

# Index

- ! commands 8-13
- + or - commands 23-6
- ? command 8-3, 8-12
- 10/100 20-1, 20-6
- 10/100** command 19-4
- 10/100 ports 19-5, 19-8
- 10/100cfg** command 3-11, 3-14, 7-99, 7-103, 7-105, 7-107, 7-109, 7-113, 7-116, 19-5, 19-7
- 10/100vc** command 7-113, 19-8
- 802.2 pass through 24-15, 25-32
- 802.1Q 19-1, 20-1
- 802.10 22-24
- 1483 scaling services 38-16
  - creating 38-32
  - displaying 38-62
  - mapping parameters 38-35
  - modifying 38-47

## A

- AAL5 Discard 42-33
- aat** command 38-43
- ab** command 11-8
- adaptive clocking 36-9
- addprtnl** command 19-11
- addvp** command 25-5, 25-19, 25-28, 25-46, 25-61
  - translations 24-15
- adjacency
  - definition for XMAP 27-2
- ADM 3-39, 3-42, 7-62, 7-65, 7-70, 7-73, 41-53, 54-25, 54-26
- admin login 8-19, 12-2
- aipxsr** command 33-12
- AIS 54-18, 54-19, 54-24, 54-26, 54-27
  - LED 3-41, 3-44, 7-64, 7-72, 7-75
- aisr** command 31-16
- alternate routing
  - in PNNI 45-25
- any-to-any switching 24-1
- ARP protocol 31-3
- ARP server 35-37
- ASCII terminal commands 8-4
- ASM-155C 5-16, 7-48
- ASM-155F 5-16

- ASM-155Fx 7-45
  - fiber optic power budget 7-46
- ASM2 and ASX modules 35-3
  - bandwidth groups 35-52
  - MBS 35-54
  - PCR 35-53
  - SCR 35-54
  - traffic shaping 35-52
- ASM2-155F 7-50
  - fiber optic power budget 7-51, 7-54
- ASM2-155FR 7-53
- ASM2-155Fx 7-45
- ASM2-622F 7-56
- ASM2-622FR 7-59
- ASM2-DS3 5-16, 7-70
- ASM2-E3 5-16, 7-73
- ASM-CE 7-67, 36-1, 36-2, 36-21, 36-25, 53-1
  - fiber optic power budget 7-68
- ASM-DS3 5-16, 7-62
- ASM-E3 5-16, 7-65
- ASX-155FM 3-30
- ASX-155FM/FS/FSH
  - fiber optic power budget 3-31
- ASX-155FS 3-30
- ASX-155FSH 3-30
- ASX-155RFM/RFS 3-33
  - fiber optic power budget 3-34, 3-37
- ASX-622RFM/RFS 3-36
- ASX-DS3 3-39
- ASX-E3 3-42
- at** command 25-19
- ATM
  - 1483 scaling services 38-16
  - access modules 35-1
  - cell errors 35-40
  - Classical IP 38-11
  - congestion 43-37, 43-46
  - discards 35-39
  - IMA 44-1
  - improving signaling performance 41-2
  - IPX routing 25-39
  - LAN Emulation 38-3
  - leaky buckets 43-37
  - menu 35-6
  - point-to-multipoint 42-35
  - Point-to-Point Bridging 38-13

- priority for virtual circuits 42-42, 43-11
- segment buffers 35-10
- Segmentation and Reassembly (SAR) 35-9
- statistics 35-38, 35-39, 35-43, 35-45, 35-48, 35-50
- traffic descriptors 42-15
- Trunking 38-24
- VLAN clusters (X-LANE) 38-14
- VP switching 42-43
- ATM access ports
  - cell errors 35-40
  - configuring 35-7
  - discards 35-39
  - loopback mode 35-11
  - PCR 35-13
  - PVCs 35-12
  - Segmentation and Reassembly (SAR) 35-9
  - statistics 35-38, 35-39, 35-43
  - viewing 35-19
  - virtual channels 35-28
- ATM address
  - creating 35-17
  - deleting 35-18
  - modifying 35-18
  - viewing 35-36
- atm** command 35-6, 42-24
- ATM Direct Mapped (ADM) Protocol 54-25, 54-26
- ATM modules 3-29, 7-43, 35-2
  - ASM-155C 7-48
  - ASM-155Fx 7-45
  - ASM2-155F 7-50
  - ASM2-155FR 7-53
  - ASM2-155Fx 7-45
  - ASM2-622F 7-56
  - ASM2-622FR 7-59
  - ASM2-DS3 7-70
  - ASM2-E3 7-73
  - ASM-CE 7-67
  - ASM-DS3 7-62
  - ASM-E3 7-65
  - ASX-155FM 3-30
  - ASX-155FS 3-30
  - ASX-155FSH 3-30
  - ASX-155RFM/RFS 3-33
  - ASX-622RFM/RFS 3-36
  - ASX-DS3 3-39
  - ASX-E3 3-42
  - pinouts 7-44
- ATM Name Server (ANS) 43-30
- ATM Point-to-Point Bridging 38-13
- ATM ports
  - DS3 54-17, 54-20, 54-21, 54-22, 54-28, 54-29, 54-30, 54-31
  - E3 54-23, 54-25, 54-26, 54-32, 54-33
  - number of services supported 38-1
  - viewing 35-19
- ATM switch
  - service registry table 43-30
- ATM switching 4-2, 4-4, 4-14, 4-20
  - applications 41-3
  - buffer management 41-7
  - buffers supported 41-12
  - Cell Loss Priority (CLP) 42-13
  - congestion 42-12
  - connections supported 41-12
  - EFCI 42-11
  - error statistics 43-35, 43-45
  - FCSM required 41-10, 41-11, 41-14
  - input buffers 41-7
  - intelligent multicast replication 43-47
  - label swapping 42-4
  - large cell buffers 41-8
  - Maximum Burst Size (MBS) 35-54, 42-14
  - monitoring 43-40
  - Peak Cell Rate (PCR) 35-53, 35-55, 42-14
  - point-to-multipoint virtual circuits 42-5
  - point-to-point virtual circuits 42-5
  - priority levels 42-12
  - resource mangement 42-11
  - soft PVCs 42-6, 43-3
  - statistics 43-33
  - Sustainable Cell Rate (SCR) 35-54, 42-14
  - traffic descriptors 42-16
- ATM Trunking 38-24
- ATM uplinks 41-3
  - example 35-5
- atm\_use\_mbus** flag 41-2
- atvl** command 26-19, 28-27
- Authenticated Groups 25-1
  - as mobile groups 25-5
  - configuring 25-27
- Authentication 25-1
- Authentication Management Console (AMC)
  - software 25-5
- auto-activated LANE ports
  - configuring 25-33
- autoencaps** command 24-34

- auto-switch
  - diagram 25-30
  - timer 25-30
- Auto-Switch bridge mode 25-29
- AutoTracker
  - application examples 30-1
  - configuring policies 26-4
  - DHCP MAC address policy 26-3
  - DHCP policy 26-25
  - DHCP policy example 26-23
  - DHCP port policy 26-3
  - MAC address policy 26-2
  - menu 28-2
  - network address policy 26-2
  - policies 26-1, 28-3
  - port binding policy 26-2
  - port policy 26-2
  - protocol policy 26-2
  - user-defined policy 26-2
- AutoTracker policies
  - in mobile group 25-34
- Available Bit Rate (ABR) 41-2, 42-8, 42-23, 45-37
  - resource management 42-8
- Available Cell Rate (AVCR)
  - minimum threshold 45-32
  - proportional multiplier 45-32
- avlbootpmode** command 32-2

## B

- backbones 19-9
  - Ethernet 19-9
- Backplane 47-4
- backplane threshold 15-4
- balanced T1 56-3
- bandwidth group 35-52
- Banyan Vines
  - translations for 24-12
  - VLAN for 28-31
- BECN 49-9
- BNC 56-3
- boot configuration A-1
- Boot prompt A-1
  - basic commands A-3
  - logging in A-2
  - MPM A-10
  - MPM-1G A-10
  - MPM-C A-7
  - MPM-II A-10

- MPM-III A-7
- MPX A-7
- BOOTP relay 32-4
  - and authentication 32-5
- BPS 4-4, 5-2, 5-27
- br** command 23-4, 25-19
- BRI. See ISDN, Basic Rate Interface
- bridge 23-6
  - bridge forwarding table 23-7
- bridge mode 25-29
  - non-Ethernet default 25-29
  - optimized 25-29
  - Spanning Tree 25-29
- bridge port
  - statistics 23-13
- bridging
  - Frame Relay 49-12, 49-49
- bsadd** command 55-3
- bsdelete** command 55-10
- bsmodify** command 55-8

## C

- Call Admission Control (CAC) 45-25
- CAM 7-11
  - configuring 13-22
- CAM Restrictions
  - Omni Switch/Router 13-23
  - OmniSwitch 13-22
- CAM threshold 15-5
- camcfg** command 13-22
  - not used with Omni Switch/Router 13-23
- camstat** command 13-21
- caplog** command 14-12
- cas** command 20-6, 20-8, 25-33, 38-19
  - 1483 scaling services 38-32
  - 802.10 22-26
  - ATM Trunking 38-24
  - Classical IP (CIP) 38-26
  - FDDI Trunking 22-26
  - Frame Relay bridging 49-49
  - Frame Relay routing 49-52
  - Frame Relay trunking 49-54
  - LAN Emulation 38-20
  - PTOP Bridging 38-28
  - VLAN Clusters 38-30
- cats** command 25-2, 25-15
- cb** command 11-7
- cd** command 11-2, 25-63

