Using Technician Interface Scripts

Router Software Version 10.0
Site Manager Software Version 4.0

Software Version BNX 6.0
Site Manager Software Version BNX 6.0

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About This Guide

Use this guide if you are responsible for monitoring and maintaining the performance of Bay Networks routers and BNX platforms using the Bay Networks Technician Interface. Refer to this guide for

- An overview of Technician Interface scripts
- Instructions on how to
  - Load scripts
  - Set up scripts
  - Use script commands
  - Use the menu utility
- Instructions on how to display (**show** a snapshot, or **monitor** via periodic polling) statistical and configuration information about router services
- Instructions on how to enable or disable router or BNX services
- Instructions on how to configure the Packet Capture utility on the router or BNX platform

Software Suites

Routing and Switching software is available in the following suites.

- The *System Suite* includes IP routing, 802.1 Transparent Bridge, Source Route Bridge, Translation Bridge, SNMP Agent, Bay Networks HDLC, PPP, OSPF, EGP, BGP, and basic DLSw.
- The *LAN Suite* includes DECnet Phase 4, AppleTalk Phase 2, OSI, VINES, IPX, and ATM DXI, in addition to the System Suite.
- The *WAN Suite* includes ATM DXI, Frame Relay, LAPB, and X.25, in addition to the System Suite.
- The *Corporate Suite* includes the System, LAN, and WAN suites in their entirety.
- The *ARE ATM Suite* provides RFC 1483 and 1577 compliance, ATM UNI 3.0 signaling, in addition to the LAN Suite.
- The *ARE VNR Corporate Suite* provides ATM Forum LAN Emulation, in addition to the ARE ATM Suite and Corporate Suite.
- The *BNX Suite* includes IP Routing, SNMP Agent, Bay Networks HDLC, PPP, OSPF, EGP, BGP, File-Based Performance Statistics, Frame Relay switching, and Frame Relay billing, and selected components from the Corporate, ARE ATM, and ARE VNR Corporate suites.

Availability of features and functionality described in this guide depends on the suites you are using.

Audience

Written for network managers and router technicians, this guide assumes that you have a working knowledge of TCP/IP networking, and have some familiarity with network management principles concerning the MIB, SNMP, configuration and statistics management.

Before You Begin

Before using this guide to run Technician Interface commands on a router or BNX platform, you must

- Install the router or BNX platform
- Use one of the following methods to establish a connection to the router or BNX platform:
  - — Connect the serial port of an ASCII terminal device (for example, a DEC VT100) directly to the console port of the router or BNX platform
  - — Connect the serial port of a workstation or PC directly to the console port of the router or BNX platform. (Run ASCII terminal emulation software on the workstation or PC.)
  - — Dial in to the console port of the router or BNX platform from a workstation or PC running ASCII terminal emulation software. (This alternative requires one modem locally attached to your workstation or PC, and another modem locally attached to the console port of the router or BNX platform you want to access.)
  - — Establish a Telnet (in-band) connection to the router or BNX platform

Note: *Before you can access the Technician Interface using Telnet, the router or BNX platform must have at least one assigned IP address. Although there is no limit to the number of Telnet connections that you can make to the Technician Interface, we recommend that you establish no more than one Telnet session per router or BNX platform.*

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Conventions

This section describes the conventions used in this guide.

angle brackets (< >)	Indicate that you choose the text to enter based on the description inside the brackets. Do not type the brackets when entering the command. Example: if command syntax is **ping** *<ip_address>*, you enter **ping 192.32.10.12**
arrow character (➔)	Separates menu and option names in instructions. Example: Protocols➔AppleTalk identifies the AppleTalk option in the Protocols menu.
bold text	Indicates text that you need to enter and command names in text. Example: Use the **dinfo** command.
brackets ([ ])	Indicate optional elements. You can choose none, one, or all of the options.
italic text	Indicates variable values in command syntax descriptions, new terms, file and directory names, and book titles.
quotation marks (“ ”)	Indicate the title of a chapter or section within a book.
`screen text`	Indicates data that appears on the screen. Example: `Set Bay Networks Trap Monitor Filters`
ellipsis points	Horizontal (. . .) and vertical (⋮) ellipsis points indicate omitted information.
vertical line (|)	Indicates that you enter only one of the parts of the command. The vertical line separates choices. Do not type the vertical line when entering the command. Example: If the command syntax is **show at routes** | **nets**, you enter either **show at routes** or **show at nets**, but not both.

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Acronyms

ACE	Advanced Communications Engine
AFN	Access Feeder Node
ALN	Access Link Node
AN	Access Node
ANH	Access Node Hub
APING	APPN Ping
APPN	Advanced Peer-to-Peer Routing
ASCII	American Standard Code for Information Interchange
ASN	Access Stack Node
ASN.1	Abstract Syntax Notation
AT	AppleTalk Protocol
ATM	Asynchronous Transfer Mode
BCN	Backbone Concentrator Node
BLN	Backbone Link Node
BLN-2	Backbone Link Node (2 power supplies)
BOOTP	Bootstrap Protocol
CLNP	Connectionless Network Protocol
CN	Concentrator Node
CPU	Central Processing Unit
CRC	Cyclic Redundancy Check
CSMA/CD	Carrier Sense Multiple Access with Collision Detection
DLCMI	Data Link Control Management Interface

DOS	Disk Operating System
DRAM	Dynamic RAM
DSAP	Destination Service Access Point
EOF	End of File
FAT	File Allocation Table
FDDI	Fiber Distributed Data Interface
FIFO	First In First Out
FTP	File Transfer Protocol
FN	Feeder Node
FR	Frame Relay
FRE	Fast Routing Engine
GAME	Gate Access Management Entity
GMT	Greenwich Mean Time
HDLC	High-level Data Link Control
HSSI	High Speed Serial Interface
ICMP	Internet Control Message Protocol
IN	Integrated Node
IP	Internet Protocol
IPX	Internet Packet Exchange
ISDN	Integrated Services Digital Network
LAN	Local Area Network
LAPB	Link Access Procedure Balanced
LED	Light Emitting Diode
LMI	Local Management Interface
LLC	Logical Link Control
LN	Link Node
LSP	Link State Packet
MAC	Media Access Control
MCT1	Multichannel T1
MIB	Management Information Base
MOSY	Managed Object Syntax
NSAP	Network Service Access Point
NVFS	Non-Volatile File System

OSI	Open Systems Interconnection
PCMCIA	Personal Computer Memory Card International Association
PPP	Point-to-Point Protocol
PPX	Parallel Packet Express
PROM	Programmable Read-Only Memory
QENET	Quad Ethernet
RAM	Random Access Memory
RIF	Routing Information Field
RFC	Request for Comment
SAP	Service Access Point
SIMM	Single In-line Memory Module
SMDS	Switched Multimegabit Data Services
SNAP	SubNetwork Access Protocol
SNMP	Simple Network Management Protocol
SRM-L	System Resources Link Module
SYSCON	System Controller board
TFTP	Trivial File Transfer Protocol
TIP	Terminal Interface Program
TP	Transaction Program
VINES	Virtual Networking System
WAN	Wide Area Network

Chapter 1
Using Technician Interface Scripts

This chapter provides an overview of the Technician Interface scripts and explains how to run them from the Technician Interface command line. After giving an overview of the scripts and how they are structured, this chapter describes how to do the following:

- Load scripts
- Set up scripts
- Use script commands
- Use the menu utility

This manual assumes you are familiar with the Technician Interface. For complete information about this network management tool, see *Using Technician Interface Software*. For information about writing your own scripts, see *Writing Technician Interface Scripts*.

What Are Technician Interface Scripts?

The Technician Interface scripts are programs that let you manage the router using information stored in the Bay Networks Management Information Base (MIB). You can use the scripts to display statistical and configuration information about various router services and to enable or disable these services.

Script Types

Most Technician Interface scripts are *.bat* and *.mnu* files that you must load on a memory card in the router. Each *.bat* file enables you to generate statistics about a protocol or service the router supports. Each *.mnu* file enables you to display this information in Menu form. Each script contains a subcommand for each option it supports.

A number of other Technician Interface scripts are programs embedded within the router software image, rather within batch files. You enter the command for any script, regardless of type (embedded or batch file), in the same way at the Technician Interface prompt.

The router software currently includes *embedded scripts* for the following services:

- CSMACD
- IP
- FR
- FTP
- TCP
- TFTP
- SNMP
- SYNC
- TELNET

The router software implements all other scripts as batch files.

Commands for Scripts

Scripts support the following command categories:

show	Displays configuration, state, and statistical information about a router service. This command helps you isolate problems such as circuits that are not working, packets that are not being forwarded, and so on. It uses the *show.bat* file.
monitor	Displays the same information as the **show** command but refreshes the display periodically so you can observe trends and changes. Since you can use **monitor** in place of **show**, this manual does not describe syntax for the **monitor** command. This command uses the *monitor.bat* file.
enable/disable	Enables or disables system features, protocols, drivers, or individual circuits. These commands use the *enable.bat* and *disable.bat* files.
menu	Provides a menu interface to the scripts. Also provides a menu-building feature that enables you to create custom menus. This command uses *menu.bat* and various *.mnu* files.

Each **show** command supports a subset of commands that display statistical and configuration information about a particular router service. Some **show** commands present a higher level overview of the router. For example,

show circuits	Displays information about all the drivers on the router. You can use this command to display information about all driver circuits without needing to know the driver that runs on each circuit.
show drivers	Displays information about the system software configuration of the router's link modules.
show hardware	Displays backplane, configuration file, image, memory, PROM, and slot information about the router's hardware.
show protocols	Displays information about the protocols configured on the router's slots.
show state	Displays information about the current state of the router services. Using this command lets you know what services the router is running and their current state.
show system	Displays information about the router's memory, buffers, drivers, and configured protocols.

Note: *You can abbreviate command names, using the first three characters of the command name, as long as the abbreviation uniquely identifies the command*

To establish the search path used to find the script files, use the **run setpath** command. It defines the aliases that integrate the scripts into the Technician Interface command set. The **setpath** command uses the *setpath.bat* script and is explained in the "Setting Up Scripts" section.

Loading .bat and .mnu Scripts

You can use the Bay Networks implementation of File Transfer Protocol (FTP) to load *.bat* version scripts and *.mnu* script menu files into a memory card on the router. FTP enables you to load more than one script at a time.

Before you can load any scripts, ensure that you have enabled the Bay Networks FTP service on the target router. The *Configuring TCP Services* guide contains instructions on how to configure FTP using Site Manager software.

To load all the *.bat* scripts and *.mnu* menu files located in a directory on a Unix workstation, change to that directory using the **cd** command. Then issue the following commands at your workstation's command line:

`$:` **ftp** *<router IP address>*

`Name:` **Manager**

`Password:` *<Technician_Interface_password>*

`ftp>` **cd** *<router volume>***:**

`ftp>` **bin**

`ftp>` **prompt**

`ftp>` **mput *.bat**

`ftp>` **mput *.mnu**

The **prompt** command disables the prompt that asks whether you want to transfer each file. Be careful that you do not overwrite important files when using this command.

Note: *You must have Manager access in order to write to an NVFS volume using the Bay Networks implementation of FTP.*

This procedure loads all of the *.bat* and *.mnu* files onto a file system volume on the router. To conserve space on the router's local file system, we recommend that you load only scripts that correspond to the protocols and drivers configured for that router.

To use the Trivial File Transfer Protocol (TFTP) to transfer files one at a time, refer to Chapters 4 and 5 of *Using Technician Interface Software*.

Setting Up Scripts

Once you log in to a Technician Interface session on a router, you can enter embedded script commands at the command line prompt without any additional preparations. However, before you run any *.bat* version scripts, mount the Flash volume on which they reside.

Use the **mount** command to set the default directory to the directory containing the *.bat* and *.mnu* files. The following example mounts Volume 2:

mount 2:

You can also set the default directory by using the **dir** command. When using the **dir** command, enter **dir** and the appropriate volume number or letter, as shown in the following example:

dir 2:

Now you can use the **run setpath** command to set the search path and alias definitions for the script commands. The search path is a list of volume IDs on which to search for a script file. There are two ways to specify a search path.

Example 1 — Entering the volume IDs on the command line

run setpath "2:;3:;4:"

Example 2 — Letting the* setpath *command prompt you

run setpath

```
NVFS File System:

VOL    STATE       TOTAL SIZE    FREE SPACE    CONTIG FREE SPACE
-----------------------------------------------------------------
3:    FORMATTED    2097152       1218683          1017067
2:    FORMATTED    2097152        431128           431128

Please enter the volume ID  that contains the script files.
More than one volume may be entered; each separated by a semi-colon.

Format:  <vol>:[;<vol>: ...]

Example: 2:;3:;4:

Enter volume(s)[2:]: 3:
```

The **run setpath** command provides online help for the script commands.

You can run the *setpath.bat* script manually after you log into the Technician Interface (by using the **run setpath** command) or you can have the system run it automatically using the Technician Interface's autoscript feature. To use the autoscript feature, you must specify the file system search path, Manager or User script file, and logout mechanism, using the following wfSerialPortEntry (router serial port) parameters or attributes:

- Login Script Search Path
- Manager's Login Script
- User's Login Script
- Force User Logout

You can set up a separate autoscript file for the Manager login and the User login. The User autoscript contains a switch that enables you to lock the user into the script. When the switch is enabled, the autoscript automatically logs out a user that tries to break out of the script. For more information on the autoscript feature, see Chapter 2 of *Using Technician Interface Software*.

Using Script Commands

This section provides an overview of the **show** and **enable**/**disable** commands. To present a continuous display, use the **monitor** command in place of the **show** command.

Using the show Command

You can use the **show** command from the Technician Interface prompt to quickly display tables of information maintained in the router. For all the protocols, you can display circuit alerts, the base record, disabled or enabled circuits, and statistics.

Table 1-1 lists at a high level, *additional information* you can obtain and the command you use to display the information. You can list the subcommands on your monitor by entering the command shown in the table without options or followed by a **?**.

For example, to list the AppleTalk subcommands, enter **show at** or **show at ?**. For a detailed description of options and sample displays of the information they generate, refer to Chapter 2.

Table 1-1. Displaying Service Information

To Display Information About This Service	Use This Command
Advanced Peer-to-Peer Networking service (adjacencies, class of services, directories, DLC, DLUR, endpoints, ISR, memory, mode, ports, topology, tunnels, VRN)	**show appn** *<option>*
AppleTalk service (AARP, circuits, configuration, routes, statistics, zones, zone filters)	**show at** *<option>*
Asynchronous Transfer Mode service (interfaces, lines, PVCs, statistics)	**show atm** *<option>*
Asynchronous Transfer Mode DXI service (lines, PVCs, statistics)	**show atmdxi** *<option>*
Asynchronous Transfer Mode (ATM) Adaption Layer Controller (ALC) link module service (circuits, phy, transmit and receive errors, transmit and receive statistics)	**show atm line** *<option>*

(continued)

Table 1-1. Displaying Service Information *(continued)*

To Display Information About This Service	Use This Command
AppleTalk Update-based Routing Protocol service (connection, statistics, zone filters)	**show aurp** *<option>*
Automatic line speed negotiation on 100Base-T Ethernet interfaces (alerts, circuits enabled/disabled)	**show autoneg** *<option>*
Border Gateway Protocol service (errors, peers, routes, timers, statistics, weights)	**show bgp** *<option>*
Bootstrap Protocol service (clients, relay agents, statistics)	**show bootp** *<option>*
Bridge service (circuits, forwarding tables, statistics)	**show bridge** *<option>*
Circuits for all drivers (configuration; hardware filters; receive, transmit, and system errors; statistics)	**show circuits** *<option>*
Console (configuration, statistics)	**show console** *<option>*
CSMA/CD service (hardware filters; receive, transmit and system errors; statistics; sample data)	**show csmacd** *<option>*
N11 Data Collection Module (DCM) information for the 8-Port Access Node Hub (ANH)	**show dcmmw** *<option>*
DECnet service (adjacency, circuits, designated router, routes, statistics, traffic filters)	**show decnet** *<option>*
Data Link Switching service (circuits, configuration, connections, MAC, NETBIOS, peer, SAPs, slot numbers)	**show dls** *<option>*
DS1E1 lines (clock, E1 framer and E1 port, FDL; receive, transmit, and system errors; sample data; statistics; T1 framer and T1 port; timeslots)	**show ds1e1** *<option>*
Distance Vector Multicast Routing Protocol service (circuits, neighbors, routes, statistics, tunnels)	**show dvmrp** *<option>*
E1 lines (frame and line errors)	**show e1** *<option>*
Exterior Gateway Protocol service (neighbors, statistics)	**show egp** *<option>*
Fiber Distributed Data Interface service (hardware filters; MAC, port, and SMT parameters; receive, transmit, and system errors; sample data; statistics)	**show fddi** *<option>*
Frame Relay service (lines, PVCs, statistics)	**show fr** *<option>*
File Transfer Protocol service (statistics)	**show ftp** *<option>*
Hardware options (backplane, configuration and router software image files, memory, PROMs, slots)	**show hardware** *<option>*

(continued)

Table 1-1. Displaying Service Information *(continued)*

To Display Information About This Service	Use This Command
High Speed Serial Interface service (receive, transmit, and system errors; sample data; statistics)	**show hssi** *<option>*
Internet Gateway Management Protocol service (circuits, groups, statistics)	**show igmp** *<option>*
Internet Protocol service (ARP table, circuits, forwarding table, route filters, RIP interfaces, routes, traffic filters)	**show ip** *<option>*
Internet Packet Exchange service (adjacent hosts, circuits, ping, RIP, routes, service filters, server filters, services, statistics, traffic filters)	**show ipx** *<option>*
Circuit and state information for all interface redundancy ports (enabled and disabled circuits configured with interface redundancy)	**show iredund** *<option>*
Integrated Services Digital Network service (B Channel, BRI, calls, inphone, messages, switch)	**show isdn** *<option>*
Integrated Services Digital Network BRI service (receive, transmit, and system errors; sample data; statistics)	**show isdn bri** *<option>*
Link Access Procedure-Balanced service (lines, statistics)	**show lapb** *<option>*
LAN Network Manager server agent information (for all servers, or for servers on specific circuits)	**show lnm** *<option>*
NetBIOS over IP service (interfaces, names)	**show nbip** *<option>*
NetWare Link Services Protocol (NLSP) and services (circuits, maps, neigbors, statistics, translations)	**show nlsp** *<option>*
Native Mode LAN service (circuits, security lists, Bridge statistics)	**show nml** *<option>*
Open Systems Interconnection service (adjacency, circuits, routes)	**show osi** *<option>*
Open Shortest Path First Protocol service (area, AS external routes, interfaces, LSDB, neighbors, statistics)	**show ospf** *<option>*
Packet Capture service (captured packets, configuration, line numbers, loaded slots, status)	**show packet** *<option>*
Ping MIB service (configuration, history, source and trace routes)	**show ping** *<option>*

(continued)

Table 1-1. Displaying Service Information *(continued)*

To Display Information About This Service	Use This Command
Point-to-Point Protocol service (AppleTalk, bad packets, Bridge, CHAP, circuits, DECnet, IP, IPX, line, LQR, OSI, PAP, protocol, VINES, XNS)	**show ppp** *<option>*
DLSw protocol prioritization queues (cc_stats, filters, qstats)	**show protopri** *<option>*
Reverse Address Resolution Protocol service (circuits)	**show rarp** *<option>*
Repeater service (last address, sample data, port status, statistics)	**show rptr** *<option>*
Router redundancy (circuits, groups, resources, remote routers in a redundancy group, member IDs)	**show rredund** *<option>*
Synchronous Data Link Control service (circuits, statistics)	**show sdlc** *<option>*
Switched Multi-Megabit Data Service service (addresses, circuits, statistics)	**show smds** *<option>*
Simple Network Management Protocol service (communities, events, traps)	**show snmp** *<option>*
Spanning Tree service (configuration, circuits)	**show span** *<option>*
Source Routing service (bridges, circuits, configuration, IP information, statistics)	**show sr** *<option>*
Source Route Spanning Tree service (configuration, statistics)	**show srspan** *<option>*
ST2 service information (circuits, statistics, streams)	**show st2** *<option>*
Statistical Thresholds and Alarms service (configuration, statistics)	**show sta** *<option>*
State (overview of all protocols or one circuit)	**show state** *<option>*
Switch service (back-up dialing, on-demand-dialing)	**show sws** *<option>*
Synchronous Interface service (receive, transmit, and system errors; sample data; statistics)	**show sync** *<option>*
System (buffers, drivers, memory, protocols, system information, tasks)	**show system** *<option>*
T1 lines (frame and line errors)	**show t1** *<option>*
Transport Control Protocol service (configuration, connections, statistics)	**show tcp** *<option>*

(continued)

Table 1-1. Displaying Service Information *(continued)*

To Display Information About This Service	Use This Command
TELNET service (configuration, sessions, statistics)	**show telnet** *<option>*
Trivial File Transfer Protocol service (status)	**show tftp** *<option>*
Token Ring lines (receive, transmit, and system errors; sample data; statistics)	**show token** *<option>*
VINES service (circuits, configuration, neighbors, routes, statistics, traffic filters)	**show vines** *<option>*
Bay Networks Compression Protocol service (circuits, lines, virtual circuits, statistics)	**show wcp** *<option>*
X.25 service (configuration, connections, lines, services, statistics, virtual circuits)	**show x25** *<option>*
Translation Bridge service (configuration, RIFs, SAPs, Source Routing interfaces and statistics, stations, Transparent Bridge interfaces and statistics)	**show xb** *<option>*
Xerox Networking Systems Protocol service (adjacent hosts, configuration, RIP, routes, statistics, traffic filters, virtual circuits)	**show xns** *<option>*

Using the enable and disable Commands

You can use the **enable** or **disable** commands from the Technician Interface command line to quickly enable or disable services. Table 1-2 lists the services you can enable or disable and the command you use to enable or disable that service. For a detailed description of options, refer to Chapter 3.

