHING operands which become effective when the VLAN lines are activated. In this example the switching of the routes is suppressed, but this can be changed later with appropriate MODIFY-VLAN-LINE commands.

```
/MODIFY-VLAN-LINE LINE-NAME=VLLNR1,-
/ ,AUTO-ROUTE-SWITCHING=*ON-
/ ,ROUTE-RESWITCHING=*ON

/MODIFY-VLAN-LINE LINE-NAME=VLLNR2,-
/ ,AUTO-ROUTE-SWITCHING=*ON-
/ ,ROUTE-RESWITCHING=*ON
```

Note

A local processor, e.g. PROC#L#1, can be defined using the options described below.

Definition through AEC (automatic end system creation)

The local processor PROC#L#1 can alternately be specified in the processor file and generated by automatic end system creation. To do this the “automatic end system creation” option must be specified. In addition, the system must be included in the processor file and in the SOF file a MODIFY-VLAN-ASSIGNMENT command must be issued.

Setting options

```
/BCOPTION A-E-C=ON
```

Entry in the processor file

```
PROC#L#1 IP 139.22.108.135
```

Entries in the SOF file

```
/MODIFY-VLAN-ASSIGNMENT IP-ADDRESS-RANGE=*ADD-TO-VLAN (-
/FROM=139.22.108.135, TO=139.22.108.139, VLAN-ID=500)
```

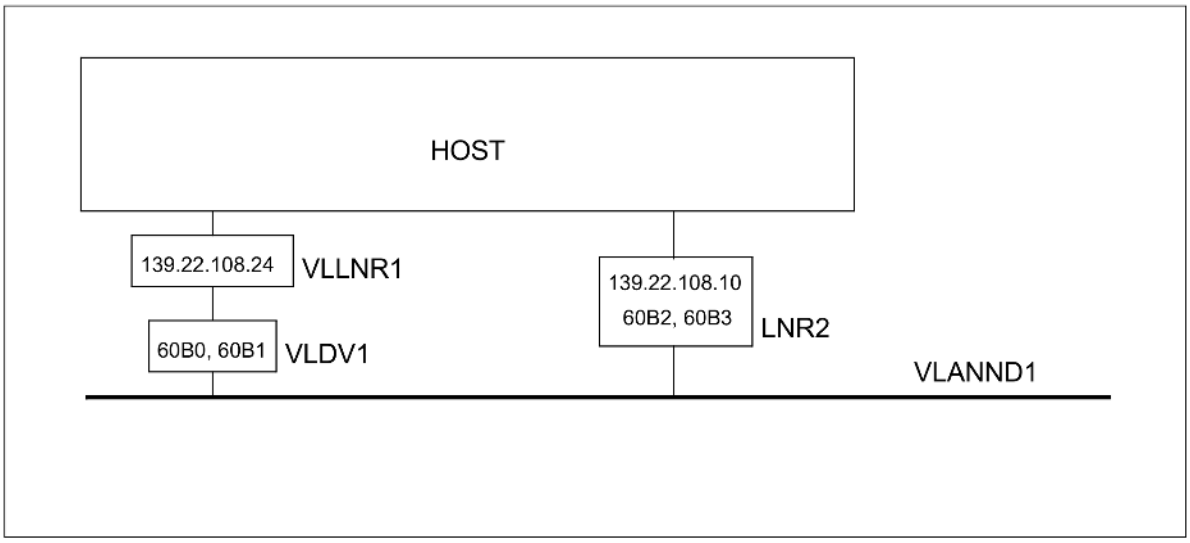
Definition through DNS

Another way of defining the local processor PROC#L#1 is to use DNS. To do this you must start the LWRESD utility routine (by default this is already possible in the DCOPT/ DCSTART command) and specify the option for DNS. DNS accesses can be restricted using the MODIFY-DNS-ACCESS command.

Entries in the SOF file

```
/MODIFY-BCAM-OPTIONS DNS-OPTIONS=*PARAMETERS(DNS-USAGE=*ON)

/MODIFY-DNS-ACCESS IP-ADDRESS-RANGE= -
/*ADD(FROM=139.22.108.135,TO=139.22.108.139)

/MODIFY-DNS-ACCESS IPV6-ADDRESS-RANGE=*NONE
/MODIFY-DNS-ACCESS NAMES=PROC#L#1

/MODIFY-VLAN-ASSIGNMENT IP-ADDRESS-RANGE=*ADD-TO-VLAN (-
/FROM=139.22.108.135, TO=139.22.108.139, VLAN-ID=500)
```

Definition of channel adapter redundancy for a VLAN mixed topology (untagged only)



In the following a redundant VLAN configuration is presented in which a VLAN line and a normal line have been defined at the same node. The device with the device mnemonic (60B2, 60B3) does not support VLAN tags but can be used for defining a redundant configuration if the VLAN is defined as untagged.

Dynamic generation

```
/REMARK Definition of the VLAN device VLDV1

/CREATE-VLAN-DEVICE DEVICE-NAME=VLDV1-
/ ,WRITE-DEVICE=60B0-
/ ,READ-DEVICE=60B1-
/ ,LAN-ADDRESS=*DYNAMIC-
/ ,MAX-LPDU-SIZE=*BY-DEVICE

/REMARK Definition of the VLAN node VLANND1 (untagged)

/CREATE-NODE NODE-NAME=VLANND1-
/ ,IP-SUBNET-MASK=255.255.255.128-
/ ,LAN-TYPE=*VIRTUAL(-
/   VLAN-ID=*UNTAGGED-
/   ,PRIORITY=*STD)

/REMARK Definition of the VLAN line VLLNR1

/CREATE-VLAN-LINE LINE-NAME=VLLNR1-
/ ,HOST-NAME=*STD-
/ ,NODE-NAME=VLANND1-
/ ,DEVICE-NAME=VLDV1-
/ ,IP-ADDRESS=139.22.108.24-
/ ,AUTO-ROUTE-SWITCHING=*OFF-
/ ,ROUTE-RESWITCHING=*OFF

/REMARK Definition of line LNR2
```

```
/CREATE-LINE LINE-NAME=LNR2,-
/            IP-ADDRESS=139.22.108.10,-
/            L2-PROTOCOL=*CSMACD(NODE-NAME=VLANND1,-
/            WRITE-DEVICE=60B2,READ-DEVICE=60B3)
```

Note

The definitions of the VLAN line and a normal line permit switching operations to be controlled by the AUTO-ROUTE-SWITCHING and ROUTE-RESWITCHING operands which become effective when the VLAN line or normal line is activated. In this example the switching of the routes is suppressed, but this can be changed later with appropriate MODIFY-VLAN-LINE commands.

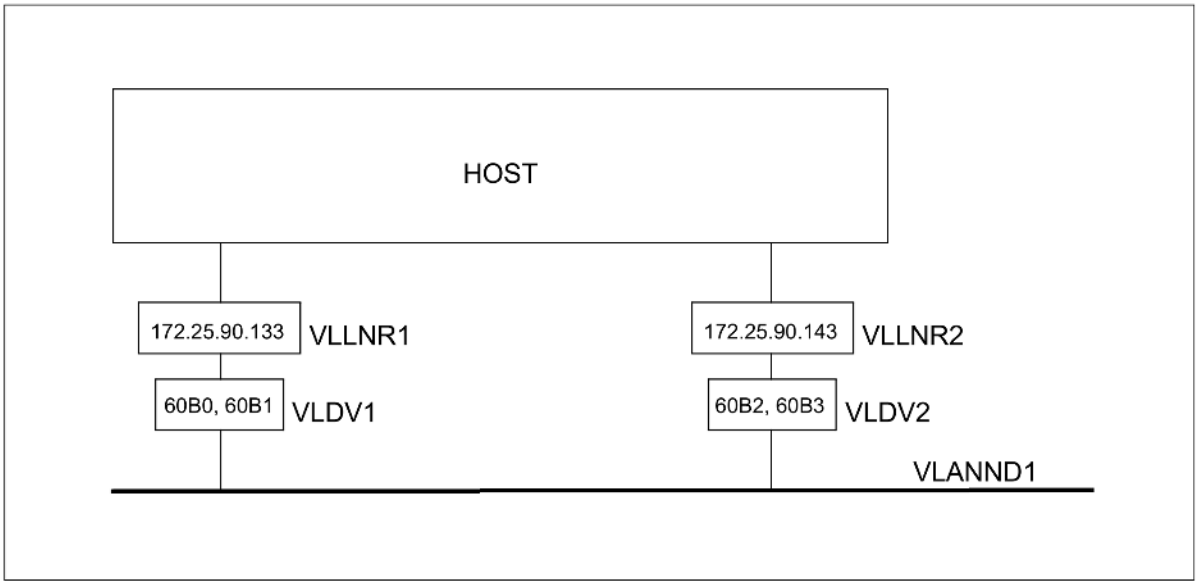
```
/MODIFY-VLAN-LINE LINE-NAME=VLLNR1,-
/ ,AUTO-ROUTE-SWITCHING=*ON-
/ ,ROUTE-RESWITCHING=*ON
```

```
/MODIFY-LINE LINE-NAME=LNR2,-
/ ,AUTO-ROUTE-SWITCHING=*ON-
/ ,ROUTE-RESWITCHING=*ON
```

Note

As in the preceding examples the local processors, routers and remote processors can be defined.

Definition of channel adapter redundancy for an untagged VLAN



In the following a redundant VLAN configuration is presented using only BCAM commands. For this purpose two VLAN-capable and operated device connections are available which are to be operated without tagged frame. The VLAN node must be defined with VLAN-ID=*UNTAGGED.