- CDDI modules 7-76
  - FSM-C 7-84
  - FSM-M-C 7-86
  - pinouts 7-77
- ceadd** command 36-12, 36-17
- cedele** command 36-28
- Cell Delay Variation (CDV) 42-9, 42-42, 43-11, 45-15, 45-48, 46-18
  - proportional multiplier 45-33
- Cell Loss Priority (CLP) 42-13
  - in statistics displays 43-40
- Cell Loss Ratio (CLR) 42-9, 46-18
- cell switching matrix
  - 13.2 Gbps capacity 41-6
  - distributed 41-6
- Cell Transfer Delay (CTD) 42-9, 45-15, 45-48, 46-18
  - proportional multiplier 45-33
- cellfab** command 58-3, 58-30
- cells
  - discarded 43-37
- cemodify** command 36-23
- CERR
  - LED 3-32, 3-35, 3-38, 7-47, 7-52, 7-55, 7-58, 7-61
- cestatus** command 36-29, 36-34, 36-35
- channelized DS3 56-2
- chassis
  - AC inputs 5-1
  - grounding 1-18, 5-25
  - power supplies 5-1
  - temperature 4-3
- chassis summary 13-3
- chngmac** command 18-6
- chnlinfo** command 19-13
- circuit emulation 36-1
  - adaptive clocking 36-24
  - application example 36-10
  - ATM uplink port in 36-3
  - Cell Delay Variation Tolerance (CDVT) 36-14
  - commands 36-11
  - configuring 36-6
  - connection type 36-15
  - information 36-29
  - partial cell fill count 36-13
  - serial ports 36-3, 36-21, 36-25, 36-30
  - SRTS clocking 36-24
  - structured service 36-7, 36-23
  - synchronous clocking 36-23
  - T1/E1 ports 36-3, 36-12, 36-23
  - time Slots 36-15
  - unstructured service 36-7, 36-23
  - virtual channel connections 36-21
- circuit emulation clocking modes 36-8
- Class B 1-7, 5-14
- Class of Service
  - profiles 42-21, 42-24
- Classical IP (CIP) 25-21, 25-38, 38-26
  - ARP table 38-60
  - Group for 38-26
  - static entries 38-43
- clear channel 56-40
  - logical port 56-40
- cli** command 8-3
- Clocking
  - bus-level 47-4
  - port-level 47-2
- CLP 43-33
- CLPNoTagNoSCR 42-38, 43-7
- CLPNoTagSCR 42-39, 43-8
- CLPTagNoSCR 42-38, 43-7
- CLPTagSCR 42-39, 43-8
- cmdlog** command 13-29, 14-10
- command history 8-13
- Committed Information Rate (CIR)
  - Frame Relay 49-7
- communications
  - see also serial port
- configsyc** command 10-16
- configuration files 11-2
- configuration submenu 45-27
- congestion
  - ATM 43-37, 43-46
- conlog** command 13-30, 14-11
- console port 6-6
  - configuring 2-6, 10-2, 41-25
  - speed 10-2
- Constant Bit Rate (CBR) 36-1, 42-7, 42-21, 45-36
- consumable resources 15-2
- cp** command 11-6
- cpis** command 54-33
- CPU threshold 15-5
- crankback
  - in PNNI 45-25, 45-50
- cratvl** command 28-4, 28-16, 28-31
- crechnl** command 19-10
- credit
  - transmit 25-30

- crgp** command 25-5, 25-21, 28-4
    - translations 24-15
  - crmcvl** command 29-5
  - CSM modules 41-1, 41-6, 41-12, 42-1
    - CSM-155 41-27
    - CSM-155C-8 41-35
    - CSM-622 41-31
    - CSM-A25-12 41-39
    - CSM-A25-24W 41-41
    - CSM-U 41-43, 41-61
    - FCSM 41-14
  - CSM ports
    - IMA 44-5
  - CSM-155 41-12, 41-27
    - multicasts 41-27
    - virtual circuits supported 41-27
  - CSM-155C-8 41-35
    - jumper settings 41-38
    - multicasts 41-35
    - virtual circuits supported 41-35
  - CSM-155-F
    - jumper settings 41-30
  - CSM-622 41-12, 41-31
    - jumper settings 41-34
    - multicasts 41-31
    - virtual circuits supported 41-31
  - CSM-A25-12 41-12, 41-39
    - multicasts 41-39
    - virtual circuits supported 41-39
  - CSM-A25-24 41-12
  - CSM-A25-24W 41-41
    - multicasts 41-41
    - virtual circuits supported 41-41
  - CSM-AB-155C 41-48
    - jumper settings 41-50
    - multicasts 41-48
    - virtual circuits supported 41-48
  - CSM-AB-155F 41-45
    - jumper settings 41-47
    - multicasts 41-45
    - virtual circuits supported 41-45
  - CSM-AB-CE-E1-4W 41-55
    - jumper settings 41-56, 41-57
  - CSM-AB-CE-T1-4W 41-55
  - CSM-AB-CM 41-58
    - jumper settings 41-60
  - CSM-AB-DS3-2W 41-53
  - CSM-AB-E1-4W 41-51
  - CSM-AB-E3-2W 41-53
  - CSM-AB-IMA-E1-8W 41-61, 53-1
    - jumper settings 41-63, 41-64
    - upgrading flash memory 44-33
  - CSM-AB-IMA-T1-8W 41-61, 53-1
    - upgrading flash memory 44-33
  - CSM-AB-T1-4W 41-51
  - CSM-C 36-1
  - CSM-CE 36-4, 53-1
  - CSM-T1/E1 53-1
  - CSM-U 36-4, 41-12, 41-43, 41-61, 53-1
    - wide chassis required 41-43, 41-61
  - CSM-U adapter boards
    - CSM-AB-155C 41-48
    - CSM-AB-155F 41-45
    - CSM-AB-CE-E1-4W 41-55
    - CSM-AB-CE-T1-4W 41-55
    - CSM-AB-CM 41-58
    - CSM-AB-DS3-2W 41-53
    - CSM-AB-E1-4W 41-51
    - CSM-AB-E3-2W 41-53
    - CSM-AB-IMA-E1-8W 41-61, 53-1
    - CSM-AB-IMA-T1-8W 41-61, 53-1
    - CSM-AB-T1-4W 41-51
  - cut-through routing 39-2
  - cva** command 35-17
  - cvc** command 35-12, 42-35
    - CSM virtual circuits 42-31
  - cvpt** command 43-22, 46-8, 46-9, 46-11
    - with static routes 46-3
- ## D
- das** command 20-13, 38-49
    - 802.10 22-30
    - FDDI Trunking 22-30
    - Frame Relay 49-58
  - dat** command 38-50
  - date 13-8
  - datas** command 25-15
  - Daylight Savings Time (DST) 13-8, 13-12
  - db** command 11-9
  - dbmap** command 23-18
  - DC power supplies 1-21, 5-20
  - debuglog** command 14-14
  - def\_group variable 25-11
  - default group 25-11
  - default VLAN 28-4, 28-5
    - routing 30-8
  - defvl** command 28-5

- delechnl** command 19-12
- delprtchnl** command 19-12
- DES 16-4
- Designated Transit List (DTL) 45-5, 45-23, 45-38, 45-50
- DHCP 32-4
  - and source routing 32-5
  - application example 26-23
  - overview 32-4
  - policies 26-3
  - with non-DHCP clients 32-8
- DHCP client 26-24
- DHCP server 26-24
- diag login 8-19, 12-2
- diag** user login 58-3, 58-4
- diagnostic tests 7-9
  - cell fabric test 58-30
  - chassis 58-34
  - frame fabric test 58-32
- diagnostics
  - configuring 58-26, 58-27, 58-34
  - hardware 58-1
  - login 58-3, 58-4
  - running 58-3, 58-7
- diagnostics sub-menu 8-3, 58-4
- digital services 53-2
- digital signal level X, see DSX
- discard cells 43-37
- Discard Eligibility
  - Frame Relay 49-8
- displaying Ethernet switch statistics 24-29
- disposition
  - HRE-X filtering 34-21
- DLCI 49-5
- DLCMI 49-22
- domain bridging 22-22, 22-25
  - mapping table 23-18
- domain name servers 18-1
- DS0 56-2
- DS1 56-2
- DS1 channel 56-27
  - configuration and statistical parameters 56-37
  - statistics and errors 56-31, 56-33, 56-34, 56-36
- ds1clis** command 56-36
- ds1dcs** command 56-37
- ds1dlcs** command 56-33
- ds1dlis** command 56-34
- ds1dlts** command 56-31

- ds1mod** command 56-27
- DS2 56-2
- DS-3 3-29, 3-39, 7-43, 7-62, 7-70, 56-2
  - software 54-17, 54-20, 54-21, 54-22, 54-28, 54-29, 54-30, 54-31
- ds3** command 54-2
- DS3 port 56-13
  - statistical parameters 56-24
  - statistics and errors 56-19, 56-21, 56-22
- DS3/EC
  - PLCP and 47-3
- ds3clis** command 56-24
- ds3dcs** command 56-24
- ds3dlcs** command 56-21
- ds3dlis** command 56-22
- ds3dlts** command 56-19
- ds3dms** command 56-26
- ds3mod** command 56-13, 56-16, 56-40
- dslcs** command 54-15, 56-21, 56-33
- dslis** command 54-16, 56-22, 56-34
- dslts** command 54-13, 56-19
- dsmod** command 54-2
- dss** command 54-7
- DST 13-8
- DSX 56-2
- dt** command 13-8
- duplicate MAC addresses 13-20
- dva** command 35-18
- dvc** command 35-16, 42-45
- dvpt** command 43-29
- dynamic LANE services 25-5, 25-15
  - deleting 25-15
- dynamic port assignment 25-2

## E

- E.164 addresses 46-4
- E1
  - configuring 31 timeslots 48-39
  - fractional 48-2
  - framing 53-2
- E3 3-29, 3-42, 7-43, 7-65, 7-73
  - software 54-23, 54-25, 54-26, 54-32, 54-33
- eb** command 11-9
- echo** command 8-18
- edit** command 11-7
- edit commands tutorial 11-11, 11-12
- egress cache table 39-20