Table 1-2. Enabling and Disabling Services

To Enable or Disable This Service	Use This Command
Advanced Peer-to-Peer Networking Protocol (directory, DLC, LS, port, tunnel, VRN)	**enable/disable appn** *<option>*
AppleTalk (base, circuit)	**enable/disable at** *<option>*
Asynchronous Transfer Mode (line)	**enable/disable atm** *<option>*
Asynchronous Transfer Mode DXI (line)	**enable/disable atmdxi** *<option>*

(continued)

Table 1-2. Enabling and Disabling Services *(continued)*

To Enable or Disable This Service	Use This Command
AppleTalk Update-based Routing Protocol (connection)	**enable/disable aurp** *<option>*
Automatic line speed negotiation on 100Base-T Ethernet interfaces	**enable/disable autoneg** *<option>*
Bootstrap protocol	**enable/disable bootp** *<option>*
Bridge (base, circuit)	**enable/disable bridge** *<option>*
Circuits for all drivers	**enable/disable circuits** *<option>*
CSMA/CD (circuit, connector)	**enable/disable csmacd** *<option>*
N11 Data Collection Module (DCM) for the 8-Port Access Node Hub (ANH)	**enable/disable dcmmw** *<option>*
DECnet (base, circuit)	**enable/disable decnet** *<option>*
Data Link (base, circuit)	**enable/disable dls** *<option>*
DS1E1 lines	**enable/disable ds1e1** *<option>*
Distance Vector Multicast Routing Protocol (base, circuit)	**enable/disable dvmrp** *<option>*
E1 line (circuit, connector)	**enable/disable e1** *<option>*
FDDI (circuit, connector)	**enable/disable fddi** *<option>*
Frame Relay (line)	**enable/disable fr** *<option>*
File Transfer Protocol (base)	**enable/disable ftp** *<option>*
HSSI (circuit, connector)	**enable/disable hssi** *<option>*
Internet Gateway Management Protocol (base, circuit)	**enable/disable igmp** *<option>*
Internet Protocol (base, circuit, RIP)	**enable/disable ip** *<option>*
Internet Packet Exchange Protocol (base, circuit)	**enable/disable ipx** *<option>*
Interface redundancy ports	**enable/disable iredund** *<option>*
Integrated Services Digital Network (B Channel, Bri, Filter)	**enable/disable isdn** *<option>*
Integrated Services Digital Network BRI (circuit, connector)	**enable/disable isdnbri** *<option>*
Link Access Procedure-Balanced (line.llindex)	**enable/disable lapb** *<option>*

(continued)

Table 1-2. Enabling and Disabling Services *(continued)*

To Enable or Disable This Service	Use This Command
LAN Network manager (base, circuit)	**enable/disable lnm** *<option>*
NetBIOS over IP (base, interface)	**enable/disable nbip** *<option>*
Native Mode LAN (circuit, security list)	**enable/disable nml** *<option>*
Open Systems Interconnect (base)	**enable/disable osi** *<option>*
OSPF (area, base, interface)	**enable/disable ospf** *<option>*
Packet Capture (capture, line)	**enable/disable packet** *<option>*
Point-to-Point Protocol (line)	**enable/disable ppp** *<option>*
Reverse Address Resolution Protocol (base)	**enable/disable rarp** *<option>*
Repeater (port, reset, test)	**enable/disable rptr** *<option>*
Router redundancy	**enable/disable rredund** *<option>*
Synchronous Data Link Control (base, circuit)	**enable/disable sdlc** *<option>*
Simple Network Management Protocol (communities, events, traps)	**enable/disable snmp** *<option>*
Spanning Tree (base, circuit)	**enable/disable span** *<option>*
Source Routing (base, circuit)	**enable/disable sr** *<option>*
Source Route Spanning Tree (base, circuit)	**enable/disable srspan** *<option>*
Statistical Thresholds and Alarm (base, object)	**enable/disable sta** *<option>*
Switch service	**enable/disable sws** *<option>*
Synchronous line (circuit, connector)	**enable/disable sync** *<option>*
T1 line (circuit, connector)	**enable/disable t1** *<option>*
Transport Control Protocol (base)	**enable/disable tcp** *<option>*
TELNET (base)	**enable/disable telnet** *<option>*
Trivial File Transfer Protocol (base)	**enable/disable tftp** *<option>*
Token Ring line (circuit, connector)	**enable/disable token** *<option>*
VINES (base, circuit)	**enable/disable vines** *<option>*
Bay Networks Compression Protocol (circuit, line)	**enable/disable wcp** *<option>*

(continued)

Table 1-2. Enabling and Disabling Services *(continued)*

To Enable or Disable This Service	Use This Command
X.25 (base, line, service)	**enable/disable x25** *<option>*
Translation Bridge (base, circuit)	**enable/disable xb** *<option>*
Xerox Networking Systems Protocol (base, circuit)	**enable/disable xns** *<option>*

Using the Menu Utility

You can choose scripts from menus rather than starting them from the Technician Interface command line. Additionally, you can tailor the menus to include only the scripts that you use routinely, and you can create your own menus.

You can use *scripts menus* as an alternative way of accessing the full set of Technician Interface scripts, including those embedded within the router software.

Displaying Menus

To display the scripts' Main Menu, enter the following command at the Technician Interface prompt:

$ **menu**

The Main Menu appears on your screen:

```
                                Main Menu

 1. APPN                    22. FTP                    43. SMDS
 2. AT                      23. Hardware               44. SNMP
 3. ATM                     24. HSSI                   45. Source Routing
 4. ATMDXI                  25. IP                     46. SR Spanning Tree
 5. AURP                    26. IPX                    47. Spanning Tree
 6. BGP                     27. Interface Redundancy   48. System State
 7. BOOTP                   28. LAPB                   49. Switch Services
 8. Bridge                  29. LNM                    50. SYNC
 9. Circuit                 30. BNX MCT1               51. SYSLOG
10. Console                 31. NetBIOS over IP        52. System
11. CSMACD                  32. NLS                    53. T1
12. DCMMW                   33. Native Mode LAN        54. TCP
13. DECnet                  34. OSI                    55. TELNET
14. DLS                     35. OSPF                   56. TFTP
15. DS1E1                   36. Packet Capture         57. Thresholds & Alarms
16. DVMRP                   37. PPP                    58. Token Ring
17. E1                      38. Protocol Priority      59. Translation Bridge
18. EGP                     39. RARP                   60. VINES
19. FDDI                    40. Repeater (HUB          61. WCP
20. Frame Relay             41. Router Redundancy      62. XNS
21. Frame Relay Switch      42. SDLC                   63. X25

 D. Disable MORE.           M. Menu control on.         Q. Quit or Return

Enter menu number or TI command:
```

To display a submenu, enter the number of your choice. For example, to display the IP menu, enter **25** at the prompt.

```
Enter menu number or TI command: 25
```

The IP menu appears, as shown below.

```
                              IP Menu

 1. Adjacent Hosts            13. IP Cache Hits Stats
 2. Alerts                    14. IP Datagram Stats
 3. ARP Table                 15. IP Fragmentation Stats
 4. Base Info.                16. IP RIP Filters
 5. Circuits                  17. IP Stats
 6. Disabled Circuits         18. IP.bat version
 7. Enabled Circuits          19. RIP
 8. ICMP Client Stats         20. Routing Table
 9. ICMP In Stats             21. Security In Stats
10. ICMP Miscellaneous Stats  22. Security Out Stats
11. ICMP Out Stats            23. Static Routes Table
12. ICMP Server Stats         24. Traffic Filters

 D. Disable MORE.         M. Menu control on.      Q. Quit or Return

Enter menu number or TI command:
```

All of the commands shown in the second level menu display information. Next enter the number that corresponds to the table you want to display. For example, to display IP statistics, enter **17**. This action runs the script that displays the IP Statistics table, as the following example shows. Note that you can display the same table by entering the **show ip stats** command at the Technician Interface command line.

```
Enter menu number or TI command: 17

IP Statistics
-------------

                          In          Out                In       Out
Circuit IP Address      Receives   Requests  Forwards Discards Discards
------- --------------- ---------- --------- -------- -------- --------
E33     6.6.6.6         0          15642     0        0        0
E34     75.1.1.2        14976      15642     0        0        0
E31     192.168.130.165 46218      18459     0        0        0

3 Entries

Press Enter to continue.
```

When you press Enter, the menu utility returns to the submenu; in this example, pressing Enter displays the IP Menu again. You can select another option. Or to return to the Main Menu, enter **q** for Quit or press Return.

You can also display the submenu of a specific protocol by entering the name of the protocol on the command line as an option to the menu command. For example, to display the IP submenu directly, enter the following command at the Technician Interface prompt:

$ **menu ip**

Configuring Menus

You can change any menu that the menu utility displays. You can keep your changes for the current session only, or you can save them permanently. Using the menu control feature, you can

- Change the contents of a menu (add, delete, and edit commands; edit the menu title; show commands instead of command titles).
- Load a new menu into the menu structure.
- Enter a Technician Interface command while using the menu utility.

To use the menu control feature, enter **m** at the `Enter menu number or TI command:` prompt. The menu utility displays a list of options below the Main Menu, as the example on the next page shows.

```
                                Main Menu

 1. APPN                  22. FTP                  43. SMDS
 2. AT                    23. Hardware             44. SNMP
 3. ATM                   24. HSSI                 45. Source Routing
 4. ATMDXI                25. IP                   46. SR Spanning Tree
 5. AURP                  26. IPX                  47. Spanning Tree
 6. BGP                   27. Interface Redundancy 48. System State
 7. BOOTP                 28. LAPB                 49. Switch Services
 8. Bridge                29. LNM                  50. SYNC
 9. Circuit               30. BNX MCT1             51. SYSLOG
10. Console               31. NetBIOS over IP      52. System
11. CSMACD                32. NLS                  53. T1
12. DCMMW                 33. Native Mode LAN      54. TCP
13. DECnet                34. OSI                  55. TELNET
14. DLS                   35. OSPF                 56. TFTP
15. DS1E1                 36. Packet Capture       57. Thresholds & Alarms
16. DVMRP                 37. PPP                  58. Token Ring
17. E1                    38. Protocol Priority    59. Translation Bridge
18. EGP                   39. RARP                 60. VINES
19. FDDI                  40. Repeater (HUB        61. WCP
20. Frame Relay           41. Router Redundancy    62. XNS
21. Frame Relay Switch    42. SDLC                 63. X25

A. Add a command          H. Change menu title     Q. Quit
C. Clear all commands     L. Load new menu         S. Save menu commands
D. Delete command         M. Menu control off      T. Toggle cmd. display
E. Edit command

 Enter menu number or TI command:
```

To turn menu control off, just enter **m** again at the prompt. You can add and delete commands, edit a command, change a menu's title, and switch the display between menu titles and commands.

Adding a Command

With menu control on, add a command by entering **a** at the `Enter menu number or TI command:` prompt. Then enter the command number, command to be executed, and the command's title, as shown:

```
Enter menu number or TI command: a
Command: 64

Enter new command: date
Enter new title: Date and Time
Setting command 64 to date
Setting title   64 to Date and Time
```

The Main Menu automatically refreshes, displaying a new option for command 64, as the example on the next page shows.

```
                                Main Menu

 1. APPN                  22. FTP                  43. SMDS
 2. AT                    23. Hardware             44. SNMP
 3. ATM                   24. HSSI                 45. Source Routing
 4. ATMDXI                25. IP                   46. SR Spanning Tree
 5. AURP                  26. IPX                  47. Spanning Tree
 6. BGP                   27. Interface Redundancy 48. System State
 7. BOOTP                 28. LAPB                 49. Switch Services
 8. Bridge                29. LNM                  50. SYNC
 9. Circuit               30. BNX MCT1             51. SYSLOG
10. Console               31. NetBIOS over IP      52. System
11. CSMACD                32. NLS                  53. T1
12. DCMMW                 33. Native Mode LAN      54. TCP
13. DECnet                34. OSI                  55. TELNET
14. DLS                   35. OSPF                 56. TFTP
15. DS1E1                 36. Packet Capture       57. Thresholds & Alarms
16. DVMRP                 37. PPP                  58. Token Ring
17. E1                    38. Protocol Priority    59. Translation Bridge
18. EGP                   39. RARP                 60. VINES
19. FDDI                  40. Repeater (HUB        61. WCP
20. Frame Relay           41. Router Redundancy    62. XNS
21. Frame Relay Switch    42. SDLC                 63. X25
                                                   64. Date and Time

A. Add a command          H. Change menu title     Q. Quit
C. Clear all commands     L. Load new menu         S. Save menu commands
D. Delete command         M. Menu control off      T. Toggle cmd. display
E. Edit command

 Enter menu number or TI command:
```

Deleting a Command

With menu control on, delete a command by entering **d** at the `Enter menu number or TI command:` prompt. Then enter the number of the command to be deleted, as shown:

```
Enter menu number or TI command: d
Enter command number (r to Return): 64
```

The Main Menu automatically refreshes, displaying a new menu without command **64**.

Clearing All Commands

With menu control on, clear all commands by entering **c** at the `Enter menu number or TI command:` prompt. The menu utility responds by showing only the menu control options and the menu title. The rest of the screen is blank.

```
                              Main Menu

A. Add a command          H. Change menu title.     Q. Quit
C. Clear all commands     L. Load new menu          S. Save menu commands
D. Delete command         M. Menu control off       T. Toggle cmd. display
E. Edit command

Enter menu number or TI command:
```

Editing a Command

With menu control on, edit a command by entering **e** at the `Enter menu number or TI command:` prompt. Then enter the command number, command to be executed, and the command's title, as the example shows:

```
Enter menu number or TI command: e
Enter Command number (r to Return): 2
2 menu at.mnu
     AT

Type <return> to leave unchanged.

Enter new command: show at  base
Enter new title: AT Base
Setting command 2 to show at base
Setting title   AT to AT Base
```

The Main Menu automatically refreshes, displaying a new menu with the new menu title.

```
                                Main Menu

 1. APPN                  22. FTP                  43. SMDS
 2. AT Base               23. Hardware             44. SNMP
 3. ATM                   24. HSSI                 45. Source Routing
 4. ATMDXI                25. IP                   46. SR Spanning Tree
 5. AURP                  26. IPX                  47. Spanning Tree
 6. BGP                   27. Interface Redundancy 48. System State
 7. BOOTP                 28. LAPB                 49. Switch Services
 8. Bridge                29. LNM                  50. SYNC
 9. Circuit               30. BNX MCT1             51. SYSLOG
10. Console               31. NetBIOS over IP      52. System
11. CSMACD                32. NLS                  53. T1
12. DCMMW                 33. Native Mode LAN      54. TCP
13. DECnet                34. OSI                  55. TELNET
14. DLS                   35. OSPF                 56. TFTP
15. DS1E1                 36. Packet Capture       57. Thresholds & Alarms
16. DVMRP                 37. PPP                  58. Token Ring
17. E1                    38. Protocol Priority    59. Translation Bridge
18. EGP                   39. RARP                 60. VINES
19. FDDI                  40. Repeater (HUB        61. WCP
20. Frame Relay           41. Router Redundancy    62. XNS
21. Frame Relay Switch    42. SDLC                 63. X25

A. Add a command          H. Change menu title     Q. Quit
C. Clear all commands     L. Load new menu         S. Save menu commands
D. Delete command         M. Menu control off      T. Toggle cmd. display
E. Edit command

 Enter menu number or TI command:
```

Editing a Menu Title

With menu control on, edit a menu title by entering **h** at the `Enter menu number or TI command:` prompt. Then enter the new title as the example shows:

```
Enter menu number or TI command: h
Enter new menu title: Protocol Statistics
```

The Main Menu automatically refreshes, displaying a new menu title, as the example on the next page shows:

```
                        Protocol Statistics

 1. APPN                 22. FTP                  43. SMDS
 2. AT                   23. Hardware             44. SNMP
 3. ATM                  24. HSSI                 45. Source Routing
 4. ATMDXI               25. IP                   46. SR Spanning Tree
 5. AURP                 26. IPX                  47. Spanning Tree
 6. BGP                  27. Interface Redundancy 48. System State
 7. BOOTP                28. LAPB                 49. Switch Services
 8. Bridge               29. LNM                  50. SYNC
 9. Circuit              30. BNX MCT1             51. SYSLOG
10. Console              31. NetBIOS over IP      52. System
11. CSMACD               32. NLS                  53. T1
12. DCMMW                33. Native Mode LAN      54. TCP
13. DECnet               34. OSI                  55. TELNET
14. DLS                  35. OSPF                 56. TFTP
15. DS1E1                36. Packet Capture       57. Thresholds & Alarms
16. DVMRP                37. PPP                  58. Token Ring
17. E1                   38. Protocol Priority    59. Translation Bridge
18. EGP                  39. RARP                 60. VINES
19. FDDI                 40. Repeater (HUB        61. WCP
20. Frame Relay          41. Router Redundancy    62. XNS
21. Frame Relay Switch   42. SDLC                 63. X25

A. Add a command         H. Change menu title     Q. Quit
C. Clear all commands    L. Load new menu         S. Save menu commands
D. Delete command        M. Menu control off      T. Toggle cmd. display
E. Edit command

 Enter menu number or TI command:
```

Loading a New Menu

With menu control on, load a new menu by entering **l** at the `Enter menu number or TI command:` prompt. Then enter the name of the new menu, as the example shows:

```
Enter menu number or TI command: l

Please enter menu setup file.
Type <Enter> to use default menu

[vol:filename]> newmain.mnu
```

If you do not enter a volume number or letter, the program automatically saves the file to the default volume.