Dynamic generation

```
/REMARK Definition of the VLAN devices VLDV1 and VLDV2

/CREATE-VLAN-DEVICE DEVICE-NAME=VLDV1-
/ ,WRITE-DEVICE=60B0-
/ ,READ-DEVICE=60B1-
/ ,LAN-ADDRESS=*DYNAMIC-
/ ,MAX-LPDU-SIZE=*BY-DEVICE

/CREATE-VLAN-DEVICE DEVICE-NAME=VLDV2-
/ ,WRITE-DEVICE=60B2-
/ ,READ-DEVICE=60B3-
/ ,LAN-ADDRESS=*DYNAMIC-
/ ,MAX-LPDU-SIZE=*BY-DEVICE

/REMARK Definition of the VLAN node VLANND1

/CREATE-NODE NODE-NAME=VLANND1-
/ ,IP-SUBNET-MASK=255.255.255.128-
/ ,LAN-TYPE=*VIRTUAL(-
/   VLAN-ID=*UNTAGGED-
/   ,PRIORITY=*STD)

/REMARK Definition of the VLAN lines VLLNR1, VLLRN2
```

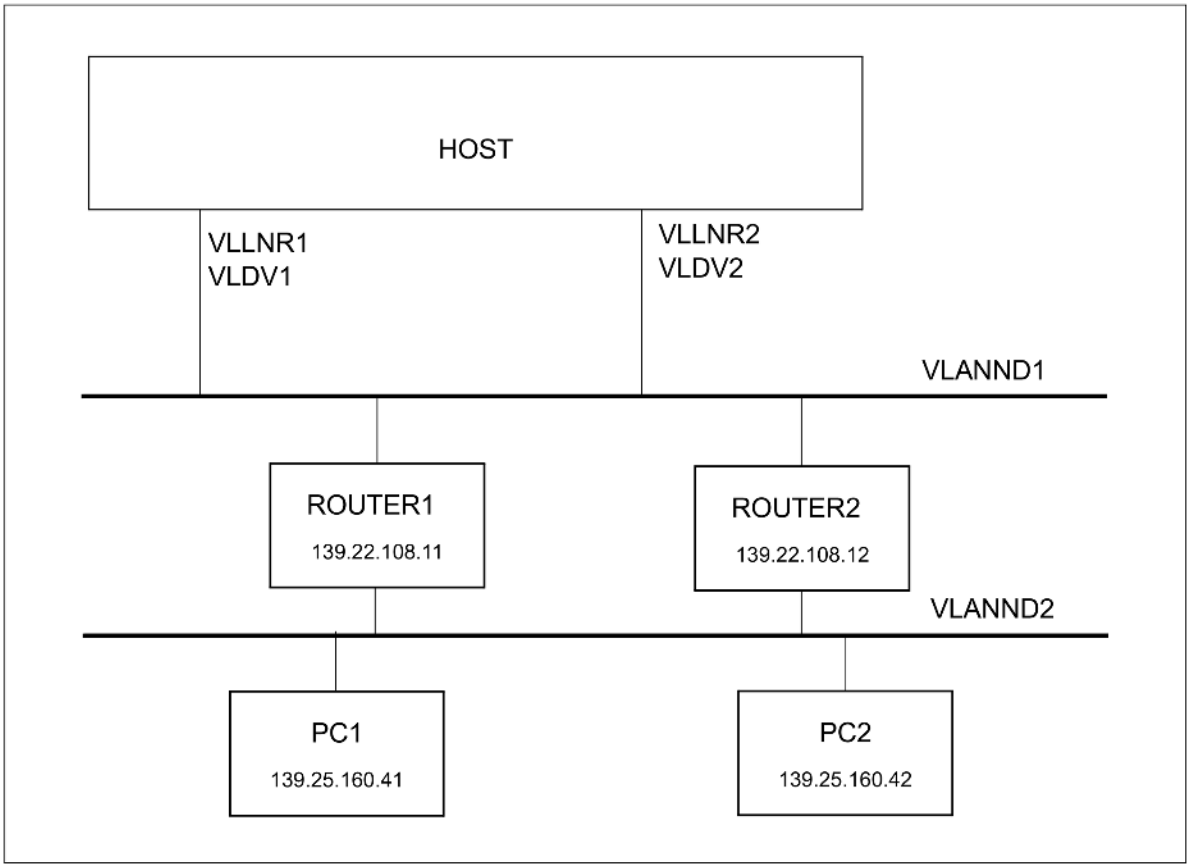
```
/CREATE-VLAN-LINE LINE-NAME=VLLNR1-
/ ,HOST-NAME=*STD-
/ ,NODE-NAME=VLANND1-
/ ,DEVICE-NAME=VLDV1-
/ ,IP-ADDRESS=139.22.108.24-
/ ,AUTO-ROUTE-SWITCHING=*OFF-
/ ,ROUTE-RESWITCHING=*OFF

/CREATE-VLAN-LINE LINE-NAME=VLLNR2-
/ ,HOST-NAME=*STD-
/ ,NODE-NAME=VLANND1-
/ ,DEVICE-NAME=VLDV2-
/ ,IP-ADDRESS=139.22.108.10-
/ ,AUTO-ROUTE-SWITCHING=*OFF-
/ ,ROUTE-RESWITCHING=*OFF
```

Note

The definitions of the VLAN lines permit switching operations to be controlled by the AUTO-ROUTE-SWITCHING and ROUTE-RESWITCHING operands which become effective when the VLAN lines are activated. In this example the switching of the routes is suppressed, but this can be changed later with appropriate MODIFY-VLAN-LINE commands.

```
/MODIFY-VLAN-LINE LINE-NAME=VLLNR1,-
/ ,AUTO-ROUTE-SWITCHING=*ON-
/ ,ROUTE-RESWITCHING=*ON

/MODIFY-VLAN-LINE LINE-NAME=VLLNR2,-
/ ,AUTO-ROUTE-SWITCHING=*ON-
/ ,ROUTE-RESWITCHING=*ON
```

Definition of channel adapter and router redundancy for a VLAN



In the following a redundant VLAN configuration is presented using only BCAM commands. For definition purposes VLAN-capable devices are used which can be defined as tagged or untagged.

Dynamic generation

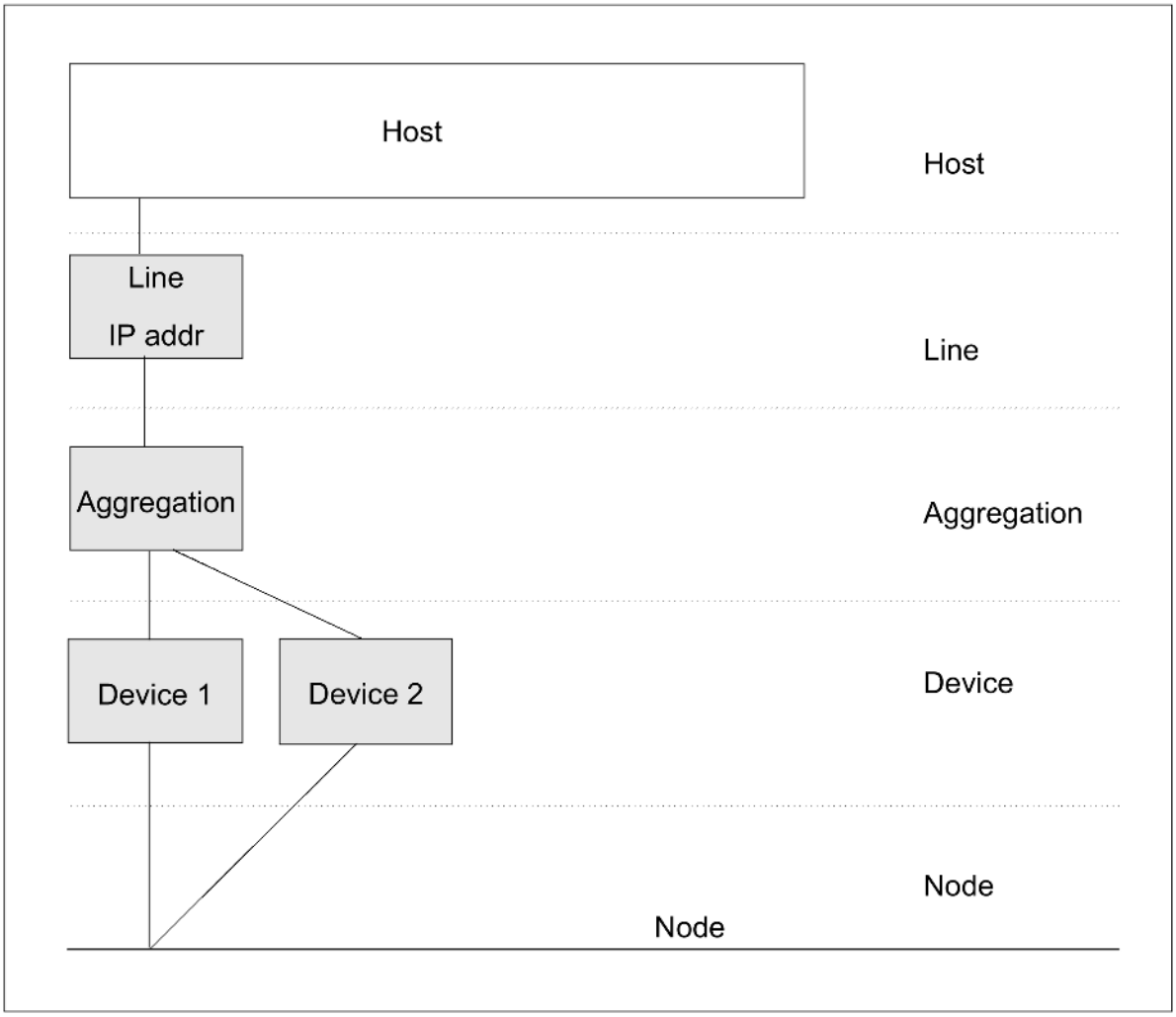
```
/REMARK Definition of the VLAN devices VLDV1 and VLDV2

/REMARK Definition of the VLAN node VLANND1

/REMARK Definition of the VLAN lines VLLNR1, VLLNR2

/REMARK Definition of the router and remote processor

/CREATE-PROCESSOR PROCESSOR-NAME=ROUTER1

/CREATE-ROUTE ROUTE-NAME=ROUTER1,-
/             PATH=*NODE(NODE-NAME=VLANND1,-
/             L3-PROTOCOL=*IP(IP-ADDRESS=139.22.108.11))

/CREATE-PROCESSOR PROCESSOR-NAME=PC1

/CREATE-ROUTE ROUTE-NAME=PC1,-
/             PATH=*VIA-ROUTER(ROUTER-ROUTE-NAME=ROUTER1,-
/             L3-PROTOCOL=*IP(IP-ADDRESS=139.25.160.41))

/CREATE-PROCESSOR PROCESSOR-NAME=ROUTER2
```

```
/CREATE-ROUTE ROUTE-NAME=ROUTER2,-
/             PATH=*NODE(NODE-NAME=VLANND1,-
/             L3-PROTOCOL=*IP(IP-ADDRESS=139.22.108.12))

/CREATE-PROCESSOR PROCESSOR-NAME=PC2

/CREATE-ROUTE ROUTE-NAME=PC2,-
/             PATH=*VIA-ROUTER(ROUTER-ROUTE-NAME=ROUTER2,-
/             L3-PROTOCOL=*IP(IP-ADDRESS=139.25.160.42))
```

Examples of link aggregations

- Definition of a link aggregation with one line
- Definition of a link aggregation with multiple VLAN lines

Definition of a link aggregation with one line



The example shows how two devices (VLAN devices) are aggregated. Only one IP address and one MAC address which are assigned to the link aggregation are visible to the outside. You enter the IP address when defining the line. BCAM and the device connections interwork to distribute the load over the individual devices.