- ELANs
  - auto-activated 25-15, 25-33
  - multiple 38-22
- encapsulation 24-5
  - IP 24-5
  - IPX 24-5, 24-7
- error messages 57-10
- ESM-100C 5-15, 7-29
- ESM-100C-5 7-37
- ESM-100C-12 7-103, 19-5, 19-8
  - non-auto-negotiating links 19-6
- ESM-100C-32W 7-113, 19-8
  - non-auto-negotiating links 19-6
- ESM-100C-FD 5-15, 7-33
- ESM-100CFx-5 7-40
- ESM-100FM/FS-8 7-105
- ESM-100FM-8 19-8
- ESM-100FM-FD 5-15
- ESM-100FS-FD 5-15
- ESM-100Fx-FD 7-35
- ESM-C-8 5-15, 7-17
- ESM-C-12 5-15, 7-15
- ESM-C-16 7-107, 19-8
- ESM-C-32 19-8
- ESM-C-32W 7-109
- ESM-F-8 5-15, 7-19
  - fiber optic power budget 7-19
- ESM-F-16 7-111
  - fiber optic power budget 7-111
- ESM-FM-16W 19-8
- ESM-T-12 5-15, 7-21
- ESM-T-24W 5-15, 7-116, 19-8
- ESM-U-6 5-15, 7-23
- ESX-100C-12W 3-11, 19-8
  - non-auto-negotiating links 19-6
- ESX-100C-32W 3-14, 19-8
  - non-auto-negotiating links 19-6
- ESX-100FM/FS-12W 3-17, 19-8
- ESX-FM-24W 3-20, 19-8
- eth100** command 19-4
- eth100cfg** command 7-33, 7-35, 7-37, 7-40, 19-14
- eth100vc** command 19-15
- ethdef** command 24-24
- Ethernet
  - 10/100 ports 19-5
  - 802.1q 19-1
  - auto-sensing ports 19-5
  - auto-switch bridge mode 25-29
  - backbones 19-9
  - default translations 24-16, 24-24
  - duplex mode 19-8
  - Ethertype translation 24-18
  - high-density ports 19-7
  - link mode configuration 19-7
  - LLC translation 24-21
  - older Fast Ethernet 19-14
  - OmniChannel 19-1
  - path MTU discovery 31-38
  - port mapping 25-67
  - port mirroring 25-58
  - port monitoring 25-62
  - SNAP translation 24-19
- Ethernet 10/100 ports 19-8
  - auto-negotiation 19-8
  - configuring 19-5
- Ethernet adapter boards 7-26
- Ethernet management port
  - configuring 10-5
- MPM-C 41-24
- MPM-III 6-9
- MPX 2-5
- redundancy 10-7
- Ethernet modules 3-11, 3-17, 3-20, 7-14, 7-28, 7-102, 7-113
  - configuring tests 58-28
  - displaying switch statistics 24-29
- ESM-100C 7-29
- ESM-100C-12 7-103
- ESM-100C-32W 7-113
- ESM-100C-5 7-37
- ESM-100C-FD 7-33
- ESM-100CFx-5 7-40
- ESM-100FM/FS-8 7-105
- ESM-100Fx-FD 7-35
- ESM-C-12 7-15
- ESM-C-16 7-107
- ESM-C-32W 7-109
- ESM-C-8 7-17
- ESM-F-8 7-19
- ESM-F-16 7-111
- ESM-T-12 7-21
- ESM-T-24W 7-116
- ESM-U-6 7-23
- ESX-100C-12W 3-11
- ESX-100C-32W 3-14
- ESX-100FM/FS-12W 3-17
- ESX-FM-24W 3-20
- pinouts 3-11, 7-102
- two generations 19-2

- ethernetc** command 10-5
- event 18-3
- events** command 18-5
- Explicit Forward Congestion Indication (EFCI) 42-11, 43-34

## F

- facility datalink 53-6
- Fast Ethernet
  - configuring 19-8, 19-15
- FCC Class B 5-14
- FCSM
  - virtual channels 35-28
- FCSM I 41-16
  - PNNI frame size guidelines 45-92
  - redundancy 41-16
- FCSM II 41-19
  - 1483 scaling services 38-16
- FCSM module 41-12, 41-14
  - LAN-to-ATM internetworking 41-16
  - logical ports on 35-4, 41-14
- FCSM ports
  - cell errors 35-40
  - configuring 35-7
  - statistics 35-38, 35-39, 35-43
  - viewing 35-19
- FDDI 22-5
  - 802.10 22-24
  - configuration 22-6
  - default translations 24-16, 24-25
  - domain bridging 22-22, 22-25
  - Dual-Attached Station (DAS) 22-3
  - dual-homing 22-3
  - frame flooding in 22-4
  - LLC translation 24-21
  - MAC 22-11
  - MAC counters 22-14
  - MAC status 22-13
  - Null-Attached Concentrator (NAC) 22-3
  - port counters 22-19
  - port parameters 22-20
  - port status 22-18
  - port types 22-17
  - ports 22-16
  - SMT 22-6, 22-7, 22-8
  - SMT status 22-10
  - SNAP translation 24-19
  - station timers 22-15

- topology 22-1, 22-2
- trunk ports 22-22
- wrapped ring 22-3
- fddi** command 22-5
- FDDI modules 3-45, 7-76
  - FSM-M 7-78
  - FSM-M-C 7-86
  - FSM-S 7-80
  - FSM-SH 7-82
  - FSX-M 3-46
  - FSX-S 3-49
  - FSX-SH 3-52
  - pin-outs 3-46, 7-77
- FDDI raw 24-25
- fddidef** command 24-25
- FECN 49-10
- FERF 54-18, 54-19, 54-27
  - LED 7-47
- fiber optic
  - power budgets 3-31, 3-34, 3-37, 3-47, 3-50, 3-53, 7-19, 7-46, 7-51, 7-54, 7-68, 7-78, 7-80, 7-82, 7-86, 7-92, 7-111
  - proper handling of cables 3-3
- file** command 8-2, 11-1
- files 2-7, 6-10
  - configuration 11-2
  - flash memory 11-3
  - image 2-7, 6-10, 41-25
  - PGA 6-10
- Filter Command. See UI Table Filtering
- filtering
  - HRE-X 34-1
- Filtering submenu 34-5
- flash memory 2-7, 6-1, 6-10, 41-25
- flc** command 23-20
- flood limits 25-30
  - configuring 23-20
  - displaying 23-21
- fls** command 23-21
- fltactd** command 34-17
- fltactipd** command 34-19
- fltactipdq** command 34-21
- fltactipxd** command 34-22
- fltcfg** command 34-15
- fltcommit** command 34-5
- fltd** command 34-24
- fltipchk** 34-26
- fltipd** command 34-25
- fltipmod** command 34-6
- fltipxchk** command 34-26



- fltipxd** command 34-26
- fltipxmod** 34-10
- fltreadcfg** command 34-28
- fltrm** command 34-29
- fltrmall** command 34-30
- fltservice** command 34-12
- fmac** command 22-11
- fmaddr** command 22-12
- fmctrs** command 22-14
- fmstats** command 22-13
- fping** command 31-20
- fport** command 22-16
- fportc** command 22-20
- fportctrs** command 22-19
- fportstatus** command 22-18
- fr** command 49-18
- fradd** command 49-28
- frame flooding 28-15
- Frame Relay
  - access rate 49-21
  - back-to-back configurations 49-2
  - BECN 49-9
  - bridging 49-12, 49-49
  - cables 49-3, B-1
  - CIR 49-7
  - compression 49-4
  - congestion control 49-7
  - control signals 49-39
  - Discard Eligibility 49-8
  - DLCI 49-5
  - DLCMI 49-22
  - errors 49-41
  - FECN 49-10
  - IP routing 49-13
  - IPX routing 49-16
  - polling 49-22
  - port configuration 49-19
  - Routing Group 49-51
  - self-configuration 49-6
  - split clocking 36-26, 49-21
  - statistics 49-34
  - translations 49-11
  - trunking 49-17, 49-54
  - viewing parameters 49-29
  - Virtual Circuit 49-5, 49-12
  - Virtual Circuit configuration 49-28
  - virtual ports 49-12
- Frame Relay boards
  - ipxsap** command with, 33-11
- frame relay DLCI 56-64, 56-65
- framefab** command 58-3, 58-32
- Frame-to-Cell modules
  - FCSM I 41-16
  - FCSM I redundancy 41-16
  - FCSM II 41-19
- frclear** command 49-46
- frdelete** command 49-32
- frmodify** command 49-19
- frstatus** command 49-34
- frview** command 49-29
- fsck** command 11-14, 13-18
- fsid** command 22-7
- FSM-C 5-17, 7-84
- FSM-M 5-17, 7-78
  - fiber optic power budget 7-78
- FSM-M-C 5-17, 7-86
  - fiber optic power budget 7-86
- FSM-S 5-17, 7-80
  - fiber optic power budget 7-80
- FSM-SH 5-17, 7-82
  - fiber optic power budget 7-82
- fsmt** command 22-6
- fsmtc** command 22-8
- fsstatus** command 22-10
- FSX-M 3-46
  - fiber optic power budget 3-47
- FSX-S 3-49
  - fiber optic power budget 3-50
- FSX-SH 3-52
  - fiber optic power budget 3-53
- ftimerc** command 22-15
- FTP
  - commands 9-3
- FTP client 9-1
- ftp** command 9-3
- FTP commands
  - ? 9-3
  - ascii 9-3
  - binary 9-3
  - bye 9-3
  - cd 9-3
  - delete 9-3
  - dir 9-3
  - get 9-3
  - hash 9-3
  - lpwd 9-3
  - ls 9-3
  - put 9-3
  - pwd 9-3
  - quit 9-3

- remotehelp 9-3
- user 9-3
- FTP servers 9-1, 9-2
- full-duplex 7-37, 7-40
  - Fast Ethernet 19-14
- fuses
  - spare 5-24
- fwtlv** command 26-22, 28-30

## G

- Generic Cell Rate Algorithm (GCRA) 41-2,  
42-17, 43-46
- generic service relays 32-19
- Giga I ASIC 20-5
- Giga II ASIC 20-5
- Gigabit 20-1, 20-5, 20-8
- Gigabit Ethernet modules 3-5, 7-102
  - GSM-FM-2W 7-118
  - GSM-FS-2W 7-118
  - GSM-FSH-2W 7-118
  - GSX-FM/FS/FSH-2W 3-5
  - GSX-FM/FS-4W 3-8
- GMAP
  - configuring 27-11
  - gap time 27-11
  - update time 27-12
- gmapgapttime** command 27-11
- gmapholdtime** command 27-12
- gmapls** command 27-13
- gmapst** command 27-11
- gmapupdttime** command 27-12
- gmcfg** command 25-11, 28-2
- gmstat** command 28-2
- gp** command 25-19, 25-40
- Group 25-1
  - authenticated 25-1, 25-27
  - changing parameters 25-42
  - CIP 25-21, 25-38
  - creating 25-20
  - deleting 25-45
  - flood limits 23-21
  - IP address 25-22
  - IP routing in 25-22
  - mobile 25-1, 25-5, 25-27
  - non-mobile 25-1, 25-17
  - port assignment to 25-2
  - viewing 25-40
  - WAN routing 25-21, 25-35