Toggling Menu Titles and Commands

With menu control enabled, toggle between displaying menu titles and displaying commands by entering **t** at the `Enter menu number or TI command:` prompt, as the example shows.

```
Enter menu number or TI command: t
```

At the main menu, the screen displays the menu commands (you do not need to enter **.mnu** when executing a **menu** command).

```
                                Main Menu

 1. menu appn.mnu      22. menu ftp.mnu       43. menu smds.mnu
 2. menu at.mnu        23. menu hardware.mnu  44. menu snmp.mnu
 3. menu atm.mnu       24. menu hssi.mnu      45. menu sr.mnu
 4. menu atmdxi.mnu    25. menu ip.mnu        46. menu srspan.mnu
 5. menu aurp.mnu      26. menu ipx.mnu       47. menu span.mnu
 6. menu bgp.mnu       27. menu iredund.mnu   48. menu state.mnu
 7. menu bootp.mnu     28. menu lapb.mnu      49. menu sws.mnu
 8. menu bridge.mnu    29. menu lnm.mnu       50. menu sync.mnu
 9. menu circuits.mnu  30. menu mct1.mnu      51. menu syslog.mnu
10. menu console.mnu   31. menu nbip.mnu      52. menu system.mnu
11. menu csmacd.mnu    32. menu nlsp.mnu      53. menu t1.mnu
12. menu dcmmw.mnu     33. menu nml.mnu       54. menu tcp.mnu
13. menu decnet.mnu    34. menu osi.mnu       55. menu telnet.mnu
14. menu dls.mnu       35. menu ospf.mnu      56. menu tftp.mnu
15. menu ds1e1.mnu     36. menu packet.mnu    57. menu sta.mnu
16. menu dvmrp.mnu     37. menu ppp.mnu       58. menu token.mnu
17. menu e1.mnu        38. menu protopri.mnu  59. menu xb.mnu
18. menu egp.mnu       39. menu rarp.mnu      60. menu vines.mnu
19. menu fddi.mnu      40. menu rptr.mnu      61. menu wcp.mnu
20. menu fr.mnu        41. menu rredund.mnu   62. menu xns.mnu
21. menu frsw.mnu      42. menu sdlc.mnu      63. menu x25.mnu

A. Add a command        H. Change menu title.    Q. Quit
C. Clear all commands   L. Load new menu         S. Save menu commands
D. Delete command       M. Menu control off      T. Toggle title display
E. Edit command

Enter menu number or TI command:
```

From the *subcommand* level , and with menu control on (enter **m** at the command line prompt), entering **t** at the prompt invokes the list of subcommands equivalent to the subcommand menu entries, as the following example shows.

The following example sequence of 3 screens shows what happens when you enable menu control from a subcommand menu, then toggle the menu to display the actual subcommands instead of subcommand functions.

PPP subcommand menu with menu control OFF/disabled:

```
                          PPP Menu

 1. Alerts             10. Enabled Circuits   19. LQR Stats
 2. AppleTalk Conf.    11. IP                 20. OSI
 3. AppleTalk Neg.     12. IPX Config.        21. PAP Local
 4. Bad Packets        13. IPX Neg.           22. PAP Remote
 5. Bridge Conf.       14. IPX Name Local     23. CHAP Local
 6. Bridge Neg.        15. IPX Name Remote    24. CHAP Remote
 7. Circuits           16. Line Conf          25. PPP.bat version
 8. DECnet             17. Line Parameters    26. Vines
 9. Disabled Circuits  18. LQR Conf.          27. XNS

 A. Add a command        H. Change menu title.    Q. Quit
 C. Clear all commands   L. Load new menu         S. Save menu commands
 D. Delete command       M. Menu control off      T. Toggle cmd. display
 E. Edit command

 Enter menu number or TI command: m
```

PPP subcommand menu with menu control ON/ enabled:

```
                          PPP Menu

 1. Alerts             10. Enabled Circuits   19. LQR Stats
 2. AppleTalk Conf.    11. IP                 20. OSI
 3. AppleTalk Neg.     12. IPX Config.        21. PAP Local
 4. Bad Packets        13. IPX Neg.           22. PAP Remote
 5. Bridge Conf.       14. IPX Name Local     23. CHAP Local
 6. Bridge Neg.        15. IPX Name Remote    24. CHAP Remote
 7. Circuits           16. Line Conf          25. PPP.bat version
 8. DECnet             17. Line Parameters    26. Vines
 9. Disabled Circuits  18. LQR Conf.          27. XNS

 A. Add a command        H. Change menu title.    Q. Quit
 C. Clear all commands   L. Load new menu         S. Save menu commands
 D. Delete command       M. Menu control off      T. Toggle cmd. display
 E. Edit command

 Enter menu number or TI command: t
```

PPP subcommand menu
Toggled to display subcommands instead of subcommand functions:

```
                                PPP Menu

 1. show ppp alerts                15. show ppp ipx name remote
 2. show ppp appletalk configured  16. show ppp line  configuration
 3. show ppp appletalk negotiated  17. show ppp line  parameters
 4. show ppp bad packets           18. show ppp lqr configuration
 5. show ppp bridge configured     19. show ppp lqr stats
 6. show ppp bridge negotiated     20. show ppp osi
 7. show ppp circuit               21. show ppp pap local
 8. show ppp decnet                22. show ppp pap remote
 9. show ppp disabled              23. show ppp chap local
10. show ppp enabled               24. show ppp chap remote
11. show ppp ip                    25. show ppp version
12. show ppp ipx configured        26. show ppp vines
13. show ppp ipx negotiated        27. show ppp xns
14. show ppp ipx name local

A. Add a command        H. Change menu title.    Q. Quit
C. Clear all commands   L. Load new menu         S. Save menu commands
D. Delete command       M. Menu control off      T. Toggle title display
E. Edit command

Enter menu number or TI command:
```

Saving Changes Made to Menus

With menu control on, save your changes for future sessions by entering **s** at the `Enter menu number or TI command:` prompt, add a filename, then press the Return key. Refer to the following example:

```
Enter menu number or TI command: s
Enter file name [main.mnu]: testing.mnu
Saving commands to testing.mnu.
```

The Technician Interface saves the file to the default volume. The current menu session now uses the file you specified. If you do not specify a filename at the `Enter file name [main.mnu]:` prompt, the Technician Interface overwrites the *main.mnu* file stored on the router's file system once you press the Return key. If you mistakenly select **s**, type **q** and press the Return key to quit.

Chapter 2 provides a complete reference for all **show** (and **monitor**) scripts in the system. Refer to it for more information, sample displays, and references to other manuals that describe each protocol in detail.

Chapter 2
Using the show Command

Use the **show** command to display routing, configuration, interface, and statistical data from the Management Information Base (MIB). The type and amount of data displayed depends on the specific protocol or network service you want to view.

In the command syntax, items in square brackets ([ ]) indicate optional information. Items in curly braces ({ }) indicate choices that complete a command, and you must enter one of the choices offered. Text in angle brackets (< >) indicates the type of information to enter as an optional part of the command syntax; for example <*circuit name*>. Use lowercase for all commands; they are case sensitive.

Note: *For on-line help – After loading the scripts you need on a given router, you can display a list of available script subcommands by entering* **show** *<option> without additional options or with a question mark as an option. For example, after you load* at.bat *and associated baseline script files on a router, entering* **show at** *or* **show at ?** *at the Technician Interface prompt invokes the list of all* **show at** *subcommand options.*

In command syntax, <*pattern*> means that you can use wildcard searching with the * and ? characters. Use * to find a string of any characters and any length. Use ? to designate any character in a specific position of the search string. For example, to locate all networks whose addresses begin with 29, enter the search string **29***. This pattern will locate the addresses 2901456 and 2967. Or if you have a set of names that begin and end with the same characters but have different characters in the middle, such as xxx1.yy, xxx2.yy and so on, you can enter the search pattern **xxx?.yy** to locate them.

show appn

The **show appn** *<option>* commands display configuration, state, and statistical information about the Advanced Peer-to-Peer Networking (APPN) service. For detailed information about the Bay Networks implementation of APPN, refer to *Configuring APPN Services*.

The **show appn** command supports the following subcommand options:

adjacencies [<node name>]	ls definition [<LS name>]
base	ls hpr
cos node [<COS name>]	ls status [<LS name>]
cos priority [<COS name>]	memory
cos tg [<COS name>]	mode [<mode name>]
directory entry [<LU name>]	port definition [<port name>]
directory statistics	port hpr
dlc [<DLC name>]	port status [<port name>]
dlur lu [<LU name>]	rtp connection
dlur pu [<LU name>]	rtp route

dlus [<DLUS name>]	rtp statistics
endpoint address [<PLU name>]	topology node [<CP name>]
endpoint route [<PLU name>]	topology statistics
endpoint statistics [<PLU name>]	topology tg definition [<owner name>]
isr address [<FQCP name>]	topology tg status [<owner name>]
isr parameters	tunnel [<circuit>]
isr route [<FQCP name>]	version
isr statistics [<FQCP name>]	vrn [<VRN name>]
ls anr	

adjacencies [*<node name>*]

Displays the following information for all APPN nodes or for a specific APPN node:

Node	Administratively assigned name for a specific node in the format *<network ID>.<CP name>.*
CP-CP Status	Status of the Control Point to Control Point session between this node and an adjacent node. Inactive indicates that no CP-CP sessions exist between the network node and adjacent node. Active indicates that CP-CP sessions are active.
Out-of-Seq TDUs	Number of out-of-sequence Topology Database Updates. In a quiesced state, this value is zero. In normal operation, the value varies depending on the network environment.
Last FRSN Sent	Last Flow Reduction Sequence Number sent in a topology update to an adjacent network node.
Last FRSN Received	Last Flow Reduction Sequence Number received in a topology update from an adjacent network node.

Sample Display – show appn adjacencies

```
APPN Adjacent Nodes
-------------------
                    CP-CP   Out-of-Seq Last FRSN Last FRSN
       Node         Status     TDUs      Sent    Received
 ----------------- -------- ---------- --------- ---------
 USWFLT01.AFN      ACTIVE            0      3561       207
 USWFLT01.SNEEZY   INACTIVE          0      3554       853
 USWFLT01.WF3174A  ACTIVE            0      3561       687

3 Entries.
```

base

Displays base record information for APPN. The table displays the following information:

Capabilities:

Negotiated LS Support	Indicates that the APPN node supports negotiable link stations.
Segment Reassembly	Indicates that the APPN node supports segment reassembly.
BIND Reassembly	Indicates that the APPN node supports BIND reassembly.
Parallel TG Support	Indicates that the APPN node supports the ability to establish multiple transmission groups.
Dynamic LS Support	Indicates that the APPN node supports the ability to accept connections (that have not been predefined) from adjacent nodes.
Adaptive BIND Pacing	Indicates whether the APPN node supports the ability to control the flow of BINDs.
Receive Registered Chars	Indicates whether the APPN node supports resource registration.
Border Node Support	Indicates whether the APPN node supports border nodes.
Central Directory Support	Indicates whether the APPN node is a central directory server.
Route Tree Caching	Indicates that the APPN node supports route tree caching.
Incremental Tree Updates	Indicates that the APPN node supports incremental updates to the route-selection tree cache.
Mode-to-COS Mapping	Indicates that the APPN node supports mapping of mode name and COS and transmission priority.
Multi-Domain Support	Indicates whether the APPN node supports multi-domain traffic flows.
Endpoint RSCV Storage	Indicates whether the APPN node supports Route Selection Control Vectors (RSCVs) storage during ISR sessions.

Capacity:

Alert Queue Size	Maximum number of alerts that are held while waiting for the establishment of a link to a reporting point.
COS Cache Size	Size of the COS database weight cache.
Directory Cache Size	Maximum number of entries that can be stored in the directory database at the network node.

Max Directory Entries	Maximum number of cached directory entries that can be stored in the local directory database at any one time.
Route Tree Cache Size	Size of the topology and routing services tree database.
Route Tree Use Limit	Maximum number of Route Selection Trees (RSTs) cached.
Max Nodes in Topology	Maximum number of times an RST will be used before Route Selection Services (RSS) calculates a new route tree for that route.
Max TGs in Topology	Maximum number of transmission groups in the local topology database.

Sample Display – show appn base

```
APPN Base Information
---------------------

 Node Name: USWFLT01.DURHAM
     State: Active

 Capabilities:
     Negotiated LS Support: Yes
        Segment Reassembly: Yes
           BIND Reassembly: Yes
       Parallel TG Support: Yes
        Dynamic LS Support: Yes
      Adaptive BIND Pacing: Yes
  Receive Registered Chars: Yes
       Border Node Support: No
 Central Directory Support: No
        Route Tree Caching: Yes
  Incremental Tree Updates: Yes
       Mode-to-COS Mapping: Yes
      Multi-Domain Support: Yes
     Endpoint RSCV Storage: Yes

 Capacity:
          Alert Queue Size: 10
            COS Cache Size: 8
      Directory Cache Size: 100
     Max Directory Entries: Unlimited
     Route Tree Cache Size: 8
      Route Tree Use Limit: 8
     Max Nodes in Topology: Unlimited
       Max TGs in Topology: Unlimited
```

cos node [*<COS name>*]

Displays resistance and congestion information for all COS types or for a specific COS type.

COS	COS Name: #BATCH, #INTER, #INTERSC, #BATCHSC, CPSVCMG or SNASVCMG. #BATCH refers to jobs which are batch-like in nature (i.e., where there is a lot of data is involved and response time is not very important). #INTER refers to interactive jobs (i.e., where there is not much data involved and response time is very important). #INTERSC and #BATCHSC are secure versions of #INTER and #BATCH. CPSVCMG and SNASVCMG are used for APPN control data.
Weight	Size of the COS database weight cache assigned to a particular node given its resistance and congestion characteristics.
Resist Min	Minimum route addition resistance allowed. Route addition resistance indicates the relative desirability of using this node for intermediate session traffic. The value, which can be an integer from 0 to 255, is used in route computation. The lower the value, the more desirable the node is for intermediate routing.
Resist Max	Maximum route addition resistance allowed.
Congest Min	Minimum congestion allowed.
Congest Max	Maximum congestion allowed.

Sample Display – show appn cos node

```
APPN COS Nodes
--------------

                Resist Resist Congest Congest
   COS    Weight  Min    Max     Min     Max
 -------- ------ ------ ------ ------- -------
 #BATCH        5      0     31       0       0
 #BATCH       10      0     63       0       0
 #BATCH       20      0     95       0       0
 #BATCH       40      0    127       0       0
 #BATCH       60      0    159       0       0
 #BATCH       80      0    191       0       0
 #BATCH      120      0    223       0       1
 #BATCH      160      0    255       0       1
 #INTER        5      0     31       0       0
 #INTER       10      0     63       0       0
 #INTER       20      0     95       0       0
 #INTER       40      0    127       0       0
 #INTER       60      0    159       0       0
 #INTER       80      0    191       0       0
 #INTER      120      0    223       0       1
 #INTER      160      0    255       0       1
 CPSVCMG       5      0     31       0       0

17 Entries.
```

cos priority [*<COS name>*]

Displays the transmission priority for all COS types or for a specific COS type. For more information about COS types, see the **cos node** command. The priority can be Low, Medium, High, or Network.

Sample Display – show appn cos priority

```
APPN COS Priorities
-------------------

   COS     Priority
 -------- --------
 #BATCH   Low
 #INTER   High
 CPSVCMG  Network
 #BATCHSC Low
 #CONNECT Medium
 #INTERSC High
 SNASVCMG Network

7 Entries.
```

cos tg [*<COS name>*]

Displays Transmission Group (TG) information for all COS types or for a specific COS type.

Eff-Cap Min	Minimum effective capacity. Effective capacity is the bit-transmission rate of the transmission group. It is derived from the link bandwidth and maximum load factor with the range of 0 through 255.
Eff-Cap Max	Maximum effective capacity.
Connect Min	Minimum cost per connection time. This value represents the relative cost per unit of time to use the transmission group. Range is from 0, which means no cost, to 255, which indicates maximum cost.
Connect Max	Maximum cost per connection time.
Byte Cst Min	Minimum cost of transmitting a byte over this connection. Range is from 0 (lowest cost) to 255.
Byte Cst Max	Maximum cost of transmitting a byte over this connection. Range is from 0 (lowest cost) to 255.

Security Min	Minimum security, with security represented as an integer with a range of 1 through 255: 1 (nonsecure), 32 (public switched), 64 (underground), 128 (conduit), 160 (encrypted), 192 (guarded radiation), 255 (maximum).
Security Max	Maximum security, with security represented as an integer with a range of 1 through 255: 1 (nonsecure), 32 (public switched), 64 (underground), 128 (conduit), 160 (encrypted), 192 (guarded radiation), 255 (maximum).
Delay Min	Minimum amount of time that it takes for a signal to travel the length of the logical link, with a range of from 0 to 255: 76 (negligible), 113 (terrestrial), 145 (packet), 153 (long), 255 (maximum).
Delay Max	Maximum amount of time that it takes for a signal to travel the length of the logical link, with a range of from 0 to 255: 76 (negligible), 113 (terrestrial), 145 (packet), 153 (long), 255 (maximum).
User-1 Min	First minimum user-defined transmission group characteristic for this transmission group with a range of from 0 to 255.
User-1 Max	First maximum user-defined transmission group characteristic for this transmission group with a range of from 0 to 255.
User-2 Min	Second minimum user-defined transmission group characteristic for this transmission group with a range of from 0 to 255.
User-2 Max	Second maximum user-defined transmission group characteristic for this transmission group with a range of from 0 to 255.
User-3 Min	Third minimum user-defined transmission group characteristic for this transmission group with a range of from 0 to 255.
User-3 Max	Third maximum user-defined transmission group characteristic for this transmission group with a range of from 0 to 255.

For more information about COS types and weight, see the **cos node** command.

Sample Display – show appn cos tg

```
APPN COS TGs
------------

              Eff-Cap Connect ByteCst Securty  Delay  User-1  User-2  User-3
   COS    Wgt Min Max Min Max Min Max Min Max Min Max Min Max Min Max Min Max
 -------- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- --- ---
 #BATCH    30  68 255   0   0   0   0   1 255   0 255   0 255   0 255   0 255
 #BATCH    60  56 255   0   0   0   0   1 255   0 255   0 255   0 255   0 255
 #BATCH    90  56 255   0 128   0 128   1 255   0 255   0 255   0 255   0 255
 #BATCH   120  48 255   0   0   0   0   1 255   0 255   0 255   0 255   0 255
 #BATCH   150  48 255   0 128   0 128   1 255   0 255   0 255   0 255   0 255
 #BATCH   180  48 255   0 196   0 196   1 255   0 255   0 255   0 255   0 255
 #BATCH   210  40 255   0 196   0 196   1 255   0 255   0 255   0 255   0 255
 #BATCH   240   0 255   0 255   0 255   1 255   0 255   0 255   0 255   0 255
 #INTER    30 118 255   0   0   0   0   1 255   0  76   0 255   0 255   0 255
 #INTER    60  68 255   0   0   0   0   1 255   0 113   0 255   0 255   0 255
 #INTER    90  68 255   0 128   0 128   1 255   0 113   0 255   0 255   0 255
 #INTER   120  56 255   0   0   0   0   1 255   0 113   0 255   0 255   0 255
 #INTER   150  56 255   0 128   0 128   1 255   0 145   0 255   0 255   0 255
 #INTER   180  48 255   0   0   0   0   1 255   0 145   0 255   0 255   0 255
 #INTER   210  48 255   0 196   0 196   1 255   0 255   0 255   0 255   0 255
 #INTER   240   0 255   0 255   0 255   1 255   0 255   0 255   0 255   0 255
 CPSVCMG   30 118 255   0   0   0   0   1 255   0  76   0 255   0 255   0 255

17 Entries.
```

directory entry [*<LU name>*]

Displays directory information for all Logical Units (LUs) or for a specific LU.