Definition of the link aggregation

```
/CREATE-LINK-AGGREGATION AGGREGATION-NAME=AGGRE#01

/CREATE-VLAN-DEVICE DEVICE-NAME=D#AGG#A1, -
/WRITE-DEVICE=AA01,READ-DEVICE=AA02,AGGREGATION-NAME=AGGRE#01

/CREATE-VLAN-DEVICE DEVICE-NAME=D#AGG#A2, -
/WRITE-DEVICE=AA03,READ-DEVICE=AA04,AGGREGATION-NAME=AGGRE#01

/CREATE-NODE NODE-NAME=NODE#VA1,LAN-TYPE=*VIRTUAL(VLAN-ID=*UNTAGGED)

/CREATE-VLAN-LINE LINE-NAME=L#VLAN#1,NODE-NAME=NODE#VA1, -
/IP-ADDRESS=172.25.92.77,AGGREGATION-NAME=AGGRE#01, -
/ MAX-LPDU-SIZE=*BY-DEVICE
```

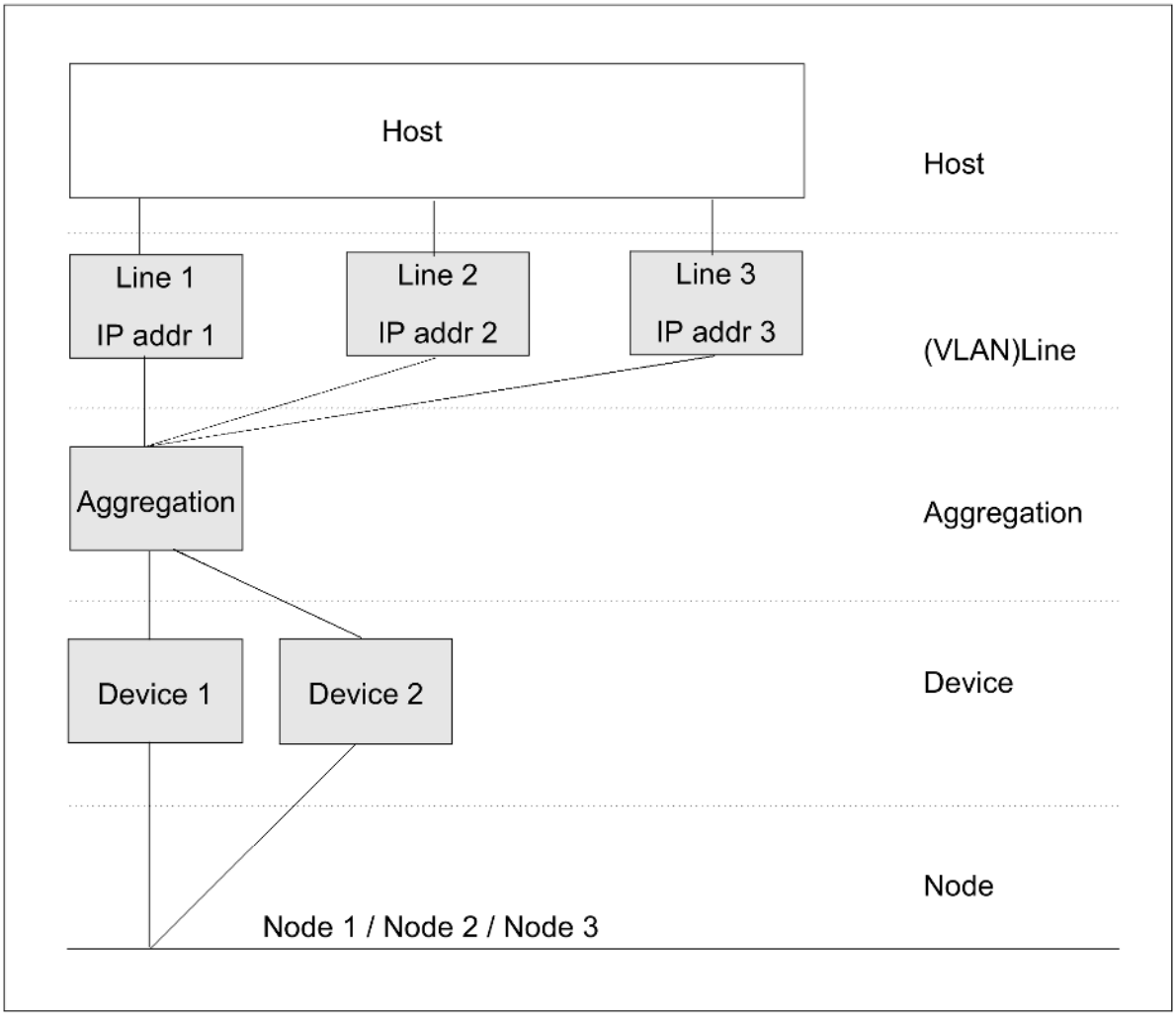
Activating the link aggregation

```
/ACTIVATE-LINK-AGGREGATION AGGREGATION-NAME=AGGRE#01
/ACTIVATE-VLAN-DEVICE DEVICE-NAME=D#AGG#A1
/ACTIVATE-VLAN-DEVICE DEVICE-NAME=D#AGG#A2
/ACTIVATE-VLAN-LINE LINE-NAME=L#VLAN#1
/BCACT NODE=NODE#VA1
```

Note

Instead of the *UNTAGGED specification for a VLAN ID in the CREATE-NODE command, you can also assign a VLAN ID. The specification *UNTAGGED corresponds to a normal line. Assigning a VLAN ID leads directly to a VLAN configuration.

Definition of a link aggregation with multiple VLAN lines



Defining the link aggregation with multiple VLAN lines

```
/CREATE-LINK-AGGREGATION AGGREGATION-NAME=AGGRE#01

/CREATE-VLAN-DEVICE DEVICE-NAME=D#AGG#A1, -
/WRITE-DEVICE=AA01,READ-DEVICE=AA02,AGGREGATION-NAME=AGGRE#01

/CREATE-VLAN-DEVICE DEVICE-NAME=D#AGG#A2, -
/WRITE-DEVICE=AA03,READ-DEVICE=AA04,AGGREGATION-NAME=AGGRE#01

/CREATE-NODE NODE-NAME=NODE#VA1,LAN-TYPE=*VIRTUAL(VLAN-ID=129)

/CREATE-VLAN-LINE LINE-NAME=L#VLAN#1,NODE-NAME=NODE#VA1, -
/IP-ADDRESS=172.25.92.77,AGGREGATION-NAME=AGGRE#01, -
/MAX-LPDU-SIZE=*BY-DEVICE

/CREATE-NODE NODE-NAME=NODE#VA2,LAN-TYPE=*VIRTUAL(VLAN-ID=229)

/CREATE-VLAN-LINE LINE-NAME=L#VLAN#2,NODE-NAME=NODE#VA2, -
/IP-ADDRESS=172.25.92.67,AGGREGATION-NAME=AGGRE#01, -
/MAX-LPDU-SIZE=*BY-DEVICE
```

```
/CREATE-NODE NODE-NAME=NODE#VA3,LAN-TYPE=*VIRTUAL(VLAN-ID=329)

/CREATE-VLAN-LINE LINE-NAME=L#VLAN#3,NODE-NAME=NODE#VA3, -
/IP-ADDRESS=172.25.92.57,AGGREGATION-NAME=AGGRE#01, -
/MAX-LPDU-SIZE=*BY-DEVICE
```

Activating the link aggregation

```
/ACTIVATE-LINK-AGGREGATION AGGREGATION-NAME=AGGRE#01
/ACTIVATE-VLAN-DEVICE DEVICE-NAME=D#AGG#A1
/ACTIVATE-VLAN-DEVICE DEVICE-NAME=D#AGG#A2
/ACTIVATE-VLAN-LINE LINE-NAME=L#VLAN#1
/ACTIVATE-VLAN-LINE LINE-NAME=L#VLAN#2
/ACTIVATE-VLAN-LINE LINE-NAME=L#VLAN#3
/BCACT NODE=NODE#VA1
/BCACT NODE=NODE#VA2
/BCACT NODE=NODE#VA3
```

Appendix

This chapter provides information about changes to the last two BCAM versions V22.0 and V23.0 compared to their previous versions V21.0 and V22.0.

Changes of BCAM V22.0A compared to BCAM V21.0A

The manual for BCAM V22.0 contains the following changes compared to the description of BCAM V21.0.

General changes

- Revision with respect to PDN/TRANSDATA

  The BCAM manual has been revised with respect to PDN/TRANSDATA as NEA networks are no longer supported in the current product range. This has the following repercussions:

  - Tables, figures and texts have been checked to see whether they refer to NEA and updated accordingly.
  - NEA-specific examples have been removed or, when necessary, updated.
  - The “Commands” chapter has been completely revised. NEA- and PDN-specific parameters are no longer described.

  The chapter “Description of the KOGS language” was excluded from the PDN/TRANSDATA revision as customers still use various sources for static generation.

  > **i** You are expressly recommended to use the BCAM commands for current generations of network configurations as these permit the entire range of network connections. Static generation, on the other hand, only offers a restricted functional scope.
  >
  > Mixed generation is not possible. However, when new generation takes place, static generation should be dispensed with completely.