- Group Mobility 25-2
  - enabling switch-wide 25-11
- Group multiplexing 22-22, 22-26, 22-28, 22-30,  
22-31, 38-8
- GSM-FM-2W 7-118
- GSM-FS-2W 7-118
- GSM-FSH-2W 7-118
- GSX-FM/FS/FSH-2W 3-5
- GSX-FM/FS-4W 3-8

## H

- half-duplex
  - Fast Ethernet 19-14
- hardware
  - mounting 4-6, 4-8, 4-10, 4-12
- hardware diagnostics 58-1
- hdcfg** command 15-2
- hdstat** command 15-6, 15-7
- Health MIB 15-1
  - management menu 15-1
  - resource thresholds 15-2
- Hello messages
  - and XMAP 27-2
  - defined 45-14
  - exchanges 45-20
  - states 45-62
  - timers 45-56
- help** command 8-2
- history** command 8-13
- hmstat** command 15-7
- hop reduction
  - by VP tunneling 43-21
- hot swapping 1-8, 1-11, 4-3, 4-6, 4-8, 4-10,  
4-12, 4-14, 4-16, 4-18, 4-21, 5-1, 5-3, 5-4,  
5-5, 5-6, 5-7, 5-8, 5-9, 7-7
- hpstat** command 15-8
- HRE 6-2, 6-15
- HRE-Plus 6-15
- hreset** command 15-8
- HRE-VX 6-16
- HRE-X 1-19
  - and IP Firewall 34-2
  - filtering feature 34-1
  - valid configurations 1-20

HRE-X filtering 34-1  
 activating changes 34-5  
 displaying active filters 34-17  
 displaying all filters 34-24  
 disposition 34-21  
 Filtering submenu 34-5  
 global groups 34-4  
 global parameters 34-15  
 IP groups 34-6  
 IP rule precedence 34-2  
 IPX groups 34-10  
 IPX rule precedence 34-3  
 precision index 34-2  
 removing groups 34-29  
 service groups 34-4, 34-12  
 HSM 7-10

## I

**ib** command 11-9  
 IBM 8230 21-21  
 IBM 8272 21-21  
 ICMP protocol 31-3  
 ICMP statistics and errors 31-18  
**icmps** command 31-18  
**igpa** command 44-15  
**igpclc** command 44-67  
**igpd** command 44-32  
**igplcs** command 44-55  
**igplis** command 44-56  
**igplts** command 44-54  
**igpm** command 44-21  
**igpmem** command 44-18  
**igprat** command 44-32  
**igps** command 44-35  
**igpsts** command 44-48  
**igptestb** command 44-29  
**igpteste** command 44-31  
 IISP - see Interim Inter-Switch Signalling Protocol (IISP)  
 IISP routes 46-3  
**ilkcls** command 44-67  
**ilklcs** command 44-63, 44-64  
**ilklts** command 44-60  
**ilkm** command 44-28  
**ilks** command 44-44  
**ilksts** command 44-57  
 IMA 44-1  
 adding links 44-18  
 application example 44-8  
 clearing group statistics 44-67  
 clearing link statistics 44-67  
 conducting tests 44-29  
 configuring 44-3, 44-15  
 configuring link parameters 44-28  
 CSM ports 44-5, 44-19  
 deleting groups 44-32  
 filler cells 44-4  
 group performance statistics 44-54, 44-55, 44-56  
 group statistics 44-48  
 group summary status 44-35  
 groups 44-4  
 ICP cells 44-4  
 link performance statistics 44-60, 44-63, 44-64  
 Link State Machine (LSM) 44-11  
 link statistics 44-57  
 link summary status 44-44  
 links 44-4  
 modifying groups 44-21  
 modifying links 44-20  
 restarting a group 44-32  
 stuff cells 44-4  
 synchronization 44-12  
 troubleshooting 44-68  
 User Interface commands 44-13  
**ima** command 44-13  
 image files 2-7, 6-10, 11-3, 41-25  
**imcd** command 43-52  
**imce** command 43-50  
**imci** command 43-51  
**imcr** command 43-50  
**imgcl** command 11-5  
**imgsync** command 10-16  
**info** command 13-6  
 ingress cache table 39-19  
 Integrated Local Management Interface (ILMI) 35-8, 35-20, 42-59, 45-18  
 LANE 43-30

- intelligent multicast replication 43-47
  - disabling 43-50
  - displaying performance gain 43-51
  - displaying tree depth 43-52
  - enabling 43-50
  - performance gain 43-47, 43-51
  - replication trees 43-49
  - supported on OC-3 modules 43-48
  - tree depth 43-49, 43-52
- interface** command 8-2, 22-5
- interface menu 22-5
- Interim Inter-Switch Signalling Protocol (IISP)
  - 42-28, 42-51, 43-23, 45-1, 45-4, 45-28, 46-1
  - E.164 addresses 46-4
  - route addresses 46-9
  - transit networks 46-6
  - virtual path tunnels 46-3
- Interswitch Protocols (XIP) 27-1
  - submenu 27-1
- Inverse ARP 49-13
- Inverse Multiplexing over ATM (IMA) - See IMA
- IP
  - abbreviated address format 8-15
  - address 9-2
  - BOOTP relay 32-4
  - DHCP 32-4
  - framing type 25-24
  - problems with 57-6
  - RIP mode 25-23
- IP address
  - changing in group 25-43
- ip** command 31-7
- IP protocol 31-3
- IP RIP Filters
  - adding "global" filters 31-30
  - adding specific filters 31-31
  - configuring 31-30
  - deleting filters 31-33
  - displaying all filters 31-34
  - displaying global filters 31-35
  - displaying specific filters 31-35
  - filter precedence 31-32
- IP Routing 25-22
  - adding an IP address to ARP table 31-9
  - adding IP static routes 31-16
  - Address Resolution Protocol 31-3
  - flushing the RIP Routing Table 31-29
  - HRE-X filtering 34-1
  - Internet Control Message Protocol 31-3
  - Internet Protocol 31-3
  - Open Shortest Path First Protocol 31-2
  - PING command 31-20
  - PINGing a host 31-20
  - removing IP static routes 31-17
  - Routing Information Protocol 31-2
  - Simple Network Management Protocol 31-3
  - TELNET protocol 31-3
  - tracing an IP route 31-28
  - Transmission Control Protocol 31-3
  - User Datagram Protocol 31-3
  - viewing ICMP statistics and errors 31-18
  - viewing IP statistics and errors 31-12
  - viewing RIP statistics and errors 31-23
  - viewing TCP statistics 31-24
  - viewing the Address Translation Table 31-8
  - viewing the IP routing table 31-15
  - viewing the IP-to-MAC Table 31-36
  - viewing the TCP Connection Table 31-26
  - viewing the UDP listener table 31-22
  - viewing UDP statistics and errors 31-21
- ipf** command 31-34
- ipmac** command 31-36
- ipr** command 31-15
- ips** command 31-12
- IP-to-MAC Table
  - displaying all entries 31-36
  - displaying specific entries 31-37
  - flushing entries 31-37
- IPX
  - address mapping 24-9
  - routing over ATM 25-39
  - Token Ring 24-14
  - triggered RIP and SAP 25-37
  - VLANs 30-4, 30-7
- ipx** command 33-4
- IPX RIP
  - description of protocol 33-2

- IPX RIP/SAP Filtering
    - adding global filters 33-19
    - adding specific filters 33-20
    - configuring NetWare for WAN links 33-33
    - default setting of filters 33-18
    - deleting filters 33-22
    - displaying all filters 33-23
    - displaying global filters 33-24
    - displaying specific filters 33-24
    - filter precedence 33-25
    - uses for filters 33-18
  - IPX routing
    - adding an IPX static route 33-12
    - configuring IPX Serialization Packet Filtering 33-26
    - configuring IPX Watchdog Spoofing 33-28
    - configuring NetWare for WAN links 33-33
    - configuring SPX Keepalive Spoofing 33-30
    - disabling IPX Router Complex 33-14
    - displaying IPX Routing Table 33-5
    - enabling IPX Router Complex 33-14
    - flushing RIP/SAP tables 33-15
    - GNS Output filters 33-18
    - HRE-X filtering 34-1
    - PINGing an IPX node 33-16
    - removing IPX static routes 33-13
    - RIP Input filters 33-18
    - RIP Output filters 33-18
    - RIP/SAP Filters
      - configuring 33-18
    - SAP Input filters 33-18
    - SAP Output filters 33-18
    - the IPX submenu 33-4
    - viewing IPX statistics 33-8
    - viewing SAP Bindery 33-10
  - IPX Serialization Packet Filtering
    - configuring 33-26
  - IPX static routes
    - removing 33-13
  - IPX Watchdog Spoofing
    - configuring 33-28
  - ipxdrtr** command 33-38
  - ipxext** command 33-37
  - ipxf** command 33-23
  - ipxfilter** command 33-19
  - ipxflush** command 33-15
  - ipxoff** command 33-14
  - ipxping** command 33-16
  - ipxr** command 33-5
  - ipxs** command 33-8
  - ipxsap** command 33-10
  - ipxserialf** 33-26
  - ipxserialf** command 33-26
  - ipxspoof** 33-28
  - ipxt** command 33-36
  - ipxtimer** command 33-35
  - ISDN
    - Basic Rate Interface (BRI) 48-2
  - isdn** command 52-3
  - ISDN Ports
    - accessing the ISDN menu 52-3
    - deleting an ISDN configuration entry 52-5
    - displaying ISDN configuration entry status 52-7
    - modifying an ISDN configuration entry 52-4
    - viewing an ISDN configuration entry 52-6
  - isdnd** command 52-5
  - isdnm** command 52-4
  - isdns** command 52-7
  - isdnv** command 52-6
  - iupgfpa** command 44-33
- ## K
- kill** command 8-23
- ## L
- LAN Emulation (LANE) 38-3, 38-22, 38-56, 39-6
    - back-off timers 38-6
    - BUS 38-54
    - default translations 24-17
    - dynamic 25-5
    - Ethertype translation 24-18, 24-22
    - LECS 38-54
    - LES 38-54
    - SNAP translation 24-20
    - Token Ring 38-4
  - LAN Emulation Clients, see LEC
  - LANE Configuration Server (LECS)
    - ATM address 43-30
  - LANE Service Menu (LSM) 37-4
  - layer 3 forwarding engine 39-4
  - lb** command 11-8
  - LE\_ARP table 38-56
  - Leaky Bucket 41-2, 42-17, 42-20, 43-46
    - dual 42-19