LU	Logical Unit name.
NN Server	Network Node server name.
LU Owner	Logical Unit owner name.
Location	Location of the Logical Unit: Local, Domain, or XDomain (cross-domain).

Type	Directory type: Home, Cache, or Registered. Home means that the LU is in the domain of the local network node and that the LU information has been configured at the local node. Cache means that the LU has previously been located by a broadcast search and that the location information has been saved. Register means that the LU is at an end node that is in the domain of the local network node. Registered entries are registered by the served end node.
Wildcard	Type of wildcard: Explicit, Partial, or Full. Explicit means the full LU name has been specified. Partial means the entry is a partial wildcard. Full means the entry is a full wildcard, and all searches for unknown LUs will be directed to this node.

Sample Display – show appn directory entry

```
APPN Directory Entries
----------------------

        LU            NN Server          LU Owner      Location  Type   Woodard
 ---------------- ---------------- ---------------- -------- ------- -------
 USWFLT01.TESTEN   USWFLT01.RALEIGH  USWFLT01.TESTEN   Domain   Registr Explicit
 USWFLT01.RALEIGH  USWFLT01.RALEIGH  USWFLT01.RALEIGH  Local    Home    Explicit
 USWFLT01.TESTENLU USWFLT01.RALEIGH  USWFLT01.TESTEN   Domain   Registr Explicit

3 Entries.
```

directory statistics

Displays information concerning the performance of the directory services function.

Maximum Cached Entries	Maximum number of cache entries allowed.
Current Cached Entries	Current number of cache entries.
Current Home Entries	Current number of home entries.
Current Registered Entries	Current number of registered entries.
Directed Locates Received	Number of directed locates received.
Broadcast Locates Received	Number of broadcast locates received.
Directed Locates Sent	Number of directed locates sent.

Broadcast Locates Sent	Number of broadcast locates sent.
Directed Locates Not Found	Number of directed locates returned with a “not found.”
Broadcast Locates Not Found	Number of broadcast locates returned with a “not found.”
Outstanding Locates	Current number of outstanding locates, both directed and broadcast. This value varies. A value of zero indicates that no locates are unanswered.

Sample Display – show appn stats directory

```
APPN Directory Statistics
-------------------------
 Maximum Cached Entries:        100
 Current Cached Entries:        0
 Current Home Entries:          2
 Current Registered Entries:    3
 Directed Locates Received:     0
 Broadcast Locates Received:    0
 Directed Locates Sent:         0
 Broadcast Locates Sent:        0
 Directed Locates Not Found:    0
 Broadcast Locates Not Found:   0
 Outstanding Locates:           0
```

dlc [*<DLC name>*]

Displays information for all Data Link Controls (DLCs) or for a specific DLC.

DLC	Eight-character name given to this DLC.
Circuit Name	Name of the circuit used by this DLC.
State	Current state of this DLC: Inactive, Pending Active, Active, or Pending Inactive.
CCT	Circuit number.
DLC Type	Type of DLC: SDLC, LLC SRB, LLC TB, or DLS.
Negotiated LS Support	Indicates whether Link Station roles can be negotiated on this DLC.

Sample Display – show appn dlc

```
APPN DLCs
---------

                                                 DLC    Negotiated
   DLC    Circuit Name      State       CCT    Type   LS Support
 -------- ------------ ---------------- ---- ------- ----------
 DLC00001 S51          Active              1 SDLC    Yes
 DLC00002 S52          Active              2 SDLC    Yes
 DLC00003 S53          Active              3 SDLC    Yes
 DLC00004 S54          Active              4 SDLC    Yes
 DLC00006 E23.llc2     Active              6 LLC-TB  Yes
 DLC00008 E24.llc2     Active              8 LLC-TB  Yes
 DLC00010 O31.llc2     Active             10 LLC-SRB Yes

7 Entries.
```

dlur lu [*<LU name>*]

Displays the status of all the DLUR LUs or a specific DLUR LU.

LU	Logical Unit name.
PU	Physical Unit name with up to 8 characters.
DLUS	Fully qualified Dependent LU Server name containing 3 to 17 characters.
NAU Address	Network Addressable Unit address.
PLU	Primary LU name.

Sample Display – show appn dlur lu

```
APPN DLUR LUs
-------------

                                        NAU
    LU       PU          DLUS         Address        PLU
-------- -------- ----------------- ------- -----------------
L0000C22 PU188004 USWFLT01.S156CDRM       2
L0000C23 PU188004 USWFLT01.S156CDRM       3

2 Entries.
```

dlur pu [*<LU name>*]

Displays the status of all the DLUR PUs or a specific DLUR PU.

PU	Physical Unit name with up to 8 characters.
Active DLUS	Displays the fully qualified name of the active DLUS. The name can contain from 3 to 17 characters.
Primary DLUS	Displays the fully qualified primary Dependent Logical Unit Server name. The name can contain from 3 to 17 characters.
Backup DLUS	Displays the fully qualified backup Dependent Logical Unit Server name. The name can contain from 3 to 17 characters.

Sample Display – show appn dlur pu

```
APPN DLUR PUs
-------------

    PU       Active DLUS      Primary DLUS       Backup DLUS
 -------- ----------------- ----------------- -----------------
 PU188004 USWFLT01.S156CDRM USWFLT01.S156CDRM USWFLT01.S157CDRM

1 Entry.
```

dlus [*<DLUS name>*]

Displays the status of all the DLUSs or a specific DLUS.

DLUS	Displays the fully qualified name of the active DLUS. The name can contain from 3 to 17 characters.
Pipe State	State of the CP-SVR pipe between the DLUR and DLUS: Active, Inactive, PendingActive, PendingInact.
Active PUs	Number of active PUs to the DLUS.
SSCP-PU MU Rcvd	Number of Message Units Received on the SSCP-PU session.
SSCP-PU MU Sent	Number of Message Units Sent on the SSCP-PU session.
SSCP-LU MU Rcvd	Number of Message Units Received on the SSCP-LU session.
SSCP-LU MU Sent	Number of Message Units Sent on the SSCP-LU session.

Sample Display – show appn dlus

```
APPN DLUS Nodes
---------------

                                  Active SSCP-PU SSCP-PU SSCP-LU SSCP-LU
      DLUS           Pipe State     PUs   MU Sent MU Rcvd MU Sent MU Rcvd
 ----------------- ---------------- ------ ------- ------- ------- -------
 USWFLT01.S156CDRM Active               1      0       0       5       4

1 Entry.
```

endpoint address [*<PLU name>*]

Displays address information for all endpoint sessions or for sessions to a specific LU.

Partner LU	Name of the Partner Logical Unit being used by this session.
PCID	Procedure Correlation Identifier of this session.
Priority	Transmission priority being used by this session: Low, Medium, High, or Network level priority.
COS	Class-of-Service being used by this session.
LS	Adjacent Link Station used by this session.

SIDH	Session Identifier High value used by this session.
SIDL	Session Identifier Low value used by this session.
ODAI	OAF-DAF Assignor Indicator value used by this session.

Sample Display – show appn endpoint address

```
APPN Endpoint Session Addressing Info
-------------------------------------

    Partner LU          PCID        Priority   COS       LS    SIDH SIDL ODAI
 ----------------- ---------------- -------- -------- -------- ---- ---- ----
 USWFLT01.WF3174A  dbf36f442150b151 Network  CPSVCMG  @I000004    2    0    1
 USWFLT01.WF3174A  fbbf52e94a9b96c9 Network  CPSVCMG  @I000004    2    0    0
 USWFLT01.AFN      ccebbc6be89f3909 Network  CPSVCMG  @I000003    2    0    0
 USWFLT01.AFN      fbbf52e94a9b96c8 Network  CPSVCMG  @I000003    2    0    1
 USWFLT01.TESTEN   fbbf52e94a9b96c7 Network  CPSVCMG  @I000002    2    0    0
 USWFLT01.TESTEN   eebbbebc4474cd92 Network  CPSVCMG  @I000002    2    1    1

6 Entries.
```

endpoint route [*<PLU name>*]

Displays routing information for all endpoint sessions or for sessions to a specific LU. The Route column indicates the route used by the endpoint sessions. CP sessions (between adjacent nodes) do not show routes. For more information about column definitions, see the **endpoint address** command.

Note: *Routing information is only available if the endpoint session RSCV storage option is enabled.*

Sample Display – show appn endpoint route

```
APPN Endpoint Session Routing Info
----------------------------------

    Partner LU          PCID        Route
 ----------------- ---------------- -----
 USWFLT01.WFAS400  fbbf52e94a9b96cc USWFLT01.RALEIGH->TG:1->USWFLT01.AFN-
>TG:21-
                                   >USWFLT01.WFAS400
 USWFLT01.WFAS400 fbbf52e94a9b96cb USWFLT01.RALEIGH->TG:1->USWFLT01.AFN-
>TG:21-
                                   >USWFLT01.WFAS400
 USWFLT01.WF3174A  dbf36f442150b151
 USWFLT01.WF3174A  fbbf52e94a9b96c9
 USWFLT01.AFN      ccebbc6be89f3909
 USWFLT01.AFN      fbbf52e94a9b96c8
 USWFLT01.TESTEN   fbbf52e94a9b96c7
 USWFLT01.TESTEN   eebbbebc4474cd92

8 Entries.
```

endpoint statistics [*<PLU name>*]

Displays statistics for all endpoint sessions or for sessions to a specific LU.

Dir	Indicates the direction: Rx (receive) or Tx (transmit).
BTU Size	Maximum send Basic Transmission Unit size on each hop of this session.
Pacing Max	Maximum send pacing on each hop of this session.
Pacing Cur	Current send pacing on each hop of this session.
Frames	Number of normal-flow frames sent on each hop of this session.
Bytes	Number of bytes sent on each hop of this session.

Sample Display – show appn stats endpoint

```
APPN Endpoint Session Statistics
--------------------------------
                                          BTU  Pacing
    Partner LU          PCID        Dir Size  Max Cur Frames Bytes
 ----------------- ---------------- --- ----- --- --- ------ ------
 USWFLT01.WFAS400  fbbf52e94a9b96cc Rx   2048   3   3      1     40
                                    Tx   2048   1   1      1     62
 USWFLT01.WFAS400  fbbf52e94a9b96cb Rx   2048   3   3      1     28
                                    Tx   2048   1   1      1     76
 USWFLT01.WF3174A  dbf36f442150b151 Rx   2048  11   7     11     4K
                                    Tx   2048   1   1      1     15
 USWFLT01.WF3174A  fbbf52e94a9b96c9 Rx   2048   1   1      1     15
                                    Tx   2048   4   3     14   351K
 USWFLT01.AFN      ccebbc6be89f3909 Rx   2048  11   7     11     4K
                                    Tx   2048   1   1      1     15
 USWFLT01.AFN      fbbf52e94a9b96c8 Rx   2048   1   1      1     15
                                    Tx   2048  13  13     19   136K
 USWFLT01.TESTEN   fbbf52e94a9b96c7 Rx   1929   1   1      1     15
                                    Tx   1929   1   1    194    23K
 USWFLT01.TESTEN   eebbbebc4474cd92 Rx   1929   1   1    195    53K
                                    Tx   1929   1   1      1     15
8 Entries.
```

isr address [*<FQCP name>*]

Displays address information for all Intermediate Session Routing (ISR) sessions or for sessions from a particular node.

FQ CP Name	Fully Qualified Control Point name of the node assigning the PCID for this session.
PCID	Procedure Correlation Identifier of this session.
Priority	Transmission priority used by this session: Low, Medium, High, or Network.
COS	Class-of-Service being used by this session.
Hop	Indicates whether the local LU was the BIND sender (Primary) or the BIND receiver (Secondary).
LS	Adjacent Link Station used by this session.

SIDH	Session Identifier High value used by this session.
SIDL	Session Identifier Low value used by this session.
ODAI	OAF-DAF Assignor Indicator value used by this session.

Sample Display – show appn isr address

```
APPN ISR Session Addressing Info
--------------------------------

    FQ CP Name          PCID        Priority   COS    Hop    LS    SIDH SIDL ODAI
 ----------------- ---------------- ------- -------- --- -------- ---- ---- ----
 USWFLT01.TESTEN   eebbbebc4774cd92 Network SNASVCMG Pri @I000002    2    2    1
                                                     Sec @I000003    2    1    1

1 Entry.
```

isr parameters

Displays parameter information about the Intermediate Session Routing (ISR) function.

ISR State	Indicates whether ISR is enabled. The default is enabled.
Maximum RU Size	Maximum Request Unit size for intermediate sessions.
Receive Pacing Window	Maximum number of messages that the network node can receive in one pacing window during an ISR session.
Maximum ISR Sessions	Maximum number of ISR sessions that the local network node will process concurrently.
Congestion Upper Threshold	Maximum number of ISR sessions that can take place before new sessions are directed away from the network node.
Congestion Lower Threshold	Number of active ISR sessions that the local network node must drop to before it is no longer considered congested.
ISR RSCV Storage	Indicates whether Route Selection Control Vectors are stored during ISR sessions (see **isr route** command).

Sample Display – show appn isr parameters

```
APPN ISR Parameters
-------------------

                  ISR State: Enabled
             Maximum RU Size: 1024
      Receive Pacing Window: 7
       Maximum ISR Sessions: 1000
 Congestion Upper Threshold: 900
 Congestion Lower Threshold: 800
           ISR RSCV Storage: Yes
```

isr route [*<FQCP name>*]

Displays routing information for all ISR sessions or for ISR sessions from a specific node. For more information about column definitions, see the **isr address** command.

Note: *ISR RSCV storage must be enabled in order to display the route.*

Sample Display – show appn isr route

```
APPN ISR Session Routing Info
-----------------------------
    FQ CP Name          PCID        Route
 ---------------- ---------------- -----
 USWFLT01.TESTEN   eebbbebc4774cd92 USWFLT01.TESTEN->TG:21->USWFLT01.RALEIGH-
>TG:1->USWFLT01.AFN->TG:21->USWFLT01.WFAS400

1 Entry.
```

isr statistics [*<FQCP name>*]

Displays session statistics for all ISR sessions or for ISR sessions from a specific node. For more information about column definitions, see the **endpoint statistics** and **isr address** commands.

Sample Display – show appn stats isr

```
APPN ISR Session Statistics
---------------------------
                                          BTU  Pacing
    FQ CP Name          PCID        Hop  Size  Max Cur Frames Bytes
 ---------------- ---------------- ---- ----- --- --- ------ ------
 USWFLT01.TESTEN   eebbbebc4774cd92 P-Rx  1929   1   1    388    29K
                                   P-Tx  1929   3   3    388    10K
                                   S-Rx  2048   5   3    388    10K
                                   S-Tx  2048   5   3    388    29K
1 Entry.
```

ls anr

Displays automatic network routing labels for a single link station or multiple link stations.

LS	Administratively assigned name for the link station. The name can be from one to eight characters.
CP Name	Fully qualified name of the adjacent node for this link station. The name can be from three to 17 characters. Format is *<network ID>.<CP name>.*
State	The current state of the link station, active or inactive.
ANR Label	The Automatic Network Routing label assigned during RTP route setup.

Sample Display – show appn ls anr

```
APPN Link Station ANR Info
--------------------------

                                        ANR
    LS          CP Name          State  Label
 -------- ----------------- ----------- -----
 RALEIGH  USBNET01.RALEIGH  Active      91
 VEGAS    USBNET01.VEGAS    Active      90

2 Entries.
```

ls definition [*<LS name>*]

Displays Link Station (LS) information for all defined link stations or for a specific link station.

LS	Administratively assigned name for the link station. The name can be from one to eight characters.
CP Name	Fully qualified name of the adjacent node for this link station. The name can be from three to 17 characters. Format is *<network ID>.<CP name>.*
Port	Administratively assigned name for the port. The name can be from one to eight characters.
TG Num	Number associated with the transmission group for this link station.
CP-CP Sessn	Indicates whether CP-CP sessions are supported by this link station.
Max BTU	Numeric value between 256 and 4105 inclusive, indicating the maximum number of bytes in a Basic Transmission Unit (BTU) that can be sent on this transmission group. This is an administratively assigned value.
Link Address	Link address using MAC address and SAP, or SDLC address.

Sample Display – show appn ls definition

```
APPN Link Station Definition
----------------------------

                                    TG  CP-CP  Max
    LS          CP Name         Port  Num Sessn  BTU   Link Address
 -------- ----------------- -------- --- ----- ----- ---------------
 DURHAM   USWFLT01.DURHAM   PORT22     0  Yes   1417 00004500e476:04
 WFAS400  USWFLT01.WFAS400  PORT22     0  Yes   1476 40000104877a:04

2 Entries.
```

ls hpr

Displays High Performance Routing capabilities for a single link station or multiple link stations.

LS	Administratively assigned name for the link station. The name can be from one to eight characters.
CP Name	Fully qualified name of the adjacent node for this link station. The name can be from three to 17 characters. Format is *<network ID>.<CP name>.*
HPR Enabled	Specifies whether HPR support has been enabled for this link station.
Link Level Error Recovery	Specifies whether link level error recovery support has been selected for this link station.

Sample Display – show appn ls hpr

```
APPN Link Station HPR info
------------------------------

                            HPR     Link Level
    LS         CP Name      Enabled Error Recovery
 -------- ----------------- ------- --------------
 RALEIGH  USWFLT01.RALEIGH  Yes     No
 VEGAS    USWFLT01.VEGAS    Yes     Yes

2 Entries.
```

ls status [*<LS name>*]

Displays the status of all link stations or a specific link station.

LS	Administratively assigned name for the link station. The name can be from one to eight characters. Names that begin with an "@" symbol indicate dynamic link stations.
CP Name	Fully qualified name of the adjacent node for this link station. The name can be from three to 17 characters. Format is *<network ID>.<CP name>.*
State	State of this link station: Inactive, Pending Active, Active, PendingInactive.
TG Num	Number of the transmission group for this link station.
Cur Sessn	Number of active sessions on this link.
Frames Rcvd	Number of message frames received.
Bytes Rcvd	Number of message bytes received.
Frames Sent	Number of message frames sent.
Bytes Sent	Number of message bytes sent.

Sample Display – show appn ls status

```
APPN Link Station Status
------------------------

                                          TG    Cur  Frames Bytes  Frames Bytes
    LS         CP Name         State     Num  Sessn  Rcvd   Rcvd   Sent   Sent
 -------- ----------------- ----------- ---- ----- ------ ------ ------ ------
 PLUTO    USWFLT01.PLUTO    Active       21     4     56    10K     57     9K
 ANAHEIM  USWFLT01.ANAHEIM  Pend Active   3     0      0     0       0      0
 WF3174A  USWFLT01.WF3174A  Active       21     2     51    10K     41     5K
 ANAHEIM2 USWFLT01.ANAHEIM  Active        2     6     81     4K     68     3K
4 Entries.
```

memory

Displays information about CP memory usage.

Available Memory	Total memory available to the APPN service (0 means unlimited).
Memory in Use	Memory in use by the APPN service.
Warning Threshold	Warning memory threshold (0 means no threshold).
Critical Threshold	Critical memory threshold (0 means no threshold).