- New chapter "Diagnosis"

  The description of the diagnostic tools has been has been removed from the chapter "Operation" of the previous manual and summarized in this chapter. The description of the PING and BCA-PING programs has been removed.

- New chapter "BCAM control files"

  The descriptions of the BCAM control files which were previously distributed throughout the entire manual have been concentrated in this chapter.

- New chapter "BCAM functions"

  The BCAM functions were contained in the chapter "Generating a network configuration" and have now been removed from it.

- New chapter "DNS Resolver connection"

  This chapter was taken from the chapter "Generating a network configuration" in order to describe the newly ported bind basis as an autonomous function.

- The chapter "Messages" has been revised.

  This chapter now only contains a brief description of how you can create or display the messages of BCAM and openNet Server. The description of the various messages will be integrated into the “BS2000/OSD system messages” help system.

- New chapter "Examples"

  The bulk of this chapter was taken from the chapter "Generating a network configuration" in order to focus on the most important information on static and dynamic generation.

- The chapter "Appendix" has been revised.

The Appendix now only describes the changes in the last two BCAM versions (V20.0 and V21.0). The description of the BCAxxxx messages will be integrated into the “BS2000/OSD system messages” help system.

“Operand settings” table

The “Operand settings - BS2000 session” table in the chapter “Operation” has been complemented by the DNS-USAGE, FQDN-TABLE and SERVICES-TABLE operands.

New functionality

- Support of Fully Qualified Domain Names (FQDNs) at a subsequent level. In particular support of FQDN by BCAM File Handling.
- Description of the processing method of the FQDN file and of the record layout for automatic end system creation. The FQDN file is described in the chapter "BCAM control files".
- Support of the SERVICES table (services file) by BCAM File Handling. The processing method of the services file and of the record layout is described in the chapter “BCAM control files.”
- Introduction of the BCAM-EDIT commands on the basis of the SHOW functions which are available which offer S variables. For details see the section “New commands”.
- In NETSTAT the output of the DEVICE-VALUES is supported for VLAN devices as with the INTERFACE-VALUES for lines.
- To detect address conflicts, BCAM supports RFC 5227 “Address Conflict Detection.”

New commands

- EDIT-BCAM-OBJECT
  - When you use BCAM edit commands on BCAM objects such as hosts, (VLAN) lines, VLAN devices, processors and routes, you can set up ACTIVATE, CREATE, DEACTIVATE, MODIFY and SHOW commands for these BCAM objects provided they are possible in BCAM.
- EDIT-BCAM-OPTIONS
  - Display and modify the BCAM options currently set.
- EDIT-HOST-ATTRIBUTES
  - Display and modify the host-specific settings.
- EDIT-LINE
  - Display and modify the line-specific settings.
- EDIT-ROUTE-ATTRIBUTES
  - Display and modify the route-specific settings.
- EDIT-VLAN-DEVICE
  - Display and modify the device-specific settings.
- EDIT-VLAN-LINE
  - Display and modify the VLAN line-specific settings.
- SHOW-APPLICATION-BASICS
  - Display in the form of a table of the basic information for applications.
  - This command is provided for diagnostic purposes.
- SHOW-CONNECTION-BY-NAME

- Display information on connections.
- This command is provided for diagnostic purposes.

- SHOW-TSAP-OPEN
  - Display information on TSAPs

Modified commands

- BCMOD
  - New operand FQDN-TABLE
  - New operand SERVICES-TABLE
- BCOPTION
  - TCP-KEEP-ALIVE operand
  - SERVER-PORTNUMBER operand no longer supported
- CREATE-LINK-AGGREGATION
  - Generated LAN address expanded
- DCOPT
  - New operand FQDN-TABLE
  - New operand SERVICES-TABLE
  - Default setting of the DADM operand modified
- DCSTART
  - New operand FQDN-TABLE
  - New operand SERVICES-TABLE
  - Default setting of the DADM operand modified
- MODIFY-BCAM-OPTIONS
  - Operand TCP-KEEP-ALIVE
- MODIFY-LINE
  - New operand ADDR-CONFLICT-DETECT
- MODIFY-VLAN-LINE
  - New operand ADDR-CONFLICT-DETECT
- SHOW-BCAM-ATTRIBUTES
  - Display the name of the FQDN-TABLE
  - Display the name of the SERVICES-TABLE
- SHOW-BCAM-PARAMETERS
  - New S variable FQDN-TAB.F-NAME
  - New S variable SERVICES-TAB.F-NAME
- SHOW-BCAM-ENVIRONMENT
  - New operand ROUTE-NAME
  - New operand value INFORMATION=*EDIT-CMDS
- SHOW-BCAM-OBJECTS
  - New operand INFORMATION

  - New values of the INFORMATION operand:
    *STD, *ACTIVATE-CMDS, *DEACTIVATE-CMDS,
    *EDIT-CMDS, *MODIFY-CMDS und *SHOW-CMDS
  - New operand OUTPUT
- SHOW-BCAM-START-PARAMETERS
  - New S variable FQDN-TAB.F-NAME
  - New S variable SERVICES-TAB.F-NAME
- SHOW-LINE
  - New operand value INFORMATION=*ADDR-CONFLICT-DETECT
- SHOW-LINE-ATTRIBUTES
  - S variable: output extended
- SHOW-LINK-AGGREGATION-ATTR
  - S variable: output of the generated LAN address removed
- SHOW-NET-STATISTICS/NETSTAT
  - New operand DEVICE-VALUES
- SHOW-OWN-ADDRESS
  - New operand ADDRESS-STATE
- SHOW-VLAN-LINE
  - New operand value INFORMATION=*ADDR-CONFLICT-DETECT
- SHOW-VLAN-LINE-ATTRIBUTES
  - S variable: output extended

Changes to tables for the command return codes

- Missing command return codes have been added.

Changes to tables and figures

- The figure in the chapter Diagnosis for SET-COMMUNICATION-TRACE has been updated as SOCKETS no longer uses this functionality.
- The figure illustrating host redundancy has been updated.
- The figure illustrating the activation sequence in the chapter “Operation” has been updated.
- The table showing the different methods of defining a network configuration in the chapter "Generating a network configuration" has been revised.

Changes in the chapter "Generating a network configuration"

- Section “Checking the network file (RDF, SOF) with RDFCHECK“

  New section “Prerequisites and restrictions” with information on using the RDFCHECK program.
- The outputs for the examples after the SYSPRC.BCAM.<bcam-vers>.RDFCHECK procedure has been called have been deleted.
- Numerous configuration examples for NEA networks have been removed.
- The chapter has been split up, resulting in the following new chapters: chapter "BCAM functions", chapter "DNS Resolver connection", chapter "Examples"

Changes in ASTRID

- FILE
  - New operand values TYPE=FQDN-TABLE and TYPE=SERVICES-TABLE
- TRACE/TRC
  - New operand value ONETSTOR

Messages with BCA identification - general modifications

It is explained how current information about the BCAM messages is obtained directly via MSGMAKER. The new, modified and deleted messages are documented in the message file.

Changes of BCAM V23.0A compared to BCAM V22.0A

The manual for BCAM V23.0 contains the following changes compared to the description of BCAM V22.0.

General changes

- BCAM-CMD is not available as a delivery unit; it is a subsystem.
- The section "Address conflicts" in chapter "Operation" has been revised with respect to the handling of address conflicts.
- The SHOW-BCAM-INFO functions which are used for diagnostic purposes are described.
- The DNS servers must be entered in the FQDN file with an FQDN name. A corresponding entry for a DNS server in the processor file can be omitted.
- In view of the introduction of the SE server line, the names S server and SQ server have as far as possible been removed from the general descriptions.
- Support of the internal control LAN which uses IPv6 functionality has been introduced for SE servers. This LAN is reserved for Customer Support. It is used to support display functions and for administration of the SE server.
- Templates for supporting initial installation of an SE server have been introduced.
- The description of the processor file has been adjusted, and the example for the processor file has been enhanced.
- The version-specific descriptions of the SYSPRC file of BCAMDEF have been adjusted.
- A brief description of the diagnostic program NSLOOKUP is also provided in chapter "DNS Resolver connection".

“Operand settings” table

The table in section "Operand settings" has been complemented by the IPV6-SUPPORT, IPV6-VLAN-AUTO-CONFIG and IPV6-PREFIX-LEN-CTRL operands. The text on IPV6-AUTO-CONFIG has been corrected.

New functionality

New commands

- ACTIVATE-OWN-ADDRESS
  - This command is used to activate individual addresses. The addresses concerned here are in the “invalid” status. The assigned line need not be deactivated and reactivated as other addresses which are being actively used can be assigned to the line/VLAN line.
- DEACTIVATE-OWN-ADDRESS
  - This command is used to deactivate individual addresses. The assigned line need not be deactivated as other addresses can be assigned to the line/VLAN line.
- SHOW-BCAM-ADDRESS
  - This command is used to display addresses which are known to BCAM (own and partner addresses) and their activation status.
- SHOW-BCAM-INFO commands

  All the following commands are based on existing BCAM-SHOW functions and can only be specified in interactive mode:
  - SHOW-BCAM-INFO-ADDRESS

    Show BCAM information on an address.
  - SHOW-BCAM-INFO-BASIC

    Show BCAM basic information.
  - SHOW-BCAM-INFO-CONFIG

    Show BCAM configuration information.
  - SHOW-BCAM-INFO-NAME

    Show information on BCAM objects which are selected by means of a name.
  - SHOW-BCAM-INFO-TOOLS

    Show information on the BCAM tools.