- learning 24-35
- LEC
  - Token Ring 38-4, 38-56
- LECS
  - adding ELANs 37-17
  - adding policies to ELANs 37-20
  - creating 37-13
  - displaying ELANs 37-42
  - displaying policies assigned to an ELAN 37-43
  - displaying statistics 37-39
  - displaying the configuration 37-41
  - displaying the status 37-38
  - Well-Known Address 43-30
- LEDs 7-13
  - amber 57-8, 57-9
  - OK2 57-8
  - STA 57-9
  - TEMP 57-9
- LES/BUS Pair
  - configuration overview 37-5
  - creating 37-7, 37-8
  - displaying LE Client information 37-36
  - displaying registered MAC addresses 37-34
  - displaying statistics 37-26
  - displaying the configuration 37-32
  - displaying the registered route descriptor 37-35
  - displaying the status 37-24
- Line Interface Unit (LIU) 53-5, 53-9
- Line Layer 40-3
- link** command 51-2
- linkadd** command 51-3, 51-4
- linkdelete** command 51-11
- linkmodify** command 51-9
- linkstatus** command 51-15
- linkview** command 51-12
- LLC 24-6, 24-21
- load** command 9-4
- logc** command 13-28
- logging** command 13-24
- Logging menu 13-24
- logical port
  - clear channel 56-40
  - configuration 56-38, 56-40
  - configuration and statistics 56-44
  - protocol configuration 56-47, 56-50
  - protocol configuration and statistics 56-54, 56-58
  - statistics and errors 56-46, 56-63

- login accounts 8-19, 12-2
- logout 8-3
- logout** command 8-3
- lookup** command 8-12
- lpadd** command 56-38
- lpcls** command 56-46
- lpdel** command 56-42
- lpfradd** command 56-64
- lpfrdel** command 56-65
- lpmod** command 56-40
- lppcls** command 56-63
- lppmod** command 56-47, 56-50
- lppview** command 56-54, 56-58
- lpview** command 56-44
- ls** command 9-4, 11-3
- lslb** command 37-23
- lsmcfg** command 37-5
- lvpt** command 43-24, 43-26, 46-3, 46-8, 46-11

## M

- m013** command 56-10
- M013 module
  - application examples 56-4
  - configuration 56-74
  - configuration overview 56-8
  - DS1 channel 56-27
  - DS1 channel configuration and statistical parameters 56-37
  - DS1 channel statistics and errors 56-31, 56-33, 56-34, 56-36
  - DS3 port 56-13
  - DS3 port statistical parameters 56-24
  - DS3 port statistics and errors 56-21, 56-22
  - DS3 port using C-Bit Parity 56-16
  - DS3 port statistics and errors 56-19
  - frame relay DLCI 56-64, 56-65
  - logical configuration 56-11
  - logical port 56-42
  - logical port configuration 56-38, 56-40
  - logical port configuration and statistics 56-44
  - logical port protocol configuration 56-47, 56-50
  - logical port protocol configuration and statistics 56-54, 56-58
  - logical port statistics and errors 56-46, 56-63
  - management menu 56-10
  - physical configuration 56-11
  - router interface configurations 56-67

- router interfaces 56-66, 56-68
- service configuration 56-71, 56-73
- services 56-69, 56-71
- supported physical interfaces 56-3
- technical specifications 56-6
- m013cas** command 56-69
- m013cfgdel** command 56-74
- m013das** command 56-71
- m013mas** command 56-73
- m013vas** command 56-71
- MAC 23-15, 23-16
- MAC addresses
  - configuring 18-6
  - restoring 18-6
- MAC devices
  - VLAN membership 26-22, 28-30
- main menu 8-2
- Maintenance Data Link, see MDL
- Mammoth 19-2
- map** command 35-7, 35-39
  - CSM ports 42-27
  - IISP ports 46-1
  - VPI bits 46-4
- mas** command 20-10, 38-39
  - 1483 scaling services 38-47
  - 802.10 22-28
  - ATM Trunking 38-40
  - Classical IP 38-41
  - FDDI Trunking 22-28
  - Frame Relay 49-57
  - LAN Emulation 38-39
  - PTOP Bridging 38-44
  - VLAN Clusters 38-45
- maskta** command 58-6
- masrt** command 43-30
- Maximum Burst Size (MBS) 42-40, 43-9
  - ASM2 and ASX modules 35-54
- mbwg** command 35-52
- mclk** command 47-10
- mcvl** command 29-13
- MD5 16-4
- MDL 56-17, 56-26
- media access control - see MAC
- Medium Layer 40-3
- memory management 13-17
- memory threshold 15-5
- memstat** command 13-17
- Mobile Groups 25-1, 25-5
  - aging out devices 25-11
  - AutoTracker policies 25-34
  - configuring 25-27
  - def\_group 25-11
  - default group 25-11
  - dynamic LANE 25-15
  - dynamic port assignment 25-5
  - Ethernet and Token Ring ports 25-2
  - move\_from\_def 25-12
  - move\_to\_def 25-11
  - multiple 25-2
  - policies 26-1, 26-20
  - ports in 25-5
  - primary group 25-12
  - static port assignment 25-5
  - viewing 26-19
- modatvl** command 26-6, 26-18, 28-24
- modem port 6-6, 10-3
- modmcvl** command 29-9, 29-12
- modules
  - removing 7-6
- modvl** command 25-23, 25-42, 28-4, 28-19
- modvp** command 25-47, 25-61
  - translations 24-15
- move\_from\_def variable 25-12
  - set in mpm.cmd 25-12
- move\_to\_def variable 25-11
- MPC 39-4
- MPC components 39-4
- mpccfg** command 39-10, 39-11
- MPM 4-2, 5-15
  - Boot prompt configuration A-10
  - file corruption 6-4
  - hot swap warning 6-4
  - OK1 LED 6-4
  - OK2 LED 6-4
  - power down warning 6-4
- mpm** command 10-9
- MPM Module 4-1, 4-3, 4-6, 4-8, 4-10, 4-12, 6-1, 6-3, 6-10, 6-13
  - configuring 10-1
  - LEDs 57-8
  - redundancy 10-9
  - resetting a secondary 10-19
- MPM-1G 4-2, 4-18, 5-15, 6-2, 6-3
  - Boot prompt configuration A-10
- MPM-1GW 4-4

- MPM-C 6-2, 6-3, 41-20, 41-25
    - ATM services 41-26
    - Boot prompt configuration A-7
    - Ethernet management port 41-24
    - file corruption 41-22
    - hot swap warning 41-22
    - OK1 LED 41-22
    - OK2 LED 41-22
    - power down warning 41-22
    - redundancy 41-25
    - serial ports 41-25
    - wide chassis required 41-20
  - mpmget** command 10-17
  - MPM-II 4-2, 5-15, 6-1, 6-3
    - Boot prompt configuration A-10
  - MPM-III 6-2, 6-3, 6-5
    - Boot prompt configuration A-7
    - Ethernet management port 6-9
  - mpmload** command 10-12
  - mpmreplace** command 10-12
  - mpmrm** command 10-13
  - mpmstore** command 10-11
  - MPOA 39-1
    - configuring a client 39-11
    - egress cache table 39-20
    - functionality 39-1
    - ingress cache table 39-19
    - management menu 39-10
    - requirements 39-4
    - viewing client status 39-14
    - viewing servers 39-21
    - viewing statistics 39-15
  - MPOA Client, see MPC
  - MPOA Network 39-8
  - MPOA Server, see MPS
  - MPS 39-5
  - MPS components 39-5
  - MPX 1-8, 1-10, 2-7
    - Boot prompt configuration A-7
    - configuring 10-1
    - file corruption 2-2
    - hot swap warning 2-2
    - OK1 LED 2-2
    - OK2 LED 2-2
    - power down warning 2-2
    - redundancy 2-9
    - resetting a secondary 10-19
  - MTU 31-38
  - multicast claiming 13-33
  - Multicast VLANs 28-1, 29-1
    - creating 29-4
    - deleting 29-11
    - device assignment in 29-2
    - frame flooding in 29-3
    - modifying 29-9
    - multicast addresses 29-6
    - multicast claiming, compared 29-2
    - policies 29-12
    - recipients 29-1, 29-7
    - viewing 29-13
  - multiple spanning tree 20-3
  - multiple user sessions 8-20
  - Multi-Protocol Over ATM, see MPOA
  - mux
    - virtual path 43-21
  - mva** command 35-18
  - mvc** command 35-16, 42-45
  - mvpt** command 43-29
- ## N
- names** command 18-1
  - nb** command 11-10
  - net** command 55-2
  - NetBIOS relays 32-11
  - network address policy 28-7
    - precedence 26-2
  - Network Time Protocol 16-1
  - networking** command 8-2, 31-6
  - newfs** command 11-15, 13-19
  - Next Hop Clients, see NHC
  - Next Hop Resolution Protocol, see NHRP
  - Next Hop Server, see NHS 39-5
  - NHC 39-6
  - NHRP 39-6
  - nisuf** command 10-14
  - NoCLPNoSCR 42-38, 43-7
  - NoCLPSCR 42-39, 43-8
  - noecho** command 8-18
  - non-Ethernet ports 25-29
  - Non-mobile Groups 25-1, 25-17
  - ntaccess** command 16-5
  - ntaccess** command 16-36
  - ntadmin** command 16-5
  - ntadmin** command 16-33
  - ntconfig** command 16-5
  - ntinfo** command 16-5
  - ntinfo** command 16-15



## NTP

- advertised precision 16-14
- client/server 16-8
- client/server authentication 16-9
- current leap second 16-30
- event timer subsystem 16-28
- I/O subsystem 16-27
- key ID 16-34
- key type 16-35
- list of peers 16-15
- local server information 16-21
- local server statistics 16-23
- loop filter information 16-26
- packet count statistics 16-29
- peer association 16-12
- peer associations 16-14
- peer memory usage 16-26
- peer summary information 16-16
- primary receive timeout 16-33
- reset subsystem counters 16-28
- server statistics 16-24
- specify password 16-34
- system flag 16-35
- trusted list 16-37
- version number 16-20
- ntpaddpeer** command 16-12
- ntpaddserv** command 16-13
- ntpauth** command 16-38
- ntpbcast** command 16-13
- ntpckey** command 16-37
- ntpcres** command 16-39
- ntpctlk** command 16-37
- ntpctlstat** command 16-29
- ntpctrap** command 16-41
- ntpdelay** command 16-33
- ntpdisable** command 16-35
- ntpdkey** command 16-38
- ntpdres** command 16-41
- ntpdtrap** command 16-42
- ntpenable** command 16-35
- ntpiconfig** command 16-6
- ntpiconfig** command 16-8
- ntpinfo** command 16-21
- ntpio** command 16-27
- ntpkeyid** command 16-34
- ntpkeytype** command 16-35
- ntpleap** command 16-30
- ntploop** command 16-26
- ntplpeers** command 16-15
- ntpmem** command 16-26