Sample Display – show appn memory

```
APPN Memory Utilization
-----------------------

   Available Memory: 0
      Memory in Use: 147915
  Warning Threshold: 0
 Critical Threshold: 0
```

mode [*<mode name>*]

Displays mode-to-COS mappings for all modes or for a specific mode. For information on the columns, see the **cos node** and **cos priority** commands.

Sample Display – show appn mode

```
APPN Mode to COS Mappings
-------------------------

   Mode      COS
 -------- --------
 #BATCH   #BATCH
 #INTER   #INTER
 CPSVCMG  CPSVCMG
 #BATCHSC #BATCHSC
 #INTERSC #INTERSC
 SNASVCMG SNASVCMG

6 Entries.
```

port definition [*<port name>*]

Displays port definition information for all ports or for a specific port.

Port	Administratively assigned name for this APPN port. The name can be from one to eight characters.
Number	Port number associated with the port name.
DLC	Indicates the name of the DLC supporting this port.
Receive BTU Size	Maximum Basic Transmission Unit (BTU) size that a link station on this port can receive.
Send BTU Size	Maximum BTU size that a link station on this port can send.
Max Window	Maximum number of I-frames that can be received by the Exchange Identification (XID) sender before an acknowledgement is received.
Port Type	Identifies the type of line used by this port: Leased, Switched, or Shared Access Transport Facility (SATF).
Link Address	Link address using MAC address and SAP.

Sample Display – show appn port definition

```
APPN Port Definitions
---------------------

                          Receive    Send    Max     Port
   Port    Number   DLC    BTU Size BTU Size Window   Type    Link Address
 --------- ------ -------- -------- -------- ------ -------- --------------
 PORT0001       0 DLC00001     2048     2048      7 Leased               :01
 PORT0002       0 DLC00002     2048     2048      7 Leased               :03
 PORT0003       0 DLC00003     2048     2048      7 Leased               :05
 PORT0004       0 DLC00004     2048     2048      7 Leased               :07
 PORT0008       0 DLC00008     2057     2057      7 SATF     000045222224:04
 PORT0010       0 DLC00010     2057     2057      7 SATF     000045C0E4B6:04

6 Entries.
```

port hpr

Displays High Performance Routing capabilities for a single port or multiple ports.

Port	Administratively assigned name for this APPN port. The name can be from one to eight characters.
Implicit HPR Enabled	Specifies whether HPR support has been enabled for dynamic link stations on this port.
Implicit Link Level Error Recovery	Specifies whether link level error recovery support has been selected for dynamic link stations on this port.
Implicit Link Deactivation Time	Specifies the link deactivation time (in seconds) for dynamic link stations on this port.
HPR SAP	Defines the chosen SAP for HPR traffic on this port.

Sample Display – show appn port hpr

```
APPN Port Defined HPR info
--------------------------

          Implicit Implicit       Implicit
          HPR      Link Level     Link Deact HPR
   Port   Enabled  Error Recovery Time       sap
 -------- -------- -------------- ---------- ----
 PORT0003 Yes      No                    120 C8
 PORT0005 No       No                      5 none

2 Entries.
```

port status [*<port name>*]

Displays port status information regarding the Exchange Identification (XID) and link role for all ports or for a specific port.

Port	Administratively assigned name for this APPN port. The name can be from one to eight characters.
Number	Port number associated with the port name.
State	State of this port: Inactive, Pending Active, Active, PendingInactive.
Link Role	Initial role for the link stations activated through this port: Primary, Secondary, Negotiable, or ABM (Asynchronous Balance Mode).
Good XIDs	Number of successful XID sequences that have occurred on all defined link stations on this port since the last time this port was started.
Bad XIDs	Number of unsuccessful XID sequences that have occurred on all defined link stations on this port since the last time this port was started.

Sample Display – show appn port status

```
APPN Port Status
----------------

   Port   Number      State       Link Role  Good XIDs  Bad XIDs
 -------- ------ ---------------- ---------- ---------  --------
 PORT0001      0 Active           Negotiable         1         0
 PORT0002      0 Active           Negotiable         0         0
 PORT0003      0 Active           Primary            1         0
 PORT0004      0 Active           Primary            1         0

4 Entries.
```

rtp connection

Displays information about all RTP connections or a specific RTP connection.

RTP Conn Name	Name of the RTP connection.
Destination CP Name	Fully qualified name of the destination network node. The name can be from three to 17 characters. Format is *<network ID>.<CP name>.*
1st Hop Ls Name	Name of the link station which supports the RTP connection.
COS	Class of service for the RTP connection.
Local TCID	Local Transport Connection Identifier of the RTP connection.
Remote TCID	Remote Transport Connection Identifier of the RTP connection.

Sample Display – show appn rtp connection

```
APPN RTP Connections
--------------------

  RTP                        1st Hop
  Conn       Destination      Ls         COS     Local             Remote
  Name         CP Name        Name               TCID              TCID
 -------- ----------------- -------- -------- ---------------- ----------------
 @R000001 USWFLT01.DURHAM   RALEIGH  SNASVCMG 0000000001000000 0000000005000000
 @R000002 USWFLT01.DURHAM   RALEIGH  #CONNECT 0000000002000000 0000000006000000
 @R000003 USWFLT01.DURHAM   RALEIGH  #INTER   0000000003000000 0000000007000000
 @R000004 USWFLT01.DURHAM   RALEIGH  #BATCH   0000000004000000 0000000008000000
 @R000005 USWFLT01.VEGAS    BOSTON   SNASVCMG 0000000005000000 0000000009000000
 @R000006 USWFLT01.VEGAS    BOSTON   #CONNECT 0000000006000000 000000000A000000

4 Entries.
```

rtp route

Displays the RTP route selection control vector for all RTP connections or a specific RTP connection.

RTP Conn Name	Name of the RTP connection.
Route	Route selection control vector (RSCV) of the RTP connection.

Sample Display – show appn rtp route

```
APPN RTP Connection Routing Info
--------------------------------

  RTP
  Conn
  Name    Route
 -------- -----
 @R000001 USWFLT01.VEGAS->TG:21->USWFLT01.RALEIGH
 @R000002 USWFLT01.VEGAS->TG:21->USWFLT01.RALEIGH
 @R000003 USWFLT01.VEGAS->TG:21->USWFLT01.RALEIGH
 @R000004 USWFLT01.VEGAS->TG:21->USWFLT01.RALEIGH

4 Entries.
```

rtp statistics

Displays statistics for all RTP connections or a specific RTP connection.

RTP Connection Name	Name of the RTP connection.
Cur Session	Number of currently active sessions on this RTP connection.
Dir	Direction (Rx/Tx) of the specified statistic.
Bytes	Number of bytes received/transmitted on the RTP connection.
Pkts	Number of packets received/transmitted on the RTP connection.
SessCtl Frames	Number of session control frames sent on the RTP connection.
Rate	Current receive/transmit rate (in Kbits/sec) of the RTP connection.
Discarded Bytes	Total number of bytes sent by the remote node that were discarded as duplicates.
Discarded Pkts	Total number of packets sent by the remote node that were discarded as duplicates.
Resent Bytes	Total number of bytes resent by the local node that were lost in transit.
Resent Pkts	Total number of packets resent by the local node that were lost in transit.

Sample Display – show appn rtp statistics

```
APPN RTP Connection Statistics
------------------------------
  RTP
  Conn    Cur                      SessCtl       Discarded       Resent
  Name    Sessn Dir Bytes  Pkts    Frames  Rate  Bytes  Pkts   Bytes  Pkts
 -------- ----- --- ------ ------ ------ ------ ------ ------ ------ ------
 @R000001     1 Rx     196      7      1     1K      0      0      -      -
                Tx     285      7      1     1K      -      -      0      0
 @R000002     1 Rx     344     14      1     1K      0      0      -      -
                Tx     354     15      1     1K      -      -      0      0
 @R000003     1 Rx     352    218      1     1K      0      0      -      -
                Tx     420    215      1     1K      -      -      0      0
 @R000004     1 Rx     352    195      1     1K      0      0      -      -
                Tx     420    199      1     1K      -      -      0      0

4 Entries.
```

topology node [*<CP name>*]

Displays node information on the topology database for all control points or for a specific control point.

Node	Administratively assigned name for a specific node in the format *<network ID>.<CP name>*.
Type	Type of APPN node: NN (network node) or VRN (virtual node).
FRSN	Flow Reduction Sequence Numbers are associated with Topology Database Updates (TDUs) and are unique only within each APPN network node. A TDU can be associated with multiple APPN resources. This FRSN indicates the last time this resource was updated at this node.
RSN	Resource Sequence Number that is assigned and controlled by the network node that owns this resource. This is always an even 32-bit number unless an error has occurred.
RAR	Route Addition Resistance indicates the relative desirability of using this node for intermediate session traffic. The value, which can be any integer from 0 to 255, is used in route computation. The lower the value, the more desirable the node is for intermediate routing.
Congested	Indicates whether this node is congested. This is set or reset by a node based upon one or both of the following congestion measures: cycle utilization of the hardware and total buffer utilization. When this congestion exists this node is not included in route selection by other nodes.
Depleted	Indicates whether Intermediate Session Routing resources are depleted. This node is not included in intermediate route selection by other nodes when resources are depleted.
Quiescing	Indicates whether the node is quiescing. This node is not included in route selection by other nodes when the node is quiescing.
GW	Indicates whether the node provide gateway functions.
CDS	Indicates whether the node provides Central Directory Support.

Sample Display – show appn topology node

```
APPN Topology Nodes
-------------------

       Node         Type  FRSN   RSN   RAR Congested Depleted Quiescing GW  CDS
 ----------------- ---- ------ ------ --- --------- -------- --------- --- ---
 USWFLT01.AN       NN     3547      2 128      No       No        No     No  No
 USWFLT01.AFN      NN     3547      4 128      No       No        No     No  No
 USWFLT01.ASN      NN     3547      2 128      No       No        No     No  No
 USWFLT01.BCN      NN     3547      2 128      No       No        No     No  No
 USWFLT01.BUD      NN     3547      2 128      No       No        No     No  No
 USWFLT01.CN1      VRN       0      0 128      No       No        No     No  No
 USWFLT01.PCX      NN     3547      2 128      No       No        No     No  No
 USWFLT01.PLUTO    NN     3547      6 128      No       No        No     No  No
 USWFLT01.VEGAS    NN     3548      2 128      No       No        No     No  No
 USWFLT01.DURHAM   NN     3548      2 128      No       No        No     No  No
 USWFLT01.SNEEZY   NN     3548      2 128      No       No        No     No  No
 USWFLT01.ANAHEIM  NN     3548      2 128      No       No        No     No  No
 USWFLT01.MERCURY  NN     3549     14   0      No       No        No     No  No
 USWFLT01.RALEIGH  NN     3549      2 128      No       No        No     No  No
 USWFLT01.WF3174A  NN     3551     64 128      No       No        No     No  No
 USWFLT01.WFAS400  NN     3550     88 128      No       No        No     No  No
 USWFLT01.BROOKLYN NN     3550      2 128      No       No        No     No  No

17 Entries.
```

topology statistics

Displays APPN topology statistics.

Node Record Statistics:

Max Nodes	Maximum number of nodes allowed in the APPN topology database. This administratively assigned value must be equal to or greater than the maximum total number of end nodes and network nodes. If the number of nodes exceeds this value, APPN will issue an alert and the node can no longer participate as a network node.
Current Nodes	Current number of nodes in this node's topology database. If this value exceeds the maximum number of nodes allowed, an APPN alert is issued.

Received TDUs	Number of TDUs received from all adjacent network nodes since last initialization.
Sent TDUs	Number of TDUs built by this node to be sent to all adjacent network nodes since last initialization.
Received Low RSNs	Number of topology node updates received by this node with a RSN less than the current RSN. Both even and odd RSNs are included in this count.
Received Equal RSNs	Number of topology node updates received by this node with a RSN equal to the current RSN. Both even and odd RSNs are included in this count.
Received High RSNs	Number of topology node updates received by this node with an RSN greater than the current RSN.
Received Bad RSNs	Number of topology node updates received by this node with an odd RSN greater than the current RSN.
State Updates	Number of topology node records built as a result of internally detected node state changes that affect APPN topology and routing.
Errors	Number of topology node record inconsistencies detected by this node.
Timer Updates	Number of topology node records built for this node's resource due to timer updates.
Records Purged	Number of topology node records purged from this node's topology database.

TG Record Statistics:

Received Low RSNs	Number of topology transmission group updates received by this node with an RSN less than the current RSN. Both even and odd RSNs are included in this count.
Received Equal RSNs	Number of topology transmission group updates received by this node with an RSN equal to the current RSN. Both even and odd RSNs are included in this count.
Received High RSNs	Number of topology transmission group updates received by this node with an RSN greater than the current RSN.
Received Bad RSNs	Number of topology transmission group updates received by this node with an odd RSN greater than the current RSN.
State Updates	Number of topology transmission group records built as a result of internally detected node state changes that affect APPN topology and routing.
Errors	Number of topology transmission group records inconsistencies detected by this node.
Timer Updates	Number of topology transmission group records built for this node's resource due to timer updates.
Records Purged	Number of topology transmission group records purged from this node's topology database.
Routes Calculated	Number of routes calculated for all class of services since the last initialization.

Sample Display – show appn topology statistics

```
APPN Topology Statistics
------------------------
Node Record Statistics
 ----------------------
           Max Nodes: 0
       Current Nodes: 38
       Received TDUs: 45
           Sent TDUs: 50
   Received Low RSNs: 3
 Received Equal RSNs: 39
  Received High RSNs: 19
   Received Bad RSNs: 10
       State Updates: 0
              Errors: 0
       Timer Updates: 0
      Records Purged: 0

 TG record Statistics
 --------------------
   Received Low RSNs: 18
 Received Equal RSNs: 210
  Received High RSNs: 125
   Received Bad RSNs: 43
       State Updates: 5
              Errors: 1
       Timer Updates: 0
      Records Purged: 0
Routes Calculated: 0
```

topology tg definition [*<owner name>*]

Displays transmission group information for all transmission group owners or for a specific transmission group owner.

TG Owner	Fully qualified name for the originating node for this transmission group. The format is *<network ID>.<CP name>*.
TG Destination	Fully qualified network name for the destination node for this transmission group.
TG Num	Number associated with this transmission group. Range is 0 to 255.
Eff Cap	Indicates the effective capacity of this transmission group. It is derived from the link bandwidth and maximum load factor with the range of 0 through 255. This is an administratively assigned value for this transmission group.
Conn Cost	Cost per connection time. This value represents the relative cost per unit of time to use the transmission group. Range is from 0, which means no cost, to 255, which indicates maximum cost. This is an administratively assigned value associated with this transmission group.
Byte Cost	Relative cost of transmitting a byte over this link. Range is from 0 (lowest cost) to 255. This is an administratively assigned value associated with this transmission group.
Security	Security is represented as an integer with a range of 1 to 255. This is an administratively assigned value associated with this transmission group. The most common values are 1 (nonsecure), 32 (public-switched), 64 (underground), 128 (conduit), 160 (encrypted), 192 (guarded radiation), and 255 (maximum).
Delay	Relative amount of time that it takes for a signal to travel the length of the logical link, with a range of 0 through 255. This is an administratively assigned value associated with this transmission group. The most common values are 76 (negligible), 113 (terrestrial), 145 (packet), 153 (long), and 255 (maximum).
User 1	First user-defined transmission group characteristic for this transmission group, with a range of 0 to 255. This is an administratively assigned value associated with this transmission group.
User 2	Second user-defined transmission group characteristic for this transmission group, with a range of 0 to 255. This is an administratively assigned value associated with this transmission group.
User 3	Third user-defined transmission group characteristic for this transmission group, with a range of 0 to 255. This is an administratively assigned value associated with this transmission group.

Sample Display – show appn tg definition

```
APPN Topology TG Definition
---------------------------
                                    TG  Eff Conn Byte Secu De- User User User
     TG Owner       TG Destination  Num Cap Cost Cost rity lay  1    2    3
 ---------------- ---------------- --- --- ---- ---- ---- --- ---- ---- ----
 USWFLT01.PLUTO    USWFLT01.DURHAM   21  48    0    0    1 113  128  128  128
 USWFLT01.DURHAM   USWFLT01.PLUTO    21 133  128  128    1   0  128  128  128
 USWFLT01.DURHAM   USWFLT01.ANAHEIM   1 133  128  128    1   0  128  128  128
 USWFLT01.DURHAM   USWFLT01.ANAHEIM   2 133  128  128    1   0  128  128  128
 USWFLT01.DURHAM   USWFLT01.ANAHEIM   3   0    0    0    1   0    0    0    0
 USWFLT01.DURHAM   USWFLT01.ANAHEIM   4   0    0    0    1   0    0    0    0
 USWFLT01.DURHAM   USWFLT01.WF3174A  21 133  128  128    1   0  128  128  128
 USWFLT01.ANAHEIM  USWFLT01.DURHAM    1 133  128  128    1   0  128  128  128
 USWFLT01.ANAHEIM  USWFLT01.DURHAM    2 133  128  128    1   0  128  128  128
 USWFLT01.ANAHEIM  USWFLT01.DURHAM    3   0    0    0    1   0    0    0    0
 USWFLT01.ANAHEIM  USWFLT01.WFAS400  21   0    0    0    1   0    0    0    0
 USWFLT01.WF3174A  USWFLT01.DURHAM   21  68    0    0   32 113    0    0    0

12 Entries.
```

topology tg status [*<owner name>*]

Displays transmission group topology information for all transmission group owners or for a specific transmission group owner.

TG Owner	Fully qualified name for the originating node for this transmission group. The format is *<network ID>.<CP name>.*
TG Destination	Fully qualified network name for the destination node for this transmission group.
TG Num	Number associated with this transmission group. Range is 0 to 255.
FRSN	Flow Reduction Sequence Numbers are associated with Topology Database Updates (TDUs) and are unique only within each APPN network node. This FRSN indicates the last time this resource was updated at this node.
RSN	Current owning node's Resource Sequence Number for this resource.

Up?	Indicates whether the transmission group is operational.
Quiescing	Indicates whether the transmission group is quiescing.
CP-CP Sessn	Indicates whether CP-CP sessions are supported on this transmission group.

Sample Display – show appn tg status

```
APPN Topology TG Status
-----------------------

                                  TG                        Quie- CP-CP
     TG Owner       TG Destination  Num   FRSN     RSN    Up? scing Sessn
 ---------------- ---------------- --- -------- -------- --- ----- -----
 USWFLT01.PLUTO   USWFLT01.DURHAM   21     2512      522 Yes No    Yes
 USWFLT01.DURHAM  USWFLT01.PLUTO    21     2538      272 Yes No    Yes
 USWFLT01.DURHAM  USWFLT01.ANAHEIM   1     2551      264 No  No    Yes
 USWFLT01.DURHAM  USWFLT01.ANAHEIM   2     2546      170 Yes No    Yes
 USWFLT01.DURHAM  USWFLT01.ANAHEIM   3     2504      142 No  No    Yes
 USWFLT01.DURHAM  USWFLT01.ANAHEIM   4     2504       22 No  No    Yes
 USWFLT01.DURHAM  USWFLT01.WF3174A  21     2538      166 Yes No    Yes
 USWFLT01.ANAHEIM USWFLT01.DURHAM    1     2553       86 No  No    Yes
 USWFLT01.ANAHEIM USWFLT01.DURHAM    2     2532       82 Yes No    Yes
 USWFLT01.ANAHEIM USWFLT01.DURHAM    3     2532       60 No  No    Yes
 USWFLT01.ANAHEIM USWFLT01.WFAS400  21     2532       38 No  No    Yes
 USWFLT01.WF3174A USWFLT01.DURHAM   21     2537      168 Yes No    Yes

12 Entries.
```

tunnel [<*circuit*>]

Displays APPN tunnel information for all circuits or for a specific circuit.