Modified BCAM commands

- BCMOD
  - ACCESS operand: New operand value ALLOW.
- BCMON
  - RECORD operand: New operand value SIH-TIME.
  - INFO operand (for LAYER2): New operand value IO-TIME.
  - INFO operand (for VLAN-DEVICE): New operand values IO-TIME and UNICASTS.
  - Description of why the new output messages BCA0B5C, BCA0B5D, BCA0B60, BCA0B61 and BCA0B62 are output.
- BCSET
  - New operand value I/O-DATA when selecting the trace events of PORT.
  - New operand I/O-TYPE when selecting the trace events of PORT.
  - Default of the trace length of PORT, V-PORT and G-PORT adjusted to 132.
- BCSHOW
  - New message BCA08EC for non-standard TYPE-OF-NODE.
- BCTIMES
  - DATAGRAM operand: Default changed.
- CREATE-LINE
  - Revision of the formulation with respect to the line groups.
- CREATE-NODE
  - New operand TYPE-OF-NODE
- CREATE-VLAN-LINE
  - Revision of the formulation with respect to line groups.
- DCDIAG
  - The maximum size of the buffer (previously the product from BUFNUM*BUFLEN) is no longer checked.
- DCOPT
  - ACCESS operand: New operand value ALLOW.
- DCSTART
  - ACCESS operand: New operand value ALLOW.
- GENERATE-BCAM-CMD-FILE
  - New operand EXPAND-OPERAND.
- MODIFY-BCAM-OPTIONS
  - MAX-TSDU-FOR-CREATE operand visible as with BCOPTION.
- MODIFY-DNS-ACCESS
  - DNS-RESOLVER operand made visible with suboperands.
- MODIFY-LINE
  - New operand IPV6-AUTO-CONFIG.
  - ADDR-CONFLICT-DETECT operand: Default adjusted.

- MODIFY-VLAN-LINE
  - New operand IPV6-VLAN-AUTO-CONF.
  - ADDR-CONFLICT-DETECT operand: Default adjusted.
- SHOW-BCAM-ATTRIBUTES
  - New operand value SIH-TIME in the selction for BCAM monitoring.
- SHOW-BCAM-ENVIRONMENT
  - New operand LINE-NAME which restricts the output to the line and VLAN line information.
- SHOW-BCAM-OBJECTS
  - New operand EXPAND which influences the output information with respect to the operands output.
  - New operand FORMAT which influences the output information with respect to the output format on screen or to file.
  - New operand SEARCH in which a search string can be specified.
- SHOW-DNS-ACCESS
  - SELECT operand: Operand value DNS-RESOLVER made visible.
  - S variables for DNS-RESOLVER now are visible.
- SHOW-LINE
  - INFORMATION operand: New operand values *MAX-LPDU-VALUE, *OFFLOAD and *IPV6-AUTO-CONF.
- SHOW-LINE-ATTRIBUTES
  - New S variable for IPV6-AUTO-CONF.
  - New S variable for (TCP-)OFFLOAD.
  - New S variable for ADDR.IP-ADDR-STA.
  - New S variable for ADDR.IPV6-ADDR-STA.
  - New S variable for ADDR.ISO-ADDR-STA.
  - New S variable for ADDR.LAN-ADDR-STA.
- SHOW-NODE
  - New message BCA08EC for non-standard TYPE-OF-NODE.
- SHOW-OWN-ADDRESS
  - ADDRESS-TYPE operand: New operand value *LAN.
  - ADDRESS-STATUS operand: New operand value *DUPLICATE.
- SHOW-VLAN-DEVICE
  - INFORMATION operand: New operand value *OFFLOAD.
- SHOW-VLAN-DEVICE-ATTRIBUTES
  - New S variable for (TCP-) OFFLOAD.
- SHOW-VLAN-LINE
  - INFORMATION operand: New operand values *IPV6-VLAN-AUTO-CONF and *OFFLOAD.
- SHOW-VLAN-LINE-ATTRIBUTES
  - New S variable for IPV6-VLAN-AUTO-CONF.
  - New S variable for (TCP-)OFFLOAD.
  - New S variable for ADDR.IP-ADDR-STA.

- New S variable for ADDR.IPV6-ADDR-STA.
- New S variable for ADDR.ISO-ADDR-STA.
- New S variable for ADDR.LAN-ADDR-STA.

Changes to tables for the command return codes

- Missing command return codes have been added.

Changes in ASTRID

- PORT
  - CB operand: New operand value IDAW-BUFFER, description of the operand values *STD and *TOTAL modified.
- ALL
  - Modified operand value PORT *ALL,CB=(*STD,STACK),.. .
- TOTAL
  - New operand values PORT *ALL,CB=(*STD,STACK),.. .
- STD
  - Modified operand value PORT *ALL,CB=*STD,.. .

Messages with BCA identification - general modifications

It is explained how current information about the BCAM messages is obtained directly via MSGMAKER. The new, modified and deleted messages are documented in the message file.

Changes of BCAM V24.0A compared to BCAM V23.0A

The manual for BCAM V24.0 contains the following changes compared to the description of BCAM V23.0.

General changes

- The description of the static generation (RDF) and KOGS has been removed from this manual, except for some necessary explanations.

  An RDF from older BCAM versions can still be read in using DCSTART, however, the parameter with NEA addressing (PDN) will not be evaluated.
- Partner systems must have a unique BCAM name comprising up to 8 characters and must be entered into the FQDN.
- The IPv4 compatible IPv6 address (IPv6 prefix: ::0/96) is no longer supported.
- FDDI is no longer supported.
- The description of the LWRESD installation has been improved.
- References to literature have been revised completely: the sections “White Papers”, “Helpful Links” and “Ordering RFCs” have been removed, as some of the information is outdated or links are no longer available.

New functionality

New commands

- PICK-BCAM-INFO
  - This command is used to filter the output information of the openNet server tools, the SHOW functions of BCAM and BCAM-CMD or any SHOW function for a search string.
- PREP-BCAM-INFO-MSG
  - This command is used for SHOW functions of BCAM that are implemented via BCAM messages output. It prepares the output and also enables filtering for a search string.

Amended BCAM commands

- BCSET
  - The PROFILE operand has been removed as the PORT trace selection to PROFILE is no longer supported (differentiation no longer possible as FDDI is no longer supported).
- MODIFY-ROUTE
  - Support for the WAN function has been removed.
  - The timer settings for the AK timer and the ERROR-RECOVERY timer have been removed.
- MODIFY-ROUTE-ATTRIBUTES
  - Support for the WAN function has been removed.
  - The timer settings for the AK timer and the ERROR-RECOVERY timer have been removed.
- MODIFY-ROUTE-PATH
  - Support for the WAN function has been removed.
- SHOW-BCAM-ADDRESS
  - INFORMATION operand: new TRANSFER-DATA operand value to show the volume of the transferred data. Furthermore, some runnable subsequent operations concerning the data transfer have been introduced.
- SHOW-BCAM-ENVIRONMENT
  - INFORMATION operand: new TRANSFER-DATA operand value for receiving information on the transfer data.
- SHOW-BCAM-INFO commands

  The output information of the following commands has been revised:
  - SHOW-BCAM-INFO-ADDRESS
  - SHOW-BCAM-INFO-BASIC
  - SHOW-BCAM-INFO-CONFIG
  - SHOW-BCAM-INFO-NAME
  - SHOW-BCAM-INFO-TOOLS
- SHOW-DNS-ACCESS
  - New S variables for the DNS-RESOLVER.
- SHOW-NET-STATISTICS
  - New BCAM-GLOBAL and BCAM-MEMORY operands to display global BCAM information and BCAM memory information.
- SHOW-ROUTE-ATTRIBUTES

- The following S variables are no longer supported: TIMER.AK, TIMER.ERROR-RECOVERY.
- The S variables and S variables values of the NEA addresses and settings are no longer supported.

Deleted BCAM commands

Changes to the tables of the command return codes

- Command return codes that are no longer occurring have been removed.

Changes to ASTRID

- ALL
  - New output RS ..,QUEUE=UNKNOWN-GATE,.. .
- PORT/L2
  - The PROFILE parameter has been removed, as all PORTs are of the same TYPE.
- RS
  - New operand value QUEUE=UNKNOWN-GATE,.. .
  - The operand value RANGE=GATEWAY has been removed.
- TOTAL
  - New output RS ..,QUEUE=UNKNOWN-GATE,.. .

Messages with BCA identification - general modifications

It is explained how current information about the BCAM messages is obtained directly via MSGMAKER. The new, modified and deleted messages are documented in the message file.

Glossary

ACSE
Association Control Service Element (ISO/IEC 8649, 8650): set of functions for setting up, maintaining, and clearing down Layer 7 connections between applications.

API
Application Programming Interface: an interface that is freely available to application programmers and provides a set of interface mechanisms based on a specific range of functions.

application gateway
Gateway that acts as a switch between two applications with interdependent services and that maintains two independent relationships with the partners.

ASN.1
Method for specifying the structure of protocol elements defined by CCITT and ISO (ISO 8824 and 8825).

automatic tunnel
A tunnel that is automatically generated through the use of IPv4-compatible IPv6 addresses.

backbone
A network used for linking several other connected networks, known as front-end networks, to which systems, their applications, and users are attached.

bridge
Device or system that directly links two LANs, working only with data (mainly addresses) of the Data Link Layer. A “normal” bridge, also called a local bridge, links two LANs directly; a remote bridge links two LANs that have the same technology via a WAN.

broadcast, multicast
Transmission of a message to several or all receivers in a network who are addressed by means of a broadcast address or group address. Reception is not generally guaranteed.

CCITT
Comité Consultatif International Télégraphique et Téléphonique (International Telegraph and Telephone Consultative Committee), a subagency of the UN that issues definitions in the field of telecommunications services (renamed ITU-TSS in 1993).

CEN
Comité Européen de Normalisation: European standardization body that develops nonelectrical standards for Europe. The German member is the DIN.

CENELEC
Comité Européen de Normalisation Electrotechnique: European standardization body that develops electrical standards for Europe. The German member is the DKE.

circuit switching
See CSDN.

client
Term from the client/server architecture: the partner that calls on the services of the server.

client
Logical instance which sends requests to a server.

CMIP
Common Management Information Protocol: protocol standardized by ISO for the transfer of network management operations and event reports between open systems.

CMIS
Common Management Information Services: services standardized by ISO for accessing objects and information relevant for network management.

communication architecture
Model of the communication world.

communications server
A system that supports client communication in a client/server architecture so that clients do not have to perform complex communication tasks such as the handling of protocols. A communications server functions primarily as a gateway.

connection
Communication relationship, the characteristics and quality of which are monitored by a service provider.

connectionless
Characteristic of a communication relationship in which there is no relation between the messages and no monitoring by the service provider. Relationships between the pieces resulting from segmentation are often taken into account.

connection-oriented
Characteristic of a communication relationship; see connection.

connectivity
Generally speaking, the possibility of communication between systems and partners; sometimes also used to refer only to the communication options involving transport systems.

convergence protocol
See harmonization protocol.