- ntpmlist** command 16-31
- ntpmon** command 16-31
- ntpmres** command 16-41
- ntppasswd** command 16-34
- ntppeers** command 16-16
- ntpprec** command 16-14
- ntppreset** command 16-28
- ntppstat** command 16-24
- ntpreqk** command 16-36
- ntppreset** command 16-28
- ntpshowpeer** command 16-18
- ntpstat** command 16-23
- ntptimeo** command 16-33
- ntptimer** command 16-28
- ntpunconfig** command 16-14
- ntpvrs** command 16-20
- ntpvkey** command 16-37
- ntpvres** command 16-40
- ntpvtrap** command 16-42
- ntstats** command 16-5, 16-23

## O

- OC-3 3-29, 3-30, 3-33, 7-43, 7-45, 7-50, 7-53
- OC-12 3-36, 7-56, 7-59
- OK2 LED 57-8
- Omni Switch/Router 1-1, 2-7
  - HRE-X 1-19
  - see also OmniS/R
- Omni-3wx 4-2, 4-4
- Omni-5 4-6, 4-10
- Omni-5e 4-2, 4-6, 4-8, 4-10
- Omni-5wx 4-2, 4-18
- Omni-5x 4-2, 4-14
- Omni-9 4-8, 4-12
- Omni-9wx 4-2, 4-20
- Omni-9wx-PLUS 4-21
- Omni-9x 4-2, 4-16
- OmniChannel 19-1, 19-9
  - creating 19-10
  - Ethernet 19-9
  - ports 19-11
  - primary/secondary ports 19-12
- OmniS/R 1-1
  - DHCP 32-4
  - HRE-X filtering 34-1
- OmniS/R-5 1-7
- OmniS/R-9 1-10

- OmniSwitch 4-1, 6-10, 7-1, 25-1, 41-25
  - as ATM switch 41-1, 41-5, 41-11
  - as hybrid switch 41-1, 41-4, 41-10
  - as LAN switch 35-5, 41-1, 41-3, 41-9
- DHCP 32-4
- optimized bridge mode 25-29
- OSPF protocol 31-2
- output translations 24-36

## P

- padj** command 45-69
- Partial Packet Discard (PPD) 41-2
- password 8-19, 12-2
  - changing 12-2
- Path Layer 40-2
- path MTU discovery 31-38
- pbstats** command 45-81
- PBX
  - in circuit emulation 36-4
- pcalls** command 45-79
- pdtl** command 45-80
  - summary form 45-80
- Peak Cell Rate (PCR) 42-40, 43-9
  - ASM2 and ASX modules 35-53
- Peer Group
  - ID 45-12
  - multiple 45-6
  - single 45-5
- pestats** command 45-82
- PGA files 6-10
- pgcfg** command 45-31
- pginfo** command 45-49
- phalt** command 45-84
- Phase-Lock Loop 47-2
- Physical Layer Convergence Protocol (PLCP)
  - 54-23, 54-32, 54-33
- ping** command 31-20
- pinouts
  - Ethernet modules 3-11
  - FDDI modules 3-46, 7-77
  - Token Ring modules 3-23
  - WAN modules 3-55
- PLCP 3-39, 3-42, 7-62, 7-65, 7-70, 7-73, 41-53,
  - 47-3, 54-23, 54-32, 54-33
- plink** command 45-62
  - summary form 45-64
- pmap** command 45-73
  - diagram 45-75
  - summary form 45-74
- pmapcr** command 25-19
- pmapdel** command 25-19
- pmapmod** command 25-19
- pmapv** command 25-19
- pmcfg** command 25-63
- pmdelete** command 25-65
- pmon** command 25-64
- pmpause** command 25-65
- pmstat** command 25-66
- PMTU 31-38
- pnbrs** command 45-58
  - summary form 45-59
- pncfg** command 45-39
- pninfo** command 45-52
- pnmap** command 45-76
  - summary form 45-78
- PNNI - See Private Network-to-Network Interface (PNNI)
- PNNI node
  - ATM address 45-52, 45-53
  - ID 45-52
  - node level 45-40, 45-53
- PNNI route addresses
  - configuring 46-9
  - viewing 46-15
- PNNI route properties
  - configuring 46-3
  - deleting 46-8
  - viewing 46-13
- PNNI static route addresses
  - deleting 46-11
- PNNI static routes
  - administrative weight 46-5
  - attributes 46-18
  - Cell Delay Variation (CDV) 46-5
  - Cell Transmit Delay (CTD) 46-5
  - configuring 46-3
  - metrics 46-18
  - reachable addresses 46-6, 46-15
  - route addresses 46-9
  - route property 46-3
  - scope 46-4
  - to nodes 46-17
  - Transit networks 46-6

- PNNI statistics
  - error 45-82
  - port 45-81
  - PTSE 45-83
- PNNI Topology State Elements (PTSEs)
  - 45-20, 45-49, 45-83
  - database 45-65
  - statistics 45-83
  - timers 45-41, 45-56
- PNNI Topology State Packets (PTSPs)
  - timer 45-42, 45-57
- point-to-multipoint
  - ATM virtual circuits 42-35
  - intelligent multicast replication 43-47
- Point-to-Point Protocol (PPP)
  - accessing the PPP menu 50-5
  - adding a PPP entity 50-8
  - deleting a PPP entity 50-20
  - displaying PPP entity status 50-17
  - modifying a PPP entity 50-13
  - setting global parameters 50-6
  - viewing PPP entity configurations 50-14
- policies
  - AutoTracker 26-1
  - configuring 26-4
  - DHCP 26-25
  - DHCP example 26-23
  - DHCP MAC address 26-3
  - DHCP port 26-3
  - IP 28-7
  - IPX 28-7
  - MAC address 26-2
  - network address 26-2, 28-7
  - port 26-2, 28-9
  - port binding 26-2
  - protocol 26-2
  - user-defined 26-2
- port mapping 25-19
  - example 25-67
  - operation of 25-68
  - relationship to policies 25-67
  - subset of ports 25-68
- port mirroring 25-32, 25-58
  - disabling 25-61
  - enabling 25-61
  - operation of 25-58
  - RMON probe 25-59
- Port Monitoring 25-62
  - menu 25-62
  - starting a session 25-64
  - statistics 25-66
- port monitoring resources 25-63
- port policies 28-9
  - backbone connections 28-12
  - inactive VLANs 28-12
  - silent stations 28-12
  - usefulness 28-12
  - with VAP 27-9
- port tests 58-11
  - cabling 58-36
  - cabling requirements 58-12, 58-20
- ports 25-51
  - assignment to Group 25-2
  - FDDI 22-16
  - Frame Relay 49-1
  - information 25-51
  - spanning tree 23-29
  - statistics 25-54
  - translations 24-28
- power cords 5-26
- power supply 1-8, 1-11, 4-1, 4-4, 4-6, 4-8, 4-10, 4-12, 4-14, 4-16, 4-18, 4-21, 5-1, 5-2, 5-6
  - connecting a DC power source 1-21, 5-20
  - installing 5-19
  - removing 5-19
  - replacing fuse 5-24
- ppcfg** command 45-46
- ppinfo** command 45-12, 45-60
  - summary form 45-61
- ppp** command 50-5
- pppadd** command 50-8
- pppdelete** command 50-20
- pppglobal** command 50-6
- pppmodify** command 50-13
- pppstatus** command 50-17
- pppview** command 50-14
- ppstats** command 45-83
- pptse** command 45-65
- pradd** command 46-9
- prdel** command 46-8, 46-11
- precedence
  - HRE-X filtering 34-2
- precision index
  - HRE-X filtering 34-2
- preset** command 45-86
- prestart** command 45-85

- priority
  - ATM virtual circuits 42-42, 43-11
- Private Network-to-Network Interface (PNNI)
  - 45-1
  - address summarization 45-40, 45-53
  - adjacencies 45-69
  - administrative submenu 45-29
  - administrative weight 45-15
  - alternate routing 45-25
  - ATM address 45-4
  - attributes 45-15
  - border nodes 45-6
  - Call Admission Control (CAC) 45-25
  - calls 45-79
  - Cell Delay Variation (CDV) 45-15, 45-33
  - Cell Transfer Delay (CTD) 45-15, 45-33
  - command help 45-30
  - complex representation 45-9, 45-44
  - configuration information 45-87
  - configuring 45-1, 45-3
  - configuring multi-peer group operation 45-37
  - Connect message 45-26
  - connections diagram 45-75
  - crankback 45-25
  - database summary packets 45-14, 45-59, 45-81
  - default ATM node addresses 45-12
  - defined 45-1
  - Designated Transit List (DTL) 45-5, 45-23, 45-38, 45-50, 45-80
  - discards 45-82
  - E.164 addresses 46-4
  - errors 45-50, 45-82
  - establishing a connection 45-21
  - FCSM I guidelines 45-92
  - general information submenu 45-28
  - halting 45-84
  - Hello packets 45-14
  - hello protocol 45-19
  - Hello states 45-62
  - hello timers 45-42
  - hierarchy level 45-6
  - horizontal link inactive timer 45-45
  - image files 45-3
  - load balancing 45-1
  - logical group nodes 45-37, 45-44
  - map table 45-73
  - maximum nodes 45-34
  - maximum paths 45-35
  - menu 45-27
  - metrics 45-15
  - neighbor nodes 45-19
  - neighbor states 45-58, 45-60
  - network 45-5
  - network initialization 45-18
  - nodal map table 45-76
  - node 45-5
  - operations limits 45-34
  - parent ATM address 45-54
  - parent node ID 45-54
  - parent peer group ID 45-55
  - parent peer group leader node ID 45-55
  - path limitations 45-2
  - path selection 45-23
  - peer group 45-6, 45-53
  - peer group ID 45-12
  - peer group leader election 45-8
  - peer group leader priority 45-44, 45-54
  - peer group leader state 45-54
  - peer groups 45-5
  - PNNI Topology State Elements (PTSEs) 45-5, 45-14
  - PNNI Topology State Packets (PTSPs) 45-5, 45-14
  - point-to-multipoint calls 45-50
  - point-to-point calls 45-49
  - port information 45-60
  - port type 45-3
  - preferred peer group leader 45-54
  - PTSE statistics 45-83
  - public networks 43-20
  - redundancy 45-89
  - resetting statistics 45-86
  - restarting 45-85
  - route addresses 46-1
  - Route Management menu 46-2
  - route properties 46-1
  - Routing Control Channel (RCC) 45-37, 45-47
  - Setup Message 45-24
  - Shortest Path First (SPF) algorithm 45-20, 45-49
  - static route prefixes 46-14
  - static route submenu 45-28
  - static routes 45-4, 46-1
  - static routes and VP tunnels 46-3
  - statistics 45-83
  - statistics submenu 45-29
  - summarization 45-1, 45-17, 45-22