CCT	Circuit number of the circuit running over this APPN tunnel.
Partner Node	Partner LU for this APPN tunnel.
State	Current state of the tunnel: Up, Down, Init (initializing), or Not Present.

Frames Rcvd	Number of frames received over this APPN tunnel.
Frames Sent	Number of frames transmitted over this APPN tunnel.
Frames Dropped	Number of frames dropped by this APPN tunnel due to congestion.

Sample Display – show appn tunnel

```
APPN Tunnels
------------

                                      Frames Frames Frames
 CCT    Partner Node       State      Rcvd   Sent  Dropped
 ---- ----------------- ------------ ------ ------ -------
  100 USWFLT01.ANAHEIM  Active           26      7       0

1 Entry.
```

version

Displays the current version and modification date of the *appn.bat* script.

Sample Display – show appn version

```
APPN.bat Version: 1.31 Date: 1/19/95.
```

vrn [*<VRN name>*]

Displays state information for all Virtual Routing Nodes (VRNs) or for a specific VRN.

VRN	Fully qualified network name that is locally defined at each network node in the format *<network ID>.<CP name>*.
State	Current state of this VRN: Inactive, Pending Active, Active, Pending Inactive.

Port	Administratively assigned name for this APPN port. The name can be from one to eight characters.
Port State	Current state of this port: Inactive, Pending Active, Active, Pending Inactive.

Sample Display – show appn vrn

```
APPN Virtual Routing Nodes
--------------------------

        VRN             State         Port      Port State
 ----------------- ---------------- -------- ----------------
 USWFLT01.CN1      Pending Active   PORT31   Inactive
1 Entry.
```

show at

The **show at** *<option>* commands display information about the AppleTalk protocol and services. For detailed information on the Bay Networks implementation of AppleTalk services, refer to *Configuring AppleTalk Services*.

The **show at** command supports the following subcommand options:

aarp [<net>.<node> | find <net>]	filters zone [circuit <circuit name>]
alerts	routes | nets [find <netlow>-<nethigh>] [zones]
base	stats [aarp | ddp | rtmp | zipquery | zipgni | zipes | nbp | echo] [<circuit name>]
circuit [<circuit name>]	total [routes | nets | zones | aarp]
configuration [circuit <circuit name>]	version
disabled	zones | zip [find <pattern>]
enabled	

aarp [*<net>.<node>* | **find** *<net>*]

Displays all entries in the AppleTalk Address Resolution Protocol (AARP) table, only the AARP entry for a specific node, or all entries that have a network address that matches a specified pattern.

<net>.<node>	Displays the AARP entry for the specified network node in the format *<network ID>.<node ID>*.
find *<network pattern>*	Displays the AARP entries that have a network address that matches the given pattern.

The table includes the following information:

Address	AppleTalk network address of the node.
Physical Address	Hardware address of the node (for example, the Ethernet address).
Circuit	Name of the circuit on which the address resolution is in effect.

Sample Display – show at aarp

```
AppleTalk AARP Table
--------------------

 Address     Physical Address     Circuit
--------- ----------------------- --------
60020.19  00-00-A2-01-51-AD       S32
60060.193 00-2B                   S31
60100.213 00-00-A2-00-F9-B0       E24
60120.2   <null-PPP>               S34
60130.179 00-00-89-01-A3-8A       E23
60130.226 00-80-D3-A0-0A-62       E23

6 total entries.
```

alerts

Displays all AppleTalk circuits that are enabled but not up. Mode is always Enabled but the state will be down. Use this display to identify the interfaces that are not working. The table includes the following information:

Circuit	Name of the circuit the port is on.
Mode	Mode will be Enabled, in this case.
Network	Network start and end numbers that constitute the range of the network numbers. These numbers are in the range of 1 through 65,279.
Address	Network address of the port, which is Dynamic, meaning that the seed router assigns it, or a manually configured network address and identifier.
Zone List	List containing all the zones configured for the network range.

Sample Display – show at alerts

```
AppleTalk Circuit Alerts: Enabled but state is down
---------------------------------------------------

Circuit     Mode       Network    Address              Zone List
------- ----------- ----------- --------- ---------------------------------
S31      Enabled     60060-60060 Dynamic   'WAN'

1 entries found.
1 total entries.
```

base

Displays the base record information for AppleTalk. The base record controls AppleTalk for the entire system. The table includes the following information:

Protocol	Name of the protocol, which is AppleTalk.
State	State of the protocol: Disabled, Down, Init (initializing), Not Pres (enabled but not yet started), or Up.
Nets	Number of networks in this protocol's routing table.
Zones	Number of zone/network associations in the routing table.
Zone Names	Number of unique zone names in the routing table.

Sample Display – show at base

```
AppleTalk Base Information
--------------------------

    Protocol        State    Nets  Zones Zone Names
---------------- ----------- ----- ----- ----------
AppleTalk        Up             26    24         17
```

circuit [*<circuit name>*]

Displays circuit and state information for all AppleTalk ports or for a specific port. The table includes the following information:

Circuit	Name of the circuit the port is on.
State	State of the circuit: Disabled, Down, Init (initializing), Not Pres (enabled but not yet started), or Up.
Network	Network start and end numbers that constitute the range of the network numbers. These numbers are in the range of 1 through 65,279.
Address	AppleTalk address of the port.
Zone List	List of the zones associated with the network this interface is on.

Note: *If a circuit is down, the rest of the table is blank.*

Sample Display – show at circuit

```
AppleTalk Circuit Information
------------------------------

Circuit     State      Network    Address              Zone List
-------- ----------- ----------- --------- ------------------------------
E23      Up          60130-60130 60130.34  'External'
E24      Up          60100-60100 60100.34  'Mac/Apple'
S31      Down
S32      Up          60020-60020 60020.138 'WAN'
S34      Up          60120-60120 60120.1   'PPP'

5 total entries.
```

configuration [**circuit** *<circuit name>*]

Displays configurable parameters within the AppleTalk base record. You can display this information for all circuits or for a specific circuit. The table includes the following information:

Mode	State of the protocol: Enabled or Disabled.
NBP Registered Port	Name of the port that the Name Binding Protocol uses to advertise the router's name on the network.

Note: *The* **configuration circuit** *command displays different fields from the* **configuration** *command. For definitions of these fields, refer to the* **alerts** *command.*

Sample Display – show at configuration

```
AppleTalk Base Configuration
----------------------------

   Mode     NBP Registered Port
----------- -------------------
Enabled     E22
```

Sample Display – show at configuration circuit

```
AppleTalk Circuit Configuration
-------------------------------

Circuit     Mode       Network    Address              Zone List
------- ----------- ----------- --------- ---------------------------------
E22      Enabled     60070-60070 Dynamic   'Internal'
E23      Enabled     60130-60130 Dynamic   'External'
E24      Enabled     60100-60100 Dynamic   'Mac/Apple'
                                           'Internal'
S31      Enabled     60060-60060 Dynamic   'WAN'
S32      Enabled     60020-60020 Dynamic   'WAN'
S34      Enabled     60120-60120 60120.1   'PPP'

6 total entries.
```

disabled

Displays all disabled circuits that contain an AppleTalk port. A circuit is disabled if the disable/enable parameter is set to disable and the state is down. For definitions of the columns in the table, see the **alerts** command.

Sample Display – show at disabled

```
Disabled AppleTalk Circuits
---------------------------

Circuit     Mode       Network    Address              Zone List
-------- ----------- ----------- --------- ---------------------------------
E22      Disabled    60070-60070 Dynamic   'Internal'

1 entries found.
1 total entries.
```

enabled

Displays all enabled circuits that contain an AppleTalk port. A circuit is enabled if the disable/enable parameter is set to enable and the state is up. For definitions of the columns in the table, see the **circuit** command.

Note: *If a circuit is down, the rest of the table is blank.*

Sample Display – show at enabled

```
Enabled AppleTalk Circuits
--------------------------

Circuit    State       Network    Address              Zone List
-------- ----------- ----------- --------- --------------------------------
E23      Up          60130-60130 60130.34  'External'
E24      Up          60100-60100 60100.34  'Mac/Apple'
S31      Down
S32      Up          60020-60020 60020.138 'WAN'
S34      Up          60120-60120 60120.1   'PPP'

5 entries found.
5 total entries.
```

filters zone [**circuit** *<circuit name>*]

Displays information about the zone filters for all circuits or a specified circuit. The table includes the following information:

Circuit	Name of the circuit the port is on.
AppleTalk Port	Number of the port.
Port Filter Mode	Zone filter type: Include, Exclude, 5.X Include, or 5.X Exclude.
Filtered Zones(s)	Zones that are filtered for this port.
Total zones	Number of zones that are filtered on this port.

Sample Display – show at filters zone

```
Circuit: E31
AppleTalk Port: #1

Port Filter Mode: Include

  Filtered Zone(s) for this port
 ---------------------------------
                           MARKETING
                               SALES


Total zones for circuit E31      is 2


Circuit: E21
AppleTalk Port: #2

Port Filter Mode: Deny

  Filtered Zone(s) for this port
 ---------------------------------
                           MARKETING
                               SALES
```

```
Total zones for circuit E21      is 2

Circuit: E32
AppleTalk Port: #3

Port Filter Mode: 5.x series Include

  Filtered Zone(s) for this port
 ---------------------------------
                           MARKETING

Total zones for circuit E32      is 1
```

routes | **nets** [**find** *<netlow>-<nethigh>*] [**zones**]

Displays information from the AppleTalk routing table. The table receives routes through the AppleTalk Routing Table Maintenance Protocol (RTMP) or from AppleTalk interfaces.

find *<netlow>-<nethigh>*	Displays information about network address ranges that fall within the specified start and end values; for example, 60401-60406.
zones	Displays an extended format of the routing table, which adds the zone list for each network range.

The table includes the following information:

Network	Start and end numbers of the destination network range. These numbers are in the range of 1 through 65279. A range (for example, 60020-60020 indicates the network is an extended network. A single number indicates the network is nonextended.
Hop	Number of hops to the destination network range.
Next Hop	Network address of the router that is the next hop toward the destination network range.
State	State of the network: Good, Suspect, Bad 0 (going bad), or Bad 1 (completely bad).

Port	Physical port that serves as the source of the route. An <AURP> in this column means that the router learned this route through the AppleTalk Update-based Routing Protocol.
Zone List	Name of the zone associated with this network. The table includes this column when you include the zones option on the command line. If the zone name is more than 32 characters, the script displays as much of the name as possible followed by ellipses.

Sample Display – show at routes

```
AppleTalk Routing Table
-----------------------

  Network   Hop    Next Hop      State    Port
----------- --- --------------- ------- --------
60020-60020   1 205.1.10.1      Good    <AURP>
60040-60040   2 205.1.10.2      Good    <AURP>
60050-60050   2 205.1.10.1      Good    <AURP>
60400-60400   0 60400.96        Good    E21
60401         1 60040.169       Good    E32
60404         2 205.1.10.1      Good    <AURP>
60410         3 205.1.10.2      Good    <AURP>

7 total entries.
```

Sample Display – show at nets find 60401-60404

```
AppleTalk Routing Table
-----------------------

  Network   Hop    Next Hop      State    Port
----------- --- --------------- ------- --------
60401         1 60040.169       Good    E32
60404         2 205.1.10.1      Good    <AURP>

2 total entries.
```

Sample Display – show at routes zones

```
  Network   Hop    Next Hop      State    Port            Zone List
---------- --- -------------- ------- -------- ---------------------------
60020-60020   1 205.1.10.1      Good    <AURP>   'WAN'
60080-60081   1 60090.4         Suspect F41      'Internal'
                                                 'Token'
60090-60090   0 60090.61        Good    F41      'Internal'
60100-60100   1 205.1.10.1      Good    <AURP>   'Internal'
                                                 'Mac/Apple'
60130-60130   1 205.1.10.1      Good    <AURP>   'External'
60401         3 205.1.10.1      Good    <AURP>   'Building 3, Floor 2, Sec...'
60403         2 205.1.10.1      Good    <AURP>   'LT Crisp'

7 total entries.
```

stats [**aarp** | **ddp** | **rtmp** | **zipquery** | **zipgni** | **zipes** | **nbp** | **echo**] [*<circuit name>*]

Displays general forwarding statistics for specified AppleTalk ports. You can limit the display to a specific circuit.

aarp	Displays AppleTalk Address Resolution Protocol (AARP) statistical information.
ddp	Displays Datagram Delivery Protocol (DDP) statistical information.
rtmp	Displays Routing Table Maintenance Protocol (RTMP) statistical information.
zipquery	Displays Zone Information Protocol (ZIP) statistical information specific to ZIP Query packets.
zipgni	Displays statistical information specific to ZIP GetNetInfo request packets.
zipes	Displays ZIP statistical information specific to Client activity.
nbp	Displays Name Binding Protocol (NBP) statistical information.
echo	Displays ECHO protocol statistical information.
<circuit name>	Limits the display to the specified circuit.

The table includes the following information:

Circuit	Name of the circuit the AppleTalk protocol is on.
In Datagrams	Number of packets the port has received.
In Local Datagrams	Number of datagrams destined for this port.
Forwarded Datagrams	Number of packets forwarded to the destination network.
Output Requests	Number of packets that the router has sent out of this port.
Out No Routes	Number of packets missing a destination.
Hop Count Errors	Number of datagrams dropped because this router was not their final destination and their hop count would exceed 15.

Sample Display – show at stats ddp

```
AppleTalk DDP Statistics
------------------------

             In      In Local  Forwarded    Output     Out No   Hop Count
Circuit  Datagrams  Datagrams  Datagrams   Requests    Routes     Errors
-------- ---------- ---------- ---------- ---------- ---------- ----------
E22               0          0          0          0          0          0
E23           80956       4535      61174       3166         72          0
E24           29188       3819      27215       2971          7          1
S31           15240       3887      14453       3554          2          0
S32           27354       3368      26566       3033          0          0
S34           19391       3559      18508       3143          0          0
```

total [**routes** | **nets** | **zones** | **aarp**]

Displays totals for all dynamic protocol-specific information or for the specified parameter.

routes	Displays total number of routes.
nets	Displays total number of networks.
zones	Displays total number of zones.
aarp	Displays total number of AARP entries.

Sample Display – show at total

```
 AppleTalk Totals
----------------

Routes:                26
Zones:                 28
Unique Zone Names:     18
AARP Entries:           5
```

version

Displays the current version and modification date of the *at.bat* script.

Sample Display – show at version

```
AT.bat Version: 1.18.2.1 Date: 1/17/95.
```

zones | **zip** [**find** *<pattern>*]

Displays information from the router's Zone Information Protocol (ZIP) table. The table receives its entries from manually configured zone lists for AppleTalk ports and from ZIP packets from other nodes on the network.

find *<pattern>*	Limits the display to zones that match the specified pattern. You can use the wildcard characters * and ?.

The table includes the following information:

Network	Network start and end numbers that constitute the range of the network numbers where the zone resides. These numbers are in the range of 1 through 65,279.
Zone Name	Name of each zone assigned to the entire network or the specified group.

Sample Display – show at zones

```
AppleTalk Zone Table
--------------------
Network               Zone Name
----------- ---------------------------------
 1-1         '37_Network'
 2-2         'net_1'
 3-3         'net_2'
 50-50       'ring_2ACC'
 50-50       'ring_2DEV'
 50-50       'ring_2ENG'
 50-50       'ring_2'
 200-200     'net_200'
 201-201     'net_201ACC'
 201-201     'net_201DEV'
 201-201     'net_201ENG'
 201-201     'net_201'
 203-203     'net_203ACC'
 203-203     'net_203DEV'
 203-203     'net_203ENG'
 203-203     'net_203'
18 total entries.
```

Sample Display – show at zones find net*

```
AppleTalk Zone Table
--------------------

   Network               Zone Name
 ----------- ----------------------------------
 2-2         'net_1'
 3-3         'net_2'
 200-200     'net_200'
 201-201     'net_201ACC'
 201-201     'net_201DEV'
 201-201     'net_201ENG'
 201-201     'net_201'
 203-203     'net_203ACC'
 203-203     'net_203DEV'
 203-203     'net_203ENG'
 203-203     'net_203'

11 entries found.
16 total entries.
```

show atm

The **show atm** *<option>* commands display information about the Asynchronous Transfer Mode (ATM) Adaption Layer Controller (ALC) link module service. For detailed information about the Bay Networks implementation of the ATM link module service, refer to *Configuring ATM Services.*

Note: *Refer to the "show atm line" section for more information on the* **atm line** *command.*

The **show atm** command supports the following subcommand options:

alerts	vcs [<line>] | [<line.vpi>] | [<line.vpi.vci>]
disabled	services [<line>] | [<line.circuit>]
enabled	stats
interfaces [<line>]	stats pvc [<line>] | [<line.VPI>] | [<line.VPI.VCI>]
line [<line option>]	version

alerts

Displays abnormal conditions in the ATM interface. Use this command to identify lines configured as enabled but not currently up. The table displays the following information:

Line	Line number of the Bay Networks router.
Circuit	Circuit name on which the ATM interface runs.
State	State of the ATM line: Up, Down, Init (initializing), Disabled, or Absent.

Sample Display – show atm alerts

```
 ATM Interface Line Alert Table
 ------------------------------

   Line   Circuit   State
 -------- -------- --------
  1103101   A31      Down

Total entries: 1
```

disabled

Displays the ATM interfaces that are configured as disabled. For more information about column definitions, see the **alerts** command.

Sample Display – show atm disabled

```
ATM Interface Line Disabled Table
---------------------------------

   Line   Circuit   State
 -------- -------- --------
 1103101  A31      Disabled


Total entries: 1
```

enabled

Displays the ATM interfaces that are configured as enabled. For more information about column definitions, see the **alerts** command.

Sample Display – show atm enabled

```
 ATM Interface Line Enabled Table
--------------------------------

  Line   Circuit   State
-------- -------- --------
1103101  A31      Up


Total entries: 1
```

interfaces [*<line>*]

Displays all ATM interfaces or ATM interfaces for a specified line. This table includes the following information:

VPCs	Maximum number of Virtual Path Connections supported by the ATM interface.
VCCs	Maximum number of Virtual Channel Connections supported by the ATM interface.
Address Type	Type of ATM address configured for use by the ATM interface: Private, NSAP E.164, Native E.164, Other, or Null.

For more information about column definitions, see the **alerts** command.

Sample Display – show atm interfaces

```
ATM Interface Table
-------------------

    Line     Circuit    State    VPCs   VCCs  Address Type
 ---------- --------- --------- ------ ------ ------------
  1103101      A31    Disabled      0      0      Null

Total entries: 1
```

line [*<line option>*]

Note: *See the "show atm line" section.*

vcs [*<line>*] | [*<line.vpi>*] | [*<line.vpi.vci>*]

Displays all ATM virtual channel link (VCL) instances or a subset of VCL instances.

<line>	Displays all VCs for a specified line.
<line.vpi>	Displays all VCs for a specified VPI on that line.
<line.vpi.vci>	Displays a specific VC.

The table displays the following information:

Line.VIP.VCI	Line number, Virtual Path Identifier, and Virtual Channel Identifier associated with this Virtual Circuit (VC).
Type	Type of VC: SVC or PVC.
State	State of the ATM line: Up, Down, Init (initializing), Disabled, or Absent.