CSDN
Circuit-Switched Data Network: public or private network that switches circuits between two partners for the purpose of exchanging messages. Sometimes called an X.21 network.

CSMA/CD
Carrier Sense Multiple Access / Collision Detection. A protocol defined in IEEE 802.3 and ISO 8802-3 for LANs. Ethernet and 802.3 are similar, but both use the CSMA/CD protocol. For this reason, the two terms are often used synonymously.

data compression
Reduction of data by compression.

datagram
Term for messages that are sent in connectionless communication. There is no guarantee that datagrams will reach the receiver at all, that they will arrive in the correct order, or that they will not arrive more than once.

DCE
Data Communication Equipment: in public networks, the public network device to which the data termination equipment (DTE) is connected. The public network operator’s domain ends here.

DCE
Distributed Computing Environment: a product package from the Open Software Foundation (OSF) for distributed processing with a number of facilities.

dedicated circuit
Dedicated connection between two communication partners that is available at all times without requiring a setup phase.

de-facto standard
Standard not created by an acknowledged standardization body but generally accepted. May be transformed into an internationally agreed standard.

de-jure standard
International standard issued by ISO or CCITT, or a national standard issued by a national standardization body.

DIN
Deutsches Institut für Normung (German standardization institution): official standardization body in Germany for non-electrical standards; member of CEN and ISO; also responsible for IT standards.

directory
Container for information used to identify suitable routes from user and system IDs with the aid of directory services. The standard is defined in CCITT X.500 and ISO 9594.1-8.

directory services
Products based on the standard directory. Depending on requirements, directory services can be used to manage different types of information (e.g. for comparing the interests of telephone centers and airline companies), but due to their compliance with standards can interoperate world-wide.

distributed processing
Synergetic use of the resources located on various systems in a network

DME
Distributed Management Environment: product package from OSF for distributed system and network management.

DNS
(Domain Name System)
System for administering names and addresses on the Internet.

domain
Area of a network in which similar or coordinated functions and methods that are controlled by an entity are valid for a specific range of functions. Examples: management domain, routing domain with uniform routing function, security domain with uniform security policy (see Brochure 7 “Security”), addressing domain with an entity responsible for address assignment.

DQDB
Distributed Queue Dual Bus: a function defined in IEEE 802.5 and ISO 8802-5 for a metropolitan area network that is easily migrated to ATM networks. A connectionless variant is SMDS.

Draft
Preliminary stage of an RFC.

DTE
Data Termination Equipment: in public networks, a terminal that is connected to the network via a DCE and is under the charge of the user.

dynamic right-sizing, inbound
Based on the measurement of the minimum round trip time, inbound dynamic right-sizing estimates the sender's congestion window. The congestion window is calculated with the maximum received data volume during the minimum round trip time. This measurement is used to calculate the necessary receive window and the corresponding size of the receive buffer that is to be made available.

dynamic right-sizing, outbound
Based on the measurement of the minimum round trip time, outbound dynamic right-sizing estimates the continuously available network capacity and therefore also the required congestion window. The network capacity is calculated with the maximum data volume acknowledged by the receiver during the minimum round trip time. This measurement is used to calculate the necessary congestion window and the corresponding size of the send buffer that is to be made available.

ECN
The Explicit Congestion Notification (RFC 3168) Mechanism is used to prevent the loss of packets in heavy-load situations. ECN is realized through the interaction of TCP and IP.

emulation
Component that emulates the characteristics of another device.

encapsulation
Method for transferring messages via a network. The entire message, i.e. header and data, is transported (encapsulated) as a user message in the intermediate network.

end system
Term in the OSI architecture: system which, unlike an intermediate system, has a resident transport entity (and thus applications) that uses the network functions via NSAPs. Physically, the end system itself can comprise several hardware components. Also used in other architectures in a similar manner.

entity
Term in the OSI architecture: active element on a layer.

Extension header
IPv6 headers which contain optional information which does not form part of the IPv6 basic header.

Ethernet
A LAN introduced by XEROX that is based on yellow cable and uses CSMA/CD as a transmission method. Similar to an IEEE 802.3 LAN.

evaluation
Evaluation of a system in accordance with security criteria.

gateway
Term generally used to designate a system that links two or more networks and does not operate as a bridge. Variants: gateway on the Network Layer (= router or OSI relay), transport gateway, and application gateway.

harmonization protocol (a.k.a. convergence protocol)
Protocol that serves to adapt one service provided by a protocol stack to another service, i.e. it harmonizes one service with the other.

HDLC
High-level Data Link Control: protocol defined in several ISO standards, such as ISO 7776, and used on the Data Link Layer to link two systems or devices.

heterogeneous network
A network that is made up of several different subnetworks based on different technical principles

heterogeneous X.25 coupling
Direct utilization of the network service for X.25 networks without a transport protocol (e.g. for X.28 and X.29).

high-speed TCP
TCP with the additional mechanisms “large congestion windows” and ”limited slow start” in order to reduce downtimes when errors occur: Network topologies in which the product of bandwidth and network runtime represents a large value can only be optimally used with TCP if large windows are available. However, inherent to the use of large windows is the problem that, under certain circumstances, many TCP segments may be lost when errors occur and it can take a long time to reach the original window size again after the error.

homogeneous network
A network set up according to a single technical principle.

host
Formerly a large data processing system that required a front-end processor for communication. Now designates BS2000 systems or MVS systems in SNA, and others.

hub
Line concentrator/star coupler from which lines are connected to a large number of stations in a star formation, even if the stations are logically connected in a ring. Today, hubs can integrate powerful management, bridge, and routing functions.

IAB
Internet Architecture Board: controls new developments in the internet network using the RFC mechanism.

IEC
International Electrotechnical Commission: international standardization body for electrical standards that was founded by ISO and the Joint Technical Committee 1 for IT standards. The German member is the DKE.

IEEE
Institute of Electrical and Electronic Engineers: US association of engineers which has done foundational work mainly in the LAN field, which has defined standards in the past, and which continues to do so.

industry standard
Synonymous with de-facto standard: standard which is generally accepted in a particular industry because of market forces.

integrity
Completeness and accuracy of processed, transferred, and stored data.

intermediate system (IS)
A system that logically contains only the lower three OSI layers and links various networks as a relay. Opposite of an end system. Functionally identical to a router.

Internet
Communication architecture characterized by its use of TCP and IP that resulted from the ARPA network in the USA. Expansions are controlled by the IAB by means of the RFC process.

internetworking
General term for the linking of communication networks of all types; various methods can be used.

IPng
IP next generation, synonym for IPv6

IPSEC
IP security protocol extends IP protocol by security mechanisms. It includes encryption and authentication methods used in isolation and together.

IPv4
Internet Protocol: connectionless network protocol in the Internet architecture which uses 4-byte long addresses.

IPv6
Internet Protocol: connectionless network protocol in the Internet architecture which uses 16-byte long addresses and is the successor to IPv4.

IPv6 basic header
See primary IPv6 header

ISO
International Organization for Standardization

ITU
International Telecommunications Union, a UN subagency.

ITU-TSS
Telecommunications Standards Sector, with the same functions as the former CCITT.

LAN
Local area network: originally a high-speed, short-range network. Today, also any network with a long range that operates as per CSMA/CD or token ring.

large congestion windows
Following successful error recovery, high-speed TCP for large congestion windows determines the size of the congestion window on the basis of the current size of the congestion window. (Standard TCP always halves its congestion window.) This reduces the time taken to reach the size of the original congestion window. This mechanism is defined in RFC 3649.

limited slow start
When this mechanism for high-speed TCP with large congestion windows is used, the slow start runs more slowly than in standard TCP as of a given congestion window size. This limits the number of TCP segments that may be lost if an error occurs during the slow start of a connection. The mechanism is defined in RFC 3742.

Link
Direct connection between two systems (end system/router)

Link Layer
Communication layer that guarantees direct communication between two systems (end system/router) in a network

LLC
Logical link control: protocol defined in IEEE 802.2 and ISO 8802-2 that is used in LANs above the MAC layer in order to control connection-oriented or connectionless communication.

MAC
Medium Access Control: describes the rules and methods for LAN access.

MAC address
Address of a device connected to a LAN, e.g. the internationally unique Ethernet address. These addresses are evaluated by bridges so that the destination system can be found.

MAN
Metropolitan area network: a network that provides LAN-like services and communication options over a range of approx. 50 to 150 km. Examples: DQDB, SMDS.

managed object
(short form: object)
Abstract representation of a network resource with respect to characteristics relevant to network management.

manager
Managing system for network management operations.

message handling
The method described in Recommendation X.400 for sending and exchanging messages.

MSCF
Subsystem of BS2000 that provides the privileged components (MSCF applications) of the operating system services for communication with other BS2000 instances. MSCF uses BCAM for communication.

multicast
See broadcast.

multiplexer
Network component that permits data streams to be multiplexed via a line or connection for optimum utilization of the bank width.

multiprotocol router
Router that can route communication relationships with different protocol stacks.

named pipe
Interface for bidirectional communication between servers and clients that is made available by the LAN Manager.

NEA
Name of a network architecture.

Network Layer
Communication layer that guarantees communication between the different end systems in a network.

network service
Service provided on the Network Layer of the OSI model with two variants: connectionless and connection-oriented (ISO 8348).

OIW
See EWOS.

OSF
Company founded by a group of vendors that provides open products for Unix systems, such as Motif, DCE, DME, and the OSF/1 operating system.

OSI
Open Systems Interconnection: communication architecture defined in ISO 7498; adopted by CCITT as Rec. X.200.

OSPF
Open Shortest Path First
Interior gateway protocol.

peer-to-peer communication
Communication model in which two partners of a relationship are equal and cannot act in a master/slave relationship.

Portability Guide
Document published by X/Open that defines functions to be provided for a number of function complexes and how these functions are to be provided. The latest version is XPG4.

POSIX
Portable Open System Interface: a forum and the standards created by this forum for portable system interfaces on various system platforms.