- summary address 45-13, 45-40, 45-54
- summary form of commands 45-30
- Switched Virtual Circuit Channel
  - Connection (SVCC) interval timer 45-45
- topology database 45-5, 45-20, 45-22
- UI menus 45-27
- unusable links 45-75
- verifying routes 45-88
- viewing statistics 45-81, 45-82
- prmcfg** command 45-87
- probes 18-3
- probes** command 18-4
- proutea** command 46-15
  - summary form 46-16
- prouten** command 46-17, 46-18
- prp** command 46-13
- prpadd** command 46-1, 46-3
- prt** command 46-14
- prtst** command 45-88
- prty\_disp** command 25-19
- prty\_mod** command 25-19
- psmap** command 45-70
- ptinfo** command 45-56
- PTOP Bridging 38-28
- pvcfg** command 45-87
- PVCs 36-17, 41-1, 41-12
  - ATM access 35-8
  - configuring 35-12
  - deleting 35-16, 42-45
  - modifying 35-16, 42-45
  - viewing 42-55
- pw** command 8-12, 12-2
- pwd** command 11-2

## Q

- Quality of Service (QoS) 41-2, 42-9
  - ATM virtual circuits 42-37, 43-6

## R

- rb** command 11-8
- reboot 12-3
  - see also boot
- reboot** command 12-3
- receive threshold 15-3
- redundancy
  - FCSM I 41-16
  - MPM 4-3, 4-6, 4-8, 4-10, 4-12, 4-18, 4-20, 6-13, 10-9
  - MPX 1-7, 1-8, 1-10, 2-9
  - power supply 1-8, 1-11, 4-6, 4-8, 4-10, 4-12, 4-14, 4-16, 4-18, 4-21, 5-1, 5-3, 5-4, 5-5, 5-6, 5-7, 5-8, 5-9
- re-executing commands 8-13
- Reference Timing
  - derived clock 47-2
- reg\_port\_rule variable 28-9
- relayc** command 32-2, 32-3
- relays** command 32-23
- remote trunking stations 23-17
- renounce** command 10-14
- res** command 18-1
- reset** command 58-5
- Resource Management 42-11
- resource thresholds 15-2
- riadd** command 56-66
- ridel** command 56-67
- RIF stripping
  - and UDP relay 32-1
- rimod** command 56-67
- RIP protocol 31-2
- ripflush** command 31-29
- rips** command 31-23
- ripxsr** command 33-13
- risr** command 31-17
- riview** command 56-68
- rm** command 2-8, 6-12, 9-4, 11-4
- rmatvl** command 28-4, 28-26
- rmgp** command 25-45
- rmmcvl** command 29-11
- RMON 18-3
- rmvp** command 25-48
- router interface 56-66, 56-68
  - configuration 56-67
- routing 24-1
  - default VLAN 30-8
  - Frame Relay 49-51
- Routing Control Channels (RCCs) 45-49

**S**

- sampling interval 15-6
- SAP
  - description of protocol 33-2
- SAP Bindery
  - viewing the, 33-10
- sc** command 13-3
- SC connectors
  - proper handling 3-3
- SCR 35-54
- scvc** command 43-3, 43-12, 43-14, 43-15
- SDH 40-1
- Search Command. See UI Table Filtering
- seclog** command 14-14
- secreset** command 10-19
- secs** command 40-21
- Section Layer 40-3
- security 12-1
- security** command 8-2
- sedm** command 40-8
- seds** command 40-10
- segment buffers
  - relation to Virtual Circuits 35-10
- Segmentation and Reassembly (SAR) 35-9
- selgp** command 23-6
- ser** command 6-7, 9-4, 10-2, 10-3
- serial port
  - connections 6-6
  - DCE 6-6
  - DTE 6-6
- service configuration
  - M013 module 56-71, 56-73
- service registry table
  - adding ATM addresses to 43-32
- services 22-21, 38-1
  - Classical IP 38-11
  - FDDI 22-21
  - FDDI Trunking 22-22
  - LAN Emulation 38-3
  - M013 module 56-69, 56-71
  - PTOP Bridging 38-13
  - VLAN Clusters 38-46
- services** command 8-2, 22-21, 38-18
- Service-Specific Connection Oriented Protocol (SSCOP) 35-20, 42-59
- ses** command 40-6
- sess** command 40-23
- Shortest Path First (SPF) algorithm 45-20
- si** command 13-4
- single spanning tree 20-3
- SLIP 10-3, 57-9
- slot** command 2-9, 6-13, 13-14, 41-16, 41-18
- slot table 13-14
- sls** command 10-11
- smon** command 40-4
- SNAP 24-6, 24-19
- SNMP protocol 31-3
- SNMP statistics 17-7
- SNMP traps 17-7
- snmps** command 17-7
- soft PVCs 36-17, 42-6
  - broadband bearer 43-15
  - configuring 43-3
  - deleting 42-45
  - modifying 42-45
  - point-to-multipoint 43-5, 43-12
  - priority 43-4
  - retries 43-15
  - terminating ATM address 43-4
  - viewing 43-17
- software
  - installation problems 57-4
  - switch 2-7, 6-10
- SONET 40-1
- sonet** command 40-5
- SONET error collection 40-1
  - clearing statistics 40-21
  - commands 40-5
  - disabling 40-4
  - displaying collection status 40-4
  - displaying error statistics tables 40-10
  - enabling 40-4, 40-6
  - intervals 40-2
  - Line Layer 40-3
  - Line Table statistics 40-13
  - LTE 40-3
  - Medium Layer 40-3, 40-8
  - Medium Layer Table statistics 40-8
  - Path Layer 40-2
  - Path Table statistics 40-14
  - protocol layers 40-2
  - PTE 40-3
  - Section Layer 40-3
  - Section Table Statistics 40-12
  - STE 40-3
  - summary statistics 40-23

source routing 21-4, 21-7  
     and DHCP 32-5  
     hop count 21-4  
     parameters 21-14, 21-17  
     virtual rings 21-14  
 Spanning Tree 23-27, 25-29  
     non-mobile group 25-18  
     parameters 23-24, 23-27, 23-31  
     ports 23-29  
 SPVC 36-17  
 SPX  
     description of protocol 33-2  
 SPX Keepalive Spoofing  
     configuring 33-30  
     SPX-Packet tolerance counting 33-30  
**spxspoo**f 33-30  
**srs** command 21-17  
 SRTB 21-11  
 SRTS clocking 36-8  
 STA LED 57-9  
 static bridge address 23-12  
     configuring 23-9  
 static port assignment 25-2  
 static routes  
     adding IP 31-16  
     removing IP 31-17  
 statistics  
     module level 15-7  
     port level 15-8  
     port monitoring 25-66  
     resetting 15-8  
     switch level 15-6  
 STATUS ENQUIRIES  
     Frame Relay 49-6, 49-22, 49-23  
 STM-1 40-1  
 STS-1 40-1  
 summarization 45-17  
**summary** command 8-2, 13-1  
 Sustainable Cell Rate 42-40, 43-9  
     ASM2 and ASX modules 35-54  
 SVCs 41-1, 41-12  
     ATM access 35-8  
**svvc** command 43-17  
**swap** command 10-20  
**swap on** command 41-16  
**swch** command 24-28, 24-29  
 switch  
     software 2-7, 6-10  
**switch** command 8-2, 24-23  
 switch menu 24-23

switch software  
     Boot prompt 9-5  
     loading with FTP 9-2  
     loading with ZMODEM 9-4  
 switching modules 2-7, 3-5, 3-11, 3-17, 3-20,  
     3-23, 3-29, 3-45, 3-55, 4-1, 6-10, 7-1, 7-10,  
     7-14, 7-28, 7-43, 7-76, 7-88, 7-102, 41-25,  
     48-11, 48-16  
     disabling 58-5  
     fiber optic 3-30, 3-33, 3-36, 3-45, 7-19, 7-40,  
     7-45, 7-50, 7-53, 7-56, 7-59, 7-76, 7-78, 7-80,  
     7-82, 7-111  
     hot swapping 7-7  
     installing 7-4  
     power consumption 1-14, 1-15, 1-16, 1-17,  
     5-15, 5-16, 5-17, 5-18  
     removing 7-6  
     resetting 58-5  
**swlogc** command 14-6  
**syncctl** command 10-15  
 synchronous clocking 36-8  
**syscfg** command 13-20  
**syslog** command 13-24, 14-2  
**systat** command 13-15  
 system boot A-2  
     commands 9-6  
     -see also boot  
**system** command 8-2  
 system description 13-20  
 system info 11-13, 13-5  
 system menu 11-13, 13-5  
 system prompt 8-5  
 system statistics 13-15  
 system variables 13-2

## T

T1  
     fractional 48-2  
     framing 53-2  
 T1/E1 menu 53-3  
 T1/E1 ports 36-17, 44-21, 53-1  
     alarms 53-11  
     configuring 31 timeslots on a WAN E1 port  
     48-39  
     Extended Superframe 53-2, 53-4  
     facility datalink 53-6  
     in circuit emulation 36-1, 36-4, 36-12, 36-23  
     line coding 53-5, 53-10