Hybrid/Bridged VCs	Mode of this VC (Hybrid/Bridged): Yes or No. Yes means the VC operates as a hybrid access mode VC; No means the VC works in group access mode only.
AAL	ATM Adaptation Layer Type of this VC: AAL5.
Encaps	Encapsulation type of this VC: RFC 1483/LLC, RFC 1483/Null, LANE8023 (LAN Emulation 802.3), or Other.
Xmt PCR	Transmit Peak Cell Rate (PCR) for this VC (in cells/s).
Xmt SCR	Transmit Sustainable Cell Rate (SCR) for this VC (in cells/s).

Sample Display — show atm vcs

```
ATM Interface VCL Table
-----------------------

                              Hybrid/
                              Bridged
Line.VPI.VCI    Type   State  VCs?   AAL      Encaps     Xmt PCR Xmt SCR
--------------- ---- --------- ------ ------ ------------ ------- -------
1404101.0.5       CTRL Up       NO     AAL5   Other        4716    4716
1404101.0.16      CTRL Up       NO     AAL5   Other        4716    4716
1404101.0.32      SVC  Up       NO     AAL5   Other        353207  0
1404101.0.33      SVC  Up       NO     AAL5   Other        353207  0
1404101.0.34      SVC  Up       NO     AAL5   Other        353207  0
1404101.0.35      SVC  Up       NO     AAL5   Other        353207  0
1404101.0.36      SVC  Up       NO     AAL5   Other        353207  0
1404101.0.85      SVC  Up       NO     AAL5   LANE8023     353207  0
1404101.0.87      SVC  Up       NO     AAL5   LANE8023     353207  0
1404101.0.90      SVC  Up       NO     AAL5   LANE8023     353207  0
1404101.0.91      SVC  Up       NO     AAL5   LANE8023     353207  0
1404101.0.92      SVC  Up       NO     AAL5   LANE8023     353207  0
1404101.0.94      PVC  Up       NO     AAL5   RFC1483/Null 4716    4716


Total entries: 13
```

services [*<line>*] | [*<line.circuit>*]

Displays all ATM service record instances, or a subset of service record instances, along with its AAL layer data encapsulation type, state, VC type, and ATM address (a combination of network prefix and user part).

Note: *ATM address applies only to SVC-type services records. SVCs are currently not supported.*

<line>	Displays all service record instances for a specified line.
<line.circuit>	Displays service record instance for a specified circuit on that line.

The table displays the following information:

Line.Circuit	Line number and circuit associated with this service record.
Encaps	Encapsulation type of this VC: RFC 1483/LLC, RFC 1483/Null.
State	State of the ATM line: Up, Down, Init (initializing), Disabled, or Absent.
Type	Type of virtual circuit (PVC only)
ATM Address	This parameter applies only to SVC-type service records. SVCs are currently not supported.

Sample Display – show atm services

```
ATM Service Record Table
------------------------

Line.Circuit    Encaps    State  Type               ATM Address
------------ ------------ ------ ---- ---------------------------------------
1103101.3    RFC1483/LLC  Absent PVC  (nil)


Total entries: 1
```

stats

Displays statistical information about all ATM PVCs. The table includes the following information:

Line.VPI.VCI	Line number, Virtual Path Identifier, and Virtual Channel Identifier associated with this Permanent Virtual Circuit.
Cells Transmitted	Number of assigned ATM layer cells transmitted at the transceiver transmit interface (T-count).
Cells Received	Number of ATM layer cells received at the transciever receive interface that have not been discarded (R-count).
Checksum Errors	Number of occurances of cyclical redundancy check-32 (CRC-32) failures across user payload data for any given VCL.
Invalid Length Errors	Number of active Cell Sequence PDU assembly processes closed (aborted, accumulation discarded) due to detecting a length field error in a received SAR PDU.

Sample Display – show atm stats

```
ATM Interface PVC Statistics
----------------------------

   Line.VPI.VCI
 -----------------
 1105101.0.33      Cells Transmitted: 0X   00.00.00.00.EB.93.0A.A6
                   Cells Received   : 0X   00.00.00.00.00.00.00.00
                   Checksum   Errors:                            0
                   Length     Errors:                            0


Total entries: 1
```

stats pvc [*<line>*] | [*<line.VPI>*] | [*<line.VPI.VCI>*]

Displays all ATM PVC statistics or a subset of ATM PVC statistics.

<line>	Displays all PVCs for a specified line.
<line.VPI>	Displays all PVCs for a specified VPI on that line.
<line.VPI.VCI>	Displays a specific PVC.

For more information about column definitions, see the **stats** command.

Sample Display – show atm stats pvc 1105101.0.33

```
ATM Interface PVC Statistics
----------------------------

  Line.VPI.VCI
-----------------
1105101.0.33      Cells Transmitted: 0X   00.00.00.00.EB.93.0A.A6
                  Cells Received   : 0X   00.00.00.00.00.00.00.00
                  Checksum   Errors:                            0
                  Length     Errors:                            0


Total entries: 1
```

version

Displays the current version number and modification date of the *atm.bat* script.

Sample Display – show atm version

```
ATM.bat Version: 1.7 Date: 1/23/95.
```

show atmarp

The **show atmarp** *<options>* command displays ATMARP information. For details about the Bay Networks implementation of ATM, refer to *Configuring ATM Services*.

The **show atmarp** command supports the following subcommand options:

configuration [<IP_address>]	table [<IP_address>]
interface [<IP_address>]	version
stats [<IP_address>]	

configuration [*<IP_address>*]

Displays configuration information for all ATMARP interfaces, or a specific interface.

<IP_address>	Displays ATM ARP information for a specific interface.

The table displays the following information:

Interface	IP address of the interface.
Mode	Whether the router is confirmed as an ATM ARP client or server.
Server Address (if client)	ATM address of the server.

Sample Display – show atmarp configuration

```
Interface         Mode         Server Address (if client)
---------------- ------ ---------------------------------------
5.5.5.7          Client 47000580FFE1000000F2151540.0000A20E9FCC00
6.6.6.7          Server (nil)

2 Atmarp Interfaces.
```

interface [*<IP_address>*]

Displays interface information for all ATMARP interfaces, or a specific interface.

<IP_address>	Displays ATM ARP information for a specific interface.

The table displays the following information:

Interface	IP address of the interface.
Address	ATM address this interface uses.
Server Conn. State	Indicates the state of the VC connecting the client to the server, and whether the client is currently registered with the server.

Sample Display – show atmarp interface

```
Interface     Address                                    Server Conn. State
-----------   ----------------------------------------   ------------------
5.5.5.7       47000580FFE1000000F2151540.0000A20CD5C100  Open,Registered
6.6.6.7       47000580FFE1000000F2151540.0000A20CD5C101  Server

2 Atmarp Interfaces.
```

stats [*<IP_address>*]

Displays statistics information for all ATMARP interfaces, or a specific interface.

<IP_address>	Displays ATM ARP information for a specific interface.

The table displays the following information:

Interface	IP address of the client.
Open SVCs	Number of SVCs currently open.
Calls Attempted	Number of calls attempted, both to the server and to other clients.

Calls Succeeded	Number of attempted calls that succeeded.
Failed May Retry	Number of attempted calls that did failed, but that the client may retry.
Failed No Retry	Number of attempted calls that failed, but that the client will not retry.
Calls Accepted	Number of calls that this interface accepted.

Sample Display – show atmarp stats

```
                Open    Calls      Calls      Failed     Failed     Calls
  Interface     SVCs  Attempted  Succeeded  May Retry   No Retry   Accepted
--------------- ------ ---------- ---------- ---------- ---------- ----------
5.5.5.7         1         37          2          0         35          0
6.6.6.7         2          0          0          0          0          3

2 Atmarp Interfaces.
```

table [*<IP_address>*]

Displays table information for all ATMARP interfaces, or a specific interface.

<IP_address>	Displays ATM ARP information for a specific interface.

The table displays the following information:

IP address	IP address of an ARP entry in the ATMARP cache.
Life	Age of the ARP entry (decrements from 900 s).
ATM address	ATM address to which the IP address resolves.
Vpi.vci	Virtual Path Identifier and Virtual Channel Identifier for the VCs to the IP address. If this is not present, then no VC exists to the destination.

Sample Display – show atmarp table

```
IP address       Life   ATM address                                Vpi.vci
---------------  -----  -----------------------------------------  --------
5.5.5.5            844  47000580ffe1000000f2151540.0000a20e9fcc00  0.212

IP address       Life   ATM address                                Vpi.vci
---------------  -----  -----------------------------------------  --------
6.6.6.6            823  47000580ffe1000000f2151540.0000a20e9fcc01  0.211
6.6.6.8            425  47000580ffe1000000f2151540.0000a20e9fc701  0.174

2 Atmarp Interfaces.
```

version

Displays the current version and modification date of the *atmarp.bat* script.

Sample Display – show atmarp version

```
ATMARP.bat Version: 1.## Date: 10/1/95.
```

show atmdxi

The **show atmdxi** *<option>* commands display information about Asynchronous Transfer Mode Data Exchange Interface (ATM DXI) lines and services. For detailed information about the Bay Networks implementation of ATM DXI, refer to *Configuring ATM Services*.

The **show atmdxi** command supports the following subcommand options:

alerts	stats
base	stats lmi
disabled	stats mpe
enabled	stats pvc [<line.llindex>] | [<line.llindex.VPI>] | [<line.llindex.VPI.VCI>]
lines [<line.llindex>]	version
pvcs [<line.llindex>] | [<line.llindex.VPI>] | [<line.llindex.VPI.VCI>]	

alerts

Displays abnormal conditions in the ATM DXI line level. Use this command to identify lines configured as enabled but not currently up. The table displays the following information:

Line.LLIndex	Identifier of the line and line level.
Circuit	Name or number of the circuit that the interface runs on.
State	State of the line: Down, Init (initializing), NotPres (not present), or Up.

Sample Display – show atmdxi alerts

```
ATM Data Exchange Interface (DXI) Line Alert Table
--------------------------------------------------

Line.LLIndex     Circuit    State
------------     --------  -------
2.0              NONE      NotPres


Total entries: 2
```

base

Displays the ATM DXI base record state. The base record keeps statistics on each ATM DXI line for the entire system. State is one of the following:

Healthy	All configured lines are up.
Interface Anomaly	One or more configured lines are down.
Other Anomaly	One or more configured lines are initializing or not present.

Sample Display – show atmdxi base

```
ATM Data Exchange Interface (DXI) Base Record
---------------------------------------------

Protocol               State        Lines
--------          -----------------  -----
ATM               Other Anomaly          2
```

disabled

Displays the ATM DXI interfaces that are configured as disabled. For more information on column definitions, see the **lines** command.

Sample Display – show atmdxi disabled

```
ATM Data Exchange Interface (DXI) Line Disabled Table
-----------------------------------------------------------

Line.LLIndex     Circuit    Mode    State
------------     -------  -------- -------
2.0              NONE     Disabled NotPres
```

enabled

Displays the ATM DXI interfaces that are configured as enabled. For more information on column definitions, see the **lines** command.

Sample Display – show atmdxi enabled

```
ATM Data Exchange Interface (DXI) Line Enabled Table
----------------------------------------------------------

Line.LLIndex     Circuit    Mode    State
------------     -------  -------- -------
2.0              NONE     Enabled  NotPres
```

lines [*<line.llindex>*]

Displays all ATM DXI interfaces or a just a specific line. The table includes the following information:

Line.LLIndex	Identifier of the line and line level.
Circuit	Name or number of the circuit that the interface runs on.
Mode	Mode for which the interface has been configured; enabled or disabled.
State	State of the line, as follows: • *Down* – Line is disabled. • *Init* – Line is initializing. • *NotPres* – Line is not functioning. • *Up* – Line is functioning fully.
VCs	Number of virtual circuits enabled for the line.
Converg. Sublayer	Convergence sublayer configuration of the line: AAL3/4, AAL5, or None. AAL3/4 is ATM Adaption Layer 3/4. AAL5 is ATM Adaption Layer 5.
Encaps	Multiprotocol Encapsulation that the PVC uses : RFC1294, RFC1483, or None.
Drop	Number of frames dropped at the line level.

Sample Display – show atmdxi line

```
ATM Data Exchange Interface (DXI) Line Table
-----------------------------------------

                                                Converg.
Line.LLIndex     Circuit    Mode    State   VCs  Sublayer  Encaps      Drop
------------     -------  -------- -------  ---- --------  -------  ----------
1.0              ATM      Enabled  Up          2 AAL3/4    RFC1294           0
2.0              NONE     Disabled NotPres     0 AAL3/4    RFC1294           0
```

pvcs [*<line.llindex>*] | [*<line.llindex.VPI>*] | [*<line.llindex.VPI.VCI>*]

Displays all or a subset of ATM DXI Permanent Virtual Circuits (PVCs).

<line.llindex>	Displays all PVCs for the specified line level.
<line.llindex.VPI>	Displays all PVCs for the specified virtual path on the specified line level.
<line.llindex.VPI.VCI>	Displays the PVC for the specified virtual path and virtual channel.

The displays include the following information:

Line.LLIndex	Identifier of the PVC line and line level.
Direct Cct	PVC's Direct Circuit name or number (if there is one).
State	State of the PVC, as follows: • *Down* – PVC is disabled. • *Init* – PVC is initializing. • *NotPres* – PVC is not functioning. • *Up* – PVC is functioning fully.
PVC Mode	Mode of the PVC, as follows: • *Direct* – Upper-layer protocols view this PVC as a point-to-point connection; as an individual network interface. • *Group* – Upper-layer protocols treat this PVC as one of a group of destinations to the switched network. The upper-layer protocols use a single network address to send all traffic destined for the switched network to the ATM DXI network interface. • *Hybrid* – Allows protocols to view this PVC as part of the group while the bridge views the PVC in direct mode.
Sublayer	Convergence Sublayer configuration of the line: AAL3/4, AAL5, or None. AAL3/4 is ATM Adaption Layer 3/4. AAL% is ATM Adaption Layer 5.
Encaps	Multiprotocol Encapsulation that the PVC uses: RFC 1294, RFC 1483, or None.

Sample Display – show atmdxi pvcs

```
ATM Data Exchange Interface (DXI) PVC Table
-------------------------------------------

Line.LLIndex.VPI.VCI     Direct Cct  State    PVC Mode   Sublayer  Encaps
--------------------     ---------- -------   --------   --------  -------
1.0.1.20                 -          Up       Group      AAL3/4    RFC1294
1.0.255.32000            ATMInter   Up       Direct     AAL3/4    RFC1294
2.0.1.21                 -          NotPres  Group      AAL3/4    RFC1294

Total entries: 3
```

stats

Displays ATM DXI statistics. The table includes the number of frames and octets transmitted and received and the number of frames dropped due to errors.

Sample Display – show atmdxi stats

```
ATM Data Exchange Interface (DXI) PVC Statistics
------------------------------------------------

                           Transmitted            Received
Line.LLIndex.VPI.VCI     Frames     Octets     Frames     Octets      Drops
--------------------   ---------- ---------- ---------- ----------  ---------
1.0.1.20                        0          0          0          0          0
1.0.255.32000                   0          0          0          0          0
2.0.1.21                        0          0          0          0          0


Total entries: 3
```

stats lmi

Displays statistics for all active ATM DXI Local Management Interfaces (LMIs). The table includes following information:

Line.LLIndex	Identifier of the line and line level.
Circuit	Name or number of the circuit the interface runs on.
State	State of the LMI, as follows: • *Down* – Line is disabled. • *Init* – Line is initializing. • *NotPres* – Line is not functioning. • *Up* – Line is functioning fully.
Proxy Req	Number of proxy requests.
DSU Resp	Number of digital service unit (DSU) responses.
DSU Traps	Number of DSU traps.
Other	Any other information frames that the DSU has received.

Sample Display – show atmdxi stats lmi

```
ATM Data Exchange Interface (DXI) LMI Statistics
------------------------------------------------

Line.LLIndex     Circuit   State   Proxy Req.  DSU Resp.  DSU Traps    Other
------------     -------  -------  ----------  ---------  ---------  ---------
1.0              ATM      Up                0          0          0          0


Total entries: 1
```

stats mpe

Displays statistics for all active ATM DXI multiprotocol encapsulated interfaces. The information is from the circuit level rather than the line level. The table includes the number of invalid and unsupported multiprotocol encapsulated frames received.

Circuit	Name or number of the circuit the interface runs on.
Invalid NLPID	Number of packets dropped because of an unknown or unsupported network layer protocol identifier (NLPID).
Invalid PID	Number of packets dropped because of an unknown or unsupported protocol identifier (PID).
Invalid OUI	Number of packets dropped because of an unknown or unsupported organizational unique identifier (OUI).
Misdelivered PDU	Number of packets discarded because of an inactive service access point (SAP).
Unsupported Control Field	Number of packets dropped because of an unknown or invalid control field.

Sample Display – show atmdxi stats mpe

```
ATM Data Exchange Interface (DXI) MPE Circuit Statistics
---------------------------------------------------------

                  Invalid    Invalid    Invalid    Misdelivered   Unsupported
Circuit            NLPID       PID        OUI          PDU       Control Field
-------          ---------- ---------- ----------  ------------  -------------
ATM                       0          0          0             0              0
ATMInter                  0          0          0             0              0


Total entries: 2
```

stats pvc [*<line.llindex>*] | [*<line.llindex.VPI>*] | [*<line.llindex.VPI.VCI>*]

Displays ATM DXI statistics. The table includes the number of frames and octets transmitted and received and the number of frames dropped due to errors. Options let you display more specific statistics, as follows:

<line.llindex>	Displays statistics for all PVCs for the specified line level.
<line.llindex.VPI>	Displays statistics for all PVCs for the specified virtual path on the specified line level.
<line.llindex.VPI.VCI>	Displays statistics for the PVC for the specified virtual path and channel on the specified line level.

Sample Display – show atmdxi stats pvc 1.0

```
ATM Data Exchange Interface (DXI) PVC Statistics
------------------------------------------------

                            Transmitted            Received
Line.LLIndex.VPI.VCI     Frames     Octets     Frames     Octets      Drops
--------------------   ---------- ---------- ---------- ----------  ---------
1.0.1.20                        0          0          0          0          0
1.0.255.32000                   0          0          0          0          0


Total entries: 2
```

version

Displays the current version number and modification date of the *atmdxi.bat* script.

Sample Display – show atmdxi version

```
ATMDXI.bat Version: 1.8 Date: 5/26/94.
```

show atmsig

The **show atmsig** *<options>* command displays information about the ATM Signaling service. For details about the Bay Networks implementation of ATM, refer to *Configuring ATM Services*.

The **show atmsig** command supports the following subcommand options:

ilmi [<line>]	sig [<line>]
saal [<line>]	version

ilmi [*<line>*]

Displays all instances in the ATM Interim Local Management Interface (ILMI) Entry Table, or a specific instance.

<line>	Displays ATM ILMI information for a specific line.

The table displays the following information:

Line	Line number of the router.
Circuit	Circuit number of the ATM driver associated with this ILMI instance.
State	State of the entity: Up, Down, Initializing, Not Present
Low Thre	Lower threshold – when the percentage of the buffer memory drops below this value, congestion is reached.
Up Thre	Upper threshold – when the percentage of the buffer memory exceeds this value, congestion is stopped.
VPI	Virtual Path Identifier for the ILMI VC.
VCI	Virtual Channel Identifier for the ILMI VC.
Get	ILMI Get Request Timer value (in seconds).

Get Retry	Maximum number of retransmissions of the ILME GET request before the link is considered down.
Get Next	ILMI GetNext Request Timer value (in seconds).
GetNext Retry	Maximum number of retransmissions of the ILMI GET NEXT request before the link is considered down.
Set	ILMI Set Request Timer value (in seconds).
Set Retry	Maximum number of retransmissions of the ILMI SET request before the link is considered down.