PPP
Point-to-Point Protocol: defined in RFC 1171. Serves as a protocol between routers and via serial lines for the purpose of transporting and multiplexing different network protocols.

presentation service
Service on the Presentation Layer of the OSI model that is standardized in ISO 8822.

primary IPv6 header
First IPv6 header. Its content includes the address information of the IPv6 packet. It is the only IPv6 header that is always present in an IPv6 packet.

privilege
Set of user attributes used by the access control system.

profile
In OSI, a standard that defines which protocols are to be used for a specific purpose and contains regulations regarding the values of parameters and options.

protocol
The totality of rules and methods used between two or more partners for achieving a defined purpose, usually taking the form of a definition of messages to be exchanged and of the correct execution of message sequences incl. handling of errors and other exceptional situations.

protocol relay
Relay that serves as a switch between two partners, translating the protocol elements from one end to protocol elements at the other end and initiating other protocol-compliant actions.

PSDN
Packet-Switched Data Network: public or private network in which no lines are through-connected between the communication partners; instead, the packets can take various routes through the network, depending on the workload, etc., and are re-sorted at the interface to the partner. Example: networks based on X.25.

relay
In OSI, designates an element on a layer that serves as a switch between two partners. Thus, first of all, it permits communication between these two partners. In a narrower sense, a relay on the Network Layer is the functional equivalent of a router.

repeater
Element on the Physical Layer that extends the range of a medium.

RFC
Request for Comment: method used in internet for commenting on recommended standards, definitions, or reports; also the name of a document issued by means of this process.

router
Element in a network that resides between networks and forwards message streams through the network while handling routing, flow control, addressing, and other functions. Operates on Layer 3 of the OSI model.

routing domain
Domain in a network in which the same routing methods and routing protocols are used. Routing is controlled from a single, responsible point.

routing protocol
Protocol by which routers obtain information on topologies, modifications, and costs of routes from one another or from the connected end systems.

server
Logical entity or application component that performs client operations and provides the (coordinated) usage of generally available services (File, Print, DB, communication, etc.). It can itself be the client of another server.

service
Complete, well-defined set of functions made available by a service provider to a service user; in OSI, primarily a service on a layer.

session
In OSI, designates a Layer 5 connection.

session service
Service on the Session Layer of the OSI model that is standardized in ISO 8326.

SLIP
Serial Line Interface Protocol: defined in RFC 1055.

SMDS
Switched Multimegabit Data Service: high-speed network that provides connectionless traffic based on and compatible with DQDB.

SMTP
Simple Mail Transfer Protocol: simple e-mail program from DARPA services, which is provided as standard in Unix systems.

SNMP
Simple Network Management Protocol: protocol defined in Internet for TCP/IP for the transfer of management information.

standard
Document containing definitions and requirements in order to fulfill a well-specified function or purpose. See also de-facto standard, industry standard, de-jure standard.

streams
A runtime environment in Unix systems with standardized interfaces that permits the dynamic and flexible creation and modification of protocol stacks for communication during operation.

subnetwork
Technically or administratively homogeneous part of a network.

subsystem
Part of a system that processes a self-contained function complex.

switch
Multiport bridge based on a hardware implementation that routes data traffic via multiple ports to multiple network segments.

TCP
Transmission Control Protocol: transport protocol in the internet architecture.

TCP/IP
Another name for the internet architecture.

terminal
End device used for data input/output, e.g. screen with keyboard, printer, swipe card reader.

terminal access method
Program interface in the host that defines simple interfaces and tools in the respective programming language to facilitate dialog with terminal users.

token ring
Technique used in token ring LANs, by which a token circulates in a ring-shaped LAN and regulates the transmission rights of the different stations.

transaction
Sequence of logically related processing steps, all or none of which must be processed.

transport gateway
Gateway or relay that operates on the Transport Layer and concatenates two transport connections.

transport protocol stack
Set of related protocol functions for OSI Layers 1 through 4.

transport system
Part of a system or architecture that provides approximately the same functions as the bottom four OSI layers, i.e. the transport of messages from one partner in a communication relationship to another.

transport system interface
Interface that provides upward access to the functions of the transport system and allows them to be used. The functions of the TSI depend on the transport system below it.

TSS
Telecommunications Standards Sector of ITU, formerly CCITT.

tunnel
Mechanism for the transmission of IPv6 packets compressed as IPv4 packets over an existing IPv4 infrastructure.

tunneling
Technique by which the information in a protocol element of network A is converted to a protocol element of network B and retrieved in network C. Technically and with regard to protocols, C is almost identical to A. However, tunneling is also possible, for example, from SDLC to token ring.

Virtual Local Area Network (VLAN)
Virtual Local Area Network: described in IEEE 802.1q and based on the mode of operation of a LAN, today also a network with a large range. The VLANs are classified by specifying a VLAN ID and a user priority.

VLAN-Identifikation (VLAN Id)
The assignment of a VLAN identification (abbreviated as VLAN Id) is defined in the VLAN. This Id is an integer from the range <2..4094>. VLAN Id 0 classifies an ’untagged’ VLAN.

WAN
Wide area network: public or private network that bridges long distances and, unlike LANs, operates at a relatively low speed with a higher error rate. In ATM networks, for example, these two characterizations no longer apply.

X/Open
Syndicate of various vendors and users that draw up specifications in order to produce portable products that can be implemented in multivendor networks, thereby creating open systems primarily in the Unix system area.

Abbreviations

ACSE	Association Control Service Element (ISO/IEC 8649, 8650)
API	Application Programming Interface
API/CS	Application Programming Interface/Communication System
ARP	Address Resolution Protocol
ASN	Abstract Syntax Notation
AEC/A-E-C	Automatic End System Creation
BCAM	Basic Communication Access Method
BOOTP	Bootstrap Protocol
CCITT	International Telegraph and Telephone Consultative Committee (now ITU-TSS)
CCP	Communication Control Program
CLNS	Connectionless Network Service (ISO 8348)
CMIP	Common Management Information Protocol (ISO9596)
CMIS	Common Management Information Service (ISO9595)
CMX	Communication Manager
COM	Communication port (asynchronous)
CONS	Connection-oriented Network Service (ISO 8348)
COTS	Connection-oriented Transport Service (ISO 8072)
CPI-C	Common Programming Interface for Communication
CSDN	Circuit-Switched Data Network
CSMA/CD	Carrier-Sense Multiple Access with Collision Detection
DAC	Discretionary Access Control
DAP	Directory Access Protocol
DARPA	Defense Advanced Research Projects Agency
DCAM	Data Communication Access Method
DCE	Data Communication Equipment
DCE	Distributed Computing Environment (OSF)
DDC	Direct Data Circuit (formerly HfD)

DHCP	Dynamic Host Configuration Protocol
DIN	German standards institution
DIG	Domain Information Groper
DME	Distributed Management Environment
DNS	Domain Name Service
DQDB	Distributed Queue Dual Bus
DSS	Data Terminal
DTE	Data Termination Equipment
DTS	Distributed Time Service
DUA	Directory User Agent
ECN	Explicit Congestion Notification
EN	European Norm
ES	End system
FEP	Front-end processor
FQDN	Fully Qualified Domain Name
FTP	File Transfer Protocol
HDLC	High-level Data Link Control (ISO 7776)
HNC	Highspeed Net Connect
HTTP	Hypertext Transfer Protocol
IAB	Internet Architecture Board
ICMP	Internet Control Message Protocol
IEC	International Electrotechnical Commission
IEEE	Institute of Electrical and Electronics Engineers
IGMP	Internet Group Management Protocol
IMAP	Internet Mail Access Protocol
IP	Internet Protocol
IPSEC	Internet Security Protocol
IPX	Internetwork Packet eXchange
IS	Intermediate system

ISDN	Integrated Services Digital Network
ISH	Intermediate System Hello
ISO	International Organization for Standardization
ISP	International Standardized Profile
IT	Information Technology
ITU	International Telecommunications Union
ITU-TSS	ITU – Telecommunications Standards Sector (formerly CCITT)
JV	Job Variable
KOGS	German acronym; configuration-oriented generator language
LAN	Local area network
LAPB	Link Access Procedure B (X.25)
LDAP	Leightweight Directory Access Protocol
LLC	Logical Link Control
LLC1	Logical Link Control type 1 (connectionless mode)
LLC2	Logical Link Control type 2 (connection mode)
LM	LAN Manager
LM/D	LAN Manager Dipos (886X)
LM/X	LAN Manager for Unix-based systems
LPDU	Link-Layer Protocol Data Unit
LWRESD	Light Weight Resolver Daemon
MAC	Mandatory Access Control (TCSEC)
MAN	Metropolitan Area Network
MIB	Management Information Base
MLC	Modular LAN Connect
MONJV	Monitoring Job Variable
MSCF	Multiple System Control Facility
MVS	Multiple Virtual System
NAU	Network Addressable Unit
NEA	Name of the TRANSDATA architecture

NetBEUI	NetBIOS Extended User Interface
NetBIOS	Network Basic I/O System
NFS	Network File System
NSDU	Network Service Data Unit
NTP	Network Time Protocol
OLTP	Online Transaction Processing
OS	Operating system
OSF	Open Software FoundOSFOpen Software Foundation
OSI	Open Systems Interconnection
OSPF	Open Shortest Path First
OSS	OSI Services
PAD	Packet Assembler / Disassembler
PDU	Protocol Data Unit
PLP	Packet Level Protocol (X.25)
POSIX	Portable Operating System Interface for Open Systems
PPP	Point-to-Point Protocol
PSDN	Packet-Switched Data Network
RARP	Reverse Address Resolution Protocol
RDF	Resource Definition File
Rec	Recommendation
RFC	Request For Comments
RIB	Routing Information Base
RIP	Routing Information Protocol
SAT	Security Audit Trail
SCA	Smart Card Algorithms
SCM	Software Configuration Management
SCON	Network configuration for systems
SDLC	Synchronous Data Link Control
SMDS	Switched Multimegabit Data Service

SMTP	Simple Message Transfer Protocol
SNAP	Subnetwork Access Protocol
SNMP	Simple Network Management Protocol
SOF	Start Option File
SPX	Sequenced Packet eXchange protocol
SPX	Small Packet eXchange
SPX/IPX	Sequenced Packet eXchange/ Internet Packet eXchange
SSL	Secure Sockets Layer
TCP	Transmission Control Protocol
TCP/IP	Transmission Control Protocol/Internet Protocol
TELNET	Telecommunications network protocol
TFTP	Trivial File Transfer Protocol
TIAM	Terminal Interactive Access Method
TPDU	Transport Protocol Data Unit
TSDU	Transport Service Data Unit
TSN	Task Sequence Number
TSS	Telecommunications Standards Sector (see ITU)
UDP	User Datagram Protocol
UTM	Universal Transaction Monitor – Distributed
UTM-D	Virtual Local Area Network
VLAN	Virtual Local Area Network Identification
VLAN ID/VID	Virtual Terminal SUpport
VTSU	Wide area network
WAN	Twin-Pulse Transmission
WTU	Twin-Pulse Transmission
XHCS	Extended Host Code Support

Important standards

ℹ The technical contents of a standard may be revised in a later edition.