- Line Interface Unit (LIU) 53-5, 53-9
- loopback 44-23, 44-27, 53-7, 53-10
- remote statistics 53-20
- signaling 53-7, 53-10
- statistics 53-17
- Superframe 53-2, 53-4
- yellow alarms 53-7, 53-14
- Table Filtering. See UI Table Filtering
- takeover** command 10-18
- task utilization statistics 13-16
- taskstat** command 13-16
- TCP protocol 31-3
- tcpc** command 31-26
- tcps** command 31-24
- te** command 53-3
- technical support 57-2
- telcs** command 53-18
- telis** command 53-19
- TELNET command
  - using 31-27
- telnet** command 31-27
- telts** command 53-17
- temod** command 53-4, 53-8
  - configuring a T1 port 53-4
  - configuring an E1 port 53-8
- TEMP LED 57-9
- temperature masking 58-6
- temperature sensor 13-15
- tercs** command 53-21
- teris** command 53-21
- terts** command 53-20
- tes** command 53-11, 53-13, 53-15
  - viewing a T1 port 53-13
  - viewing an E1 port 53-15
- test** command 58-7
- testcfg** command 58-27, 58-34
- testdisp** command 58-26
- time 13-8
- Time Division Multiplexing (TDM) 36-1
- time slot 53-2
- time zone 13-8
  - configuring 13-9
- Timing
  - local 47-3
  - loop 47-3
- tok** command 21-12
- Token Ring
  - Bytex hubs 21-21
  - copy bit stamping 21-10
  - default translations 24-17, 24-26
  - IBM hubs 21-21
  - LEC 38-4, 38-56
  - ODS 836J 21-21
  - port mirroring 25-58
  - Synoptics hubs 21-21
- Token Ring modules 3-23, 7-88, 7-99
  - configuring tests 58-29
  - pinouts 3-23
  - TSM-C-6 7-90
  - TSM-CD-16W 7-99
    - LEDs 7-101
  - TSM-CD-6 7-96
  - TSM-F-6 7-92
  - TSX-C-32W 3-24
  - TSX-CD-16W 3-26
- Token Ring ports
  - configuring 21-23
- tpcfg** command 3-24, 3-26, 7-96, 21-10, 21-23, 21-24, 21-26
- tperrs** command 21-35
- tpers** command 21-36
- tpvc** command 21-33
- traceroute** command 31-28
- traffic descriptor names 42-15
- Traffic Descriptors
  - Maximum Burst Size (MBS) 35-54, 42-14
  - Peak Cell Rate (PCR) 35-53, 35-55, 42-14
  - Sustainable Cell Rate (SCR) 35-54, 42-14
- Traffic Enforcement
  - congestion-based 42-16
  - static 42-16
- traffic shaping
  - ASM2 and ASX modules 35-52
  - bandwidth groups 35-52
- Transit networks 46-6
- translations 24-1
  - ATM LANE 24-17
  - automatic 24-34
  - default options 24-15
  - Ethernet 24-16
  - Ethertype 24-18
  - FDDI 24-16
  - LLC 24-21
  - SNAP 24-19
  - Token Ring 24-17



transmission states  
 XMAP 27-3  
 transmit credit 25-30  
 transmit/receive threshold 15-3  
 traps  
   configuring 17-2  
**trdef** command 24-26  
 troubleshooting 57-1  
**tsc** command 7-96, 21-20, 21-30  
 TSM-C-6 5-17, 7-90  
 TSM-CD-16W 7-99  
 TSM-CD-6 5-17, 7-96  
 TSM-CD-6W 5-17  
**tsmcfg** command 21-28, 21-29  
 TSM-F-6 5-17, 7-92  
   fiber optic power budget 7-92  
**tsmvc** command 21-31  
 TSX-C-32W 3-24  
 TSX-CD-16W 3-26

## U

UDP 31-3  
 UDP relay 32-1  
**udpl** command 31-22  
**udps** command 31-21  
 UI Table Filtering 8-26  
   Filter Command 8-29  
     combining Search Command with 8-31  
     **more** mode and 8-26  
   Search Command 8-27  
     combining Filter Command with 8-31  
     **more** mode and 8-26  
     renewing a search 8-28  
   wildcards and 8-33  
 Universal Serial Port 48-2  
 Universal Time Coordinate (UTC) 13-8  
 Unspecified Bit Rate (UBR) 42-8, 42-23, 45-37  
 User Interface 8-1, 8-3  
 user login 8-19, 12-2  
 USP. See Universal Serial Port.  
 UTC 13-8

## V

VAP  
   configuring 27-9  
   databases 27-8  
   relation to port policies 27-9  
**vap** command 35-19, 42-55  
 Variable Bit Rate (VBR) 45-36  
   non-real-time 42-7, 42-22  
   real-time 42-7, 42-22  
**vas** command 20-11, 38-51  
   802.10 22-31  
   FDDI Trunking 22-31  
   Frame Relay 49-56  
**vat** command 38-60  
**vbwg** command 35-55  
 VCI bits 42-28, 42-59  
**vclk** command 47-8  
**vclka** command 47-9  
**vcrs** command 35-48, 43-45  
**vcs** command 35-45, 35-46, 35-47, 43-40,  
   43-42, 43-43, 43-44  
**vcts** command 35-50  
**ve** command 25-56  
**velan** command 37-42  
 verbose 8-9  
**vgptovc** command 38-62  
**vi** command 24-22, 25-51  
**via** command 25-49  
**viatrl** command 26-20, 28-28  
**view** command 11-6  
**vigl** command 25-13  
**vimcrl** command 29-14, 29-15  
**viqs** command 20-12  
 virtual channel connection  
   modifying 35-16, 35-18  
 Virtual Channel Identifier (VCI) 42-4  
 virtual channels  
   statistics 35-45, 35-48, 35-50  
   status 35-29  
   viewing 35-28  
 virtual circuits  
   viewing 42-71  
 Virtual Path (VP) Tunneling 43-20  
 Virtual Path Identifier (VPI) 42-4  
 virtual path mux 43-21  
 Virtual Path Tunnels 45-46

- virtual ports 25-17
    - adding 25-46
    - deleting 25-48
    - errors 25-56
    - format 25-31
    - information on 25-49
    - modifying 25-47
    - statistics for 25-51, 25-54
    - VLAN membership 28-29
    - VLAN/group membership 26-21
  - virtual rings
    - setting up 21-6
  - virtual router ports 28-19
    - creating 25-22
  - vivl** command 26-21, 28-29
  - VLAN Advertisement Protocol
    - see VAP
  - VLAN Clusters 38-30
    - 1483 encapsulation 38-31
  - vlan** command 8-2, 25-19
  - VLAN policies
    - deleting 28-25, 29-10
    - modifying 28-26, 29-11
    - viewing 26-20, 28-28, 29-14
  - VLANs 25-17, 28-1
    - application examples 30-1
    - backbone 30-10
    - Banyan Vines 28-31
    - bridges 23-4
    - creating 28-16
    - deadlocked 57-5
    - default 28-4
    - deleting 28-26
    - deleting policies in 28-25, 29-10
    - frame flooding in 28-15
    - IP routing in, 31-4
    - IPX networks 30-4, 30-7
    - logical policies 30-2
    - modifying 28-24
    - multicast 29-1
    - network address policies 30-2
    - policies 26-2, 28-3
    - port policy 28-9, 28-18
    - router ports 28-15
    - router traffic in 28-7
    - secondary traffic 28-6
    - translated frames 30-7
    - trunking 22-22, 38-8
    - viewing 26-19, 28-27
  - vlap** command 27-9
  - vlat** command 38-56
  - vlb** command 37-24
  - vlbc** command 37-32
  - vlbs** command 37-26
  - vlec** command 37-33, 37-36
  - vlecs** command 37-38
  - vlecsc** command 37-41
  - vlecscs** command 37-39
  - vlrs** command 35-39, 43-35
  - vls** command 35-38, 43-33
  - vlts** command 35-43
  - vmac** command 37-34
  - vmpe** command 39-10, 39-14
  - vmpece** command 39-10, 39-20
  - vmpci** command 39-10, 39-19
  - vmpcs** command 39-10, 39-21
  - vmpecs** command 39-10, 39-15
  - VP switching 42-43
  - VP Tunnels
    - caution 43-22
    - creating 43-22
    - deleting 43-29
    - modifying 43-29
    - route addresses 46-9
    - viewing 43-24
  - VPI bits 42-28, 42-59
  - vpis** command 54-28
  - vpolicy** command 37-43
  - vps** command 54-17
  - vs** command 25-54
  - vss** command 38-52, 38-53, 38-58, 38-61
  - vva** command 35-36
  - vvc** command 35-28, 42-71
- ## W
- wan** command 48-22
  - WAN Links
    - accessing the LINK menu 51-2
    - adding a link record 51-3
    - deleting link records 51-11
    - displaying link status 51-15
    - modifying a link record 51-9
    - viewing link records 51-12

WAN modules 3-55, 48-11, 48-16  
  access rate 48-23, 48-30  
  back-to-back configurations 48-4  
  cables 48-19, B-1  
  data compression 48-20  
  pinouts 3-55  
  port configuration 48-22  
  split clocking 48-24  
  statistics 48-32  
  viewing parameters 48-26  
WSM-BRI 48-16  
WSM-FT1/E1 48-13  
WSM-S 48-11  
WSX-BRI-SC 3-69  
WSX-FT1/E1-SC 53-1  
WSX-FT1/E1-SC 3-65  
WSX-S-2W 3-60  
WSX-SC 3-62  
WAN routing 25-21, 25-35  
warning  
  hot swapping and file corruption 2-2, 6-4,  
    41-22  
  power down and file corruption 2-2, 6-4,  
    41-22  
**wb** command 11-10  
well-known address  
  for LECS 43-30  
**who** command 8-21  
**wpmmodify** command 48-22  
**wpstatus** command 48-32  
**wpview** command 48-26  
**write** command 8-22  
WSM 5-17  
WSM-FT1/E1 53-1  
WSX-BRI-SC 3-69  
WSX-FT1/E1-SC 3-65, 53-1  
WSX-S-2W 3-60  
WSX-SC 3-62

## X

X802.1Q 20-1, 20-3  
X-LANE 38-14  
**xlat** command 31-8  
XMAP  
  adjacency 27-2  
  and remote switches 27-4  
  common transmission time 27-7  
  configuring 27-5  
  discovery transmission time 27-6  
  transmission states 27-3  
  well-known MAC address 27-3  
**xmapcmntime** command 27-7  
**xmapdisctime** command 27-6  
**xmapls** command 27-5  
**xmapst** command 27-5

## Z

ZMODEM 9-1, 9-4, A-1