639	Language codes and authority symbols
3166	Codes for the representation of names of countries
3309	HDLC – Frame structure
4873	8-bit code for information interchange – Structure and rules for implementation
6523	Structure for the identification of organizations
7498	OSI – Basic Reference Model
7498-2	Security architecture
7498-3	Naming and addressing
7498-4	Management framework
7776	HDLC – Description of the X.25-LAPB-compatible DTE data link procedure
8072	Transport service definition
8072 AD1	Addendum to 8072 covering connectionless transmission
8073	Connection-oriented transport protocol specification
8073 AD2	Addendum to enable class 4 operation over connectionless network service
8208	X.25 PLP for DTEs
8326	Basic connection-oriented session service definition
8327	Basic connection-oriented session protocol specification
8327 AD3	Connectionless session protocol
8348	Network service definition
8348 AD2	Network layer addressing
8473	Protocol for providing the connectionless network service
8571	File transfer and management
8602	Protocol for providing the connectionless transport service
8648	Internal organization of the Network Layer
8649	Service definition for the Association Control Service Element (ACSE)
8650	Protocol specification for the ACSE

8802	LANs
8802-2	Logical link control
8802-3	CSMA/CD
8802-4	Token bus
8802-5	Token ring
8802-5 AM4	MAC sublayer bridging – Source routing
8802-10	Standard for Interoperable LAN Security (SILS)
8822	Connection-oriented presentation service definition
8822 AD1	Covering the connectionless presentation service
8823	Connection-oriented presentation protocol specification
8824	Specification of Abstract Syntax Notation One (ASN.1)
8825	Specification of basic encoding rules for ASN.1
8878	Use of X.25 to provide the OSI CONS
8880	Protocol combinations to provide and support the OSI network service
8880-1	General principles
8880-2	Provision and support of the CONS
8880-3	Provision and support of the CLNS
8881	Use of the X.25 PLP in 8802 LANs
9314-1	Token ring Physical Layer protocol (PHY)
9314-2	Token ring media access control (MAC)
9314-3	Token ring Physical Layer, medium-dependent (PMD)
9542	ES to IS routing exchange protocol for use in conjunction with ISO 8473
9545	Application Layer structure
9574	Provision of the CONS by packet-mode TEs connected to an ISDN
9575 TR	OSI routing framework
9577 TR	Protocol identification in the Network Layer
9594	Directory
9595	OSI – Management information service definition
9595-2	Common management information service (CMIS)

9596	OSI – Common management information protocol (CMIP)
9646-3	Tree and tabular combined notation (TTCN)
10000 TR	Framework and taxonomy of ISPs
10000-1	Framework
10000-2	Taxonomy
10028	Definition of the relaying functions of a Network Layer intermediate system
10029 TR	Operation of an X.25 interworking unit
10030	End system routing information exchange protocol for use in conjunction with ISO 8878
10038	MAC sublayer interconnection (MAC bridging)
10039	MAC service definition
10040	Systems management overview
10164	Systems management
10165	Structure of management information
10172 TR	Network / transport protocol interworking specification
10177	Intermediate system support of the OSI connection-oriented network service using ISO 8208 in accordance with ISO 10028
10178 TR	The structure and coding of LLC addresses in LANs
10181	Security framework
10589	IS to IS routing protocol (intra-domain)
10608	ISP TA: Connection-oriented transport service over connectionless network service
10609	ISPs TB-TE: Connection-oriented transport service over connection-oriented network service
10612	RD Relays: MAC relays using transparent bridging
10613	RA profiles: Relaying the connectionless network service
10614	RC profiles: X.25 protocol relaying
10616	Common directory use
10730 TR	Tutorial on naming and addressing
10733	Elements of management information related to OSI Network Layer standards
10734 TR	MAC bridging – Guidelines for bridged LAN source routing operation by end systems
10736	Transport Layer security protocol

10747	Protocol for exchange of inter-domain routing information among intermediate systems to support forwarding of ISO 8473 PDUs
11577	Network Layer security protocol RE profiles: MAC service relays using source routing
41102	COTS over CLNS for an end system at a CSMA/CD LAN
41103	COTS over CONS for an end system at a CSMA/CD or token ring LAN
41104	COTS over CONS at a PSDN; permanent access
41105	COTS over CONS at a PSDN: switched access
41106	COTS in the T.70 case for telematic end systems
41107	COTS over CONS in a CSDN
41108	COTS over CONS in an end system at a token ring LAN
41110	COTS over CLNS in an end system at a token ring LAN
41111	COTS over CONS by using an ISDN circuit-mode 64 kbit/s unrestricted bearer service – permanent case
41112	COTS over CONS by using an ISDN circuit-mode 64 kbit/s unrestricted bearer service – demand case
41113	CONS by using an ISDN packet-mode bearer service on the D-channel – No notification class
41115	COTS over CONS by using a permanent circuit
41116	COTS over CONS by using a switched telephone service
41801	Relaying the CLNS (RA profiles)
41802	X.25 protocol relaying (RC profiles)
E.163	Numbering plan for the international telephone service
E.164	Numbering plan for the ISDN era
I.430	Basic user-network interface – Layer 1 specification
I.431	Primary rate user-network interface – Layer 1 specification
X.3	Packet assembly/disassembly (PAD) in a public data network
X.21	Interface between DTE and DCE for synchronous operation on public data networks
X.21bis	Use on public data networks of DTE which is designed for interfacing to synchronous V-series modems
X.25	Interface between DTE and DCE for terminals operating in the packet mode and connected to public data networks by dedicated circuit

X.28	DTE/DCE interface for a start-stop terminal accessing the PAD in a public data network situated in the same country
X.29	Procedures for the exchange of control information and user data between a PAD facility and a packet-mode DTE or another PAD
X.121	International numbering plan for public data networks
877	The use of IP over ISO 8208 (X.25 PLP)
894	A Standard for the Transmission of IP Datagrams over Ethernet Networks
903	A Reverse Address Resolution Protocol
950	IP Subnet Extension
1001	Protocol standard for a NetBIOS service on a TCP/UDP transport: Concepts and methods
1002	Protocol standard for a NetBIOS service on a TCP/UDP transport: Detailed specifications
1006	ISO Transport services on top of the TCP
1042	A Standard for the Transmission of IP Datagrams over IEEE 802 Networks
1055	Serial Line Internet Protocol (SLIP)
1112	Host Extensions for IP Multicasting
1122	Requirements for Internet Hosts – Communication Layers
1155	Structure and Identification of Management Information for TCP/IP-based Internets (SMI)
1157	A Simple Network Management Protocol
1171	The point-to-point protocol for the transmission of multi-protocol datagrams over point-to-point links
1208	A glossary of networking terms
1212	Concise MIB Definitions
1213	Management Information Base for Network Management of TCP/IP-based Internets: MIB-II
1247	Open Shortest Path First
2373	IP Version 6 Addressing Architecture
2460	Internet Protocol, Version 6 (IPv6)
2461	Neighbor Discovery for IP Version 6 (IPv6)
2462	IPv6 Stateless Address Autoconfiguration
2463	Internet Control Message Protocol (ICMPv6) for the Internet Protocol Version 6 (IPv6) Specification
2464	Transmission of IPv6 Packets over Ethernet Networks

2473	Generic Packet Tunnelling in IPv6 Specification
2529	Transmission of IPv6 over IPv4 Domains without Explicit Tunnels
3168	The Addition of Explicit Congestion Notification (ECN) to IP
3649	HighSpeed TCP for Large Congestion Windows
3742	Limited Slow-Start for TCP with Large Congestion Windows
117	Network layer address domain-specific part
801.D	Spanning tree algorithm
802.2	Logical link control
802.3	CSMA/CD LANs
802.4	Token bus LANs
802.5	Token ring LANs
802.6	DQDB subnetwork of a MAN
NEABD	User services protocol
NEABR	Remote spool user services protocol
NEABT	TIAM user services protocol (terminals and printers)
NEABV	User services connection protocol
NEABF	File transfer protocol
NEATV	Connection protocol
NEATT	Transport protocol
NEATS	Subport data flow control protocol
NEABX	NEA – Protocol for providing NEA services over the OSI transport service

Related publications

You will find the manuals on the internet at http://bs2manuals.ts.fujitsu.com. You can order printed copies of those manuals which are displayed with an order number.

openNet Server
IPSec V1.4
User Guide

openNet Server
SOCKETS
User Guide

openNet Server
IPv6 Introduction and Conversion Guide, Stage 1
User Guide

interNet Services
Administrator Guide

interNet Services
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DCAM (BS2000)
Program Interfaces
Reference Manual

DCAM (BS2000)
Macros
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DCAM (BS2000)
COBOL Calls
User Guide

SNMP Management (NET-SNMP) for BS2000
User Guide

openFT
Concepts and Functions
User Guide

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Command Interface
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BS2000 OS DX
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BS2000 OS DX
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BS2000 OS DX
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User Guide

BS2000 OS DX
Performance Handbook
User Guide

IMON
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User Guide

JV
Job Variables
User Guide

CMX(BS2000)
Communication Method in BS2000
User Guide

CMX (Solaris)
Communications Manager for UNIX Systems
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User Guide

SECOS
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Ready Reference

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