Sample Display – show atmsig ilmi

```
ATM ILMI Entry Table (UME/ILMI)
-------------------------------

                      Low  Up                 Get   Get  GetNext     Set
Line    Circuit State  Thre Thre VPI  VCI  Get Retry Next Retry   Set Retry
------- ------- ------ ---- ---- --- ----- --- ----- ---- ------- --- ----
1405101 A51     Up     2    2    0   16    3   3     3    3       6   3
--------------------------------------------------------------------------------

Total entries: 1
```

saal [*<line>*]

Displays all instances in the ATM Signaling ATM Adaptation Layer (SAAL) Entry Table for the Service Specific Connection Oriented Protocol (SSCOP) service, or displays a specific instance.

<line>	Displays ATM SAAL information for a specific line.

The table displays the following information:

Line	Line number of the router.
Circuit	Circuit number of the ATM driver associated with this instance.
State	State of the SAAL entity: Up, Down, Init, Not Present.

Arbitration	Determines if the SAAL initiates link connections or waits for connections: Active or Passive.
Poll Timer	SSCOP Poll Timer value (in tenths of a second).
Alive Timer	Keep Alive Timer value (in tenths of a second).
NoResp Timer	No Response Timer value (in tenths of a second).
CnCtrl Timer	Connection Control Timer value (in tenths of a second).
MaxCn Ctrl	Maximum Connection Control Timer value.
MaxPd	SSCOP maximum Poll Data (PD) value.
Max Stat	Maximum number of list elements allowed in a STAT PDU.
Version	Version: UNI30 or UNI31.

Sample Display – show atmsig saal

```
ATM SAAL Entry Table (SSCOP)
----------------------------

                      Arbi-   Poll  Alive NoResp CnCtrl MaxCn       Max  Ver-
Line    Circuit State  tration Timer Timer Timer  Timer  Ctrl  MaxPd Stat sion
------- ------- ------ ------- ----- ----- ------ ------ ----- ----- ---- -----
1405101 A51     Up     Active  7     20    70     10     4     25    67   UNI30
--------------------------------------------------------------------------------

Total entries: 1
```

sig [*<line>*]

Displays all instances in the ATM Signaling Entry Table, or a specific instance.

<line>	Displays ATM Signaling information for a specific line.

The table displays the following information:

Line	Line number of the router.
Circuit	Circuit number of the ATM driver associated with this instance.

State	State of the entity: Up, Down, Initializing, Not Present
Max # of SvcApps	Maximum number of service access points (SAPs) allowed for this circuit.
Max Pt-Pt	Maximum number of simultaneous point-to-point connections allowed for this circuit.
Max Pt-Mp	Maximum number of simultaneous point-to-multipoint connections allowed for this circuit.
Max Parties In-MultiPt	Maximum number of simultaneous parties in a point-to-multipoint connection allowed for this circuit.
Min Buf Threshold	Minimum percentage of the buffer memory that must be free to enable new calls.
VPI	Virtual Path Identifier for the Signaling VC.
VCI	Virtual Channel Identifier for the Signaling VC.
Version	Signaling Protocol Standard: Uni 3.0 (UNI_V30), Uni 3.1 (UNI_V31), or Trillium Symmetrical Uni (UNI_SYM)
# of Restart	Number of RESTART messages permitted before the link is considered down.
# of Stat Enquiries	Number of STATUS ENQUIRY messages permitted before the link is considered down.
T303	Setup Sent Timer value (in seconds).
T308	Release Sent Timer value (in seconds).
T309	SAAL Data Link Connect Timer value (in seconds).
T310	Call Proceeding Received Timer value (in seconds).
T313	Connect Sent Timer value (in seconds).
T316	Restart Request Sent on Interface Timer value (in seconds).
T316C	Restart Request Sent on Channel Timer value (in seconds).
T322	Status Enquiry Sent Timer value (in seconds).
TDisc	SAAL Data Link Disconnect Timer value (in seconds).
T398	Drop Party Sent Timer value (in seconds).
T399	Add Party Sent Timer value (in seconds).

Sample Display – show atmsig sig

```
ATM Signaling Entry Table (Q.93B)
---------------------------------

                       Max#of  Max     Max     MaxParties Min Buf
  Line   Circuit State  SvcApps Pt-Pt   Pt-Mp   In-MultiPt Threshold
 ------- ------- ------ ------- ------- ------- ---------- ---------
 1405101 A51     Up     20      1000    40      1          2

                          # of    # of Stat
         VPI  VCI  Version Restart Enquiries T303 T308 T309 T310 T313 T316
         --- ----- ------- ------- --------- ---- ---- ---- ---- ---- ----
         0   5     UNI_V30 3       3         4    30   10   10   4    120

         T316C T322 TDisc T398 T399
         ----- ---- ----- ---- ----
         120   4    4     4    14

Total entries: 1
```

version

Displays the current version number and modification date of the *atmsig.bat* script.

Sample Display – show atmsig version

```
ATMSIG.bat Version: 1.# Date: 10/26/95.
```

show atm line

The **show atm line** *<option>* commands display information about the Asynchronous Transfer Mode (ATM) Adaption Layer Controller (ALC) link module service. For detailed information about the Bay Networks implementation of the ATM link module service, refer to *Configuring ATM Services.*

Note: *The* **atm line** *set of commands is a subset of the* **atm** *command. Refer to the "show atm" section for more information on the* **atm** *command.*

The **show atm line** command supports the following subcommand options:

alerts	receive errors [circuit <circuit name>]
base [circuit <circuit name>]	receive stats [circuit <circuit name>]
disabled	sample [<period in seconds>] [circuit <circuit name>]
enabled	stats [circuit <circuit name>]
phy [circuit <circuit name>]	transmit errors [circuit <circuit name>]
phy errors [circuit <circuit name>]	transmit stats [circuit <circuit name>]

alerts

Displays abnormal conditions in the ATM link module. The table displays the following information:

Slot	Slot number.
Conn	Physical port number.
Circuit	Circuit number for the driver.
Line Number	Line number for the physical ATM port.
Driver State	Operational state of the driver: Up, Down, Init (initializing), Download (downloading), Config (configuring), or Not Present. Note that this parameter does not represent the state of the physical interface.
First MAC Address	First MAC address reserved in the link module. The address is in canonical format.
Num MAC addrs	Number of MAC addresses reserved in the link module.
DP Notify TMO	Data Path notify timeout period. This value specifies the number of seconds to wait before implementing the DP notify function. A timer is set to this value when the state of the physical interface transitions from operational to nonoperational at the time that the DP notify function is enabled.
MTU	Size of the largest packet (in octets) which the interface can send or receive. The default is 4500 octets.

Sample Display – show atm line alerts

```
ATM Modules on Alert:
---------------------

                      Line    Driver        First       Num MAC DP Notify
Slot Conn Circuit   Number   State      MAC Address     Addrs     TMO    MTU
---- ---- -------- -------- -------- ----------------- ------- --------- ----

Found     0 matches out of     2 entries in table.
```

base [**circuit** *<circuit name>*]

Displays the ATM base record state for all ATM link module circuits or for a specified circuit. For more information on column definitions, see the **alerts** command.

Sample Display – show atm line base

```
ATM Modules:
------------

                      Line    Driver        First       Num MAC DP Notify
Slot Conn Circuit   Number   State      MAC Address     Addrs     TMO    MTU
---- ---- -------- -------- -------- ----------------- ------- --------- ----
   4    1 A41       1104101 Up       00-00-00-00-00-00      10         3 4500
   5    1 A51       1105101 Up       00-00-00-00-00-00      10         3 4500

    2 entries in table.
```

Sample Display – show atm line base circuit A51

```
ATM Modules:
------------

                      Line    Driver        First       Num MAC DP Notify
Slot Conn Circuit   Number   State      MAC Address     Addrs     TMO    MTU
---- ---- -------- -------- -------- ----------------- ------- --------- ----
   5    1 A51       1105101 Up       00-00-00-00-00-00      10         3 4500

Found     1 match out of     2 entries in table.
```

disabled

Displays the ATM link modules that are configured as disabled. For more information on column definitions, see the **alerts** command.

Sample Display – show atm line disabled

```
ATM Modules Disabled:
---------------------

                     Line    Driver        First       Num MAC DP Notify
Slot Conn Circuit   Number   State      MAC Address     Addrs     TMO    MTU
---- ---- -------- -------- -------- ----------------- ------- --------- ----

Found     0 matches out of     2 entries in table.
```

enabled

Displays the ATM link modules that are configured as enabled. For more information on column definitions, see the **alerts** command.

Sample Display – show atm line enabled

```
ATM Modules Enabled:
--------------------

                     Line    Driver        First       Num MAC DP Notify
Slot Conn Circuit   Number   State      MAC Address     Addrs     TMO    MTU
---- ---- -------- -------- -------- ----------------- ------- --------- ----
   4    1 A41       1104101 Up       00-00-00-00-00-00      10         3 4500
   5    1 A51       1105101 Up       00-00-00-00-00-00      10         3 4500

Found     2 matches out of     2 entries in table.
```

phy [**circuit** *<circuit name>*]

Displays physical circuit information about all ATM link module circuits or a specified circuit.

Speed	Estimate of the interface's current bandwidth in megabits per second: 155,520,000 Mb/s, 140,000,000 Mb/s, 100,000,000 Mb/s, or 44,736,000 Mb/s.
Type	Interface type: OC-3 MM (multimode), OC-3 SM (single mode).
Framing Mode	Transceiver mode: SDH or SONET.

For more information on column definitions, see the **alerts** command.

Sample Display – show atm line phy

```
ATM Module Physical Interface:
------------------------------

                      Phy       Speed                Framing
Slot Conn Circuit    State      (Mbps)      Type      Mode
---- ---- -------- ---------- ---------- ---------- ----------
   3    1 A31      Up         155520000 OC-3 MM    SONET

    1 entry in table.
```

Sample Display – show atm line phy circuit A51

```
ATM Module Physical Interface:
------------------------------

                      Phy       Speed                Framing
Slot Conn Circuit    State      (Mbps)      Type      Mode
---- ---- -------- ---------- ---------- ---------- ----------
   5    1 A51      Up         155520000 OC-3       SONET

Found     1 match out of     2 entries in table.
```

phy errors [**circuit** *<circuit name>*]

Displays loss of signal, loss of pointer, loss of frame, and out-of-cell delineation information for the specified circuit or for all circuits. For more information on column definitions, see the **alerts** command.

Sample Display – show atm line phy errors

```
ATM Module Physical Interface Errors:
-------------------------------------

                    Loss of    Loss of    Loss of   Out of Cell
Slot Conn Circuit    Signal    Pointer     Frame    Delineation
---- ---- -------- ---------- ---------- ---------- -----------
   4    1 A41              10          0          3           3
   5    1 A51               1          0          1           1

    2 entries in table.
```

Sample Display – show atm line phy errors circuit A51

```
ATM Module Physical Interface Errors:
-------------------------------------

                    Loss of    Loss of    Loss of   Out of Cell
Slot Conn Circuit    Signal    Pointer     Frame    Delineation
---- ---- -------- ---------- ---------- ---------- -----------
   5    1 A51               1          0          1           1

Found     1 match out of     2 entries in table.
```

receive errors [**circuit** *<circuit name>*]

Displays receive error information for the specified circuit or for all circuits:

Dropped Cells	Number of cells received at the transceiver receive interface that have been discarded.
Address Translation Errors	Number of address translation errors received.
Rcv Q Full Errors	Number of full queue errors received.
Rcv Q Write Errors	Number of write queue errors received. Write failures occur when the SAR device tries to write to an already full queue.
Rcv Q Empty Errors	Number of empty queue errors received. Empty errors occur when the SAR device has no place to put the data it has received.

For more information on column definitions, see the **alerts** command.

Sample Display – show atm line receive errors

```
ATM Module Receive Errors:
--------------------------

                                 Address     Rcv Q      Rcv Q      Rcv Q
                     Dropped   Translation    Full      Write      Empty
Slot Conn Circuit    Cells       Errors      Errors     Errors     Errors
---- ---- -------- ---------- ----------- ---------- ---------- ----------
   4    1 A41              0           0          0          0          0
   5    1 A51              0           0          0          0          0

    2 entries in table.
```

Sample Display – show atm line receive errors circuit A51

```
ATM Module Receive Errors:
--------------------------

                                 Address     Rcv Q      Rcv Q      Rcv Q
                     Dropped   Translation    Full      Write      Empty
Slot Conn Circuit     Cells      Errors      Errors     Errors     Errors
---- ---- -------- ---------- ----------- ---------- ---------- ----------
   5    1 A51               0           0          0          0          0

Found     1 match out of     2 entries in table.
```

receive stats [**circuit** *<circuit name>*]

Displays the total number of frames, octets, and cells received by all circuits or by the specified circuit.

Sample Display – show atm line receive stats

```
ATM Module Receive Statistics:
------------------------------

Slot Conn Circuit    Frames     Octets          Cells
---- ---- -------- ---------- ---------- --------------------
   4    1 A41               0          0                    0
   5    1 A51               0          0                    0

    2 entries in table.
```

Sample Display – show atm line receive stats circuit A51

```
ATM Module Receive Statistics:
------------------------------

Slot Conn Circuit    Frames     Octets          Cells
---- ---- -------- ---------- ---------- --------------------
   5    1 A51               0          0                    0

Found     1 match out of     2 entries in table.
```

sample [*<period in seconds>*] [**circuit** *<circuit name>*]

Displays the total number of frames transmitted and received for the specified circuit over the specified period of time, or for all circuits over 10 seconds. Also displays information on the following:

Rx Lack of Resources	Number of packets dropped because no host buffers were available to hold the incoming data.
Tx Lack of Resources	Number of packets dropped during transmission.

For more information on column definitions, see the **alerts** command.

Sample Display – show atm line sample

```
ATM Sampled Data over  10 seconds
---------------------------------

                       Rx         Tx     Rx Lack of Tx Lack of
Slot Conn Circuit    Frames     Frames   Resources  Resources
---- ---- -------- ---------- ---------- ---------- ----------
   4    1 A41               0          0          0          0
   5    1 A51               0          0          0          0

    2 entries in table.
```

Sample Display – show atm line sample circuit A51

```
ATM Sampled Data over  10 seconds
---------------------------------

                       Rx         Tx     Rx Lack of Tx Lack of
Slot Conn Circuit    Frames     Frames   Resources  Resources
---- ---- -------- ---------- ---------- ---------- ----------
   5    1 A51               0          0          0          0

Found     1 match out of     2 entries in table.
```

Sample Display – show atm line sample 5 circuit A51

```
ATM Sampled Data over   5 seconds
---------------------------------

                       Rx         Tx     Rx Lack of Tx Lack of
Slot Conn Circuit    Frames     Frames   Resources  Resources
---- ---- -------- ---------- ---------- ---------- ----------
   5    1 A51               0          0          0          0

Found     1 match out of     2 entries in table.
```

stats [**circuit** *<circuit name>*]

Displays the total number of bytes and frames received and transmitted for the specified circuit or for all circuits. In addition, displays the total number of errors. For more information on column definitions, see the **alerts** command.

Sample Display – show atm line stats

```
ATM Module I/O Statistics:
--------------------------

                     Receive    Receive    Transmit   Transmit    Total
Slot Conn Circuit     Bytes      Frames     Bytes      Frames     Errors
---- ---- -------- ---------- ---------- ---------- ---------- ----------
   4    1 A41               0          0 2190795656   42405432         16
   5    1 A51               0          0 1793648210   86273694          3

    2 entries in table.
```

Sample Display – show atm line stats circuit A51

```
ATM Module I/O Statistics:
--------------------------

                     Receive    Receive    Transmit   Transmit    Total
Slot Conn Circuit     Bytes      Frames     Bytes      Frames     Errors
---- ---- -------- ---------- ---------- ---------- ---------- ----------
   5    1 A51               0          0 1793648210   86273694          3

Found     1 match out of     2 entries in table.
```

transmit errors [**circuit** *<circuit name>*]

Displays the total number of full errors transmitted and the total number of Segmentation and Reassembly (SAR) errors for the specified circuit or for all circuits. For more information on column definitions, see the **alerts** command.

Sample Display – show atm line transmit errors

```
ATM Module Transmit Errors:
---------------------------

                     Xmt Q
                      Full       SAR
Slot Conn Circuit    Errors     Errors
---- ---- -------- ---------- ----------
   4    1 A41               0          0
   5    1 A51               0          0

    2 entries in table.
```

Sample Display – show atm line transmit errors circuit A51

```
ATM Module Transmit Errors:
---------------------------

                     Xmt Q
                      Full       SAR
Slot Conn Circuit    Errors     Errors
---- ---- -------- ---------- ----------
   5    1 A51               0          0

Found     1 match out of     2 entries in table.
```

transmit stats [**circuit** *<circuit name>*]

Displays the total number of frames, octets, and cells transmitted by the specified circuit or by all circuits. For more information on column definitions, see the **alerts** command.

Sample Display – show atm line transmit stats

```
ATM Module Transmit Statistics:
-------------------------------
                                                                    Out Q
Slot Conn Circuit    Frames     Octets          Cells               Length
---- ---- -------- ---------- ---------- -------------------- ----------
   4    1 A41        42405432 2190795656             45641568          1
   5    1 A51        86273694 1793648210             37367672          1

    2 entries in table.
```

Sample Display – show atm line transmit stats circuit A51

```
ATM Module Transmit Statistics:
-------------------------------
                                                                    Out Q
Slot Conn Circuit    Frames     Octets          Cells               Length
---- ---- -------- ---------- ---------- -------------------- ----------
   5    1 A51        86273694 1793648210             37367672          1

Found     1 match out of     2 entries in table.
```

show aurp

The **show aurp** *<option>* commands display information about the AppleTalk Update-based Routing Protocol (AURP) and services. For detailed information on the Bay Networks implementation of AURP services, refer to *Configuring AppleTalk Services*.

The **show aurp** command supports the following subcommand options:

alerts	filters zone
base	stats [traffic | peer | transport] [<IP address>]
connection [<IP address>]	version
disabled	

alerts

Displays all AURP connections that are enabled but not up. State is always Down. Use this display to identify the connections that are not working. The table includes the following information:

Connection	IP address of the AURP connection.
State	Current state of the connection, which in this case is always Down.
Timeout	Number of seconds to wait for an acknowledgment before retrying the connection.
Retry	Number of attempts at a connection before determining that the peer is no longer responding.

Update Rate	Rate in seconds at which the router sends routing table updates out this connection. This value is a multiple of ten. The range is 10 to 604,800 seconds (one week). The default is 30 seconds.
LHF Timeout	Last Heard From Timeout; specifies the number of seconds to wait for a Routing Information Response (RI-Rsp), Routing Information Update (RI-Upd), or Zone Information Response (ZI-Rsp) before sending a tickle request. This value is a multiple of ten. The range is 10 through 31,536,000 seconds (one year). The default is 90 seconds.

Sample Display – show aurp alerts

```
AURP Connection Alerts: Enabled but state is down
-------------------------------------------------

   Connection       State     Timeout     Retry    Update Rate LHF Timeout
 -------------- ----------- ---------- ---------- ----------- -----------
 192.32.14.85    Down                3          3          30          90

1 entries found.
3 total entries.
```

base

Displays the base record information for AURP. The base record controls AURP for the entire system. The table includes the following information:

Protocol	Name of the protocol, which is AURP.
State	State of the protocol: Disabled, Down, Init (initializing), Not Pres (enabled but not yet started), or Up.
Configured IP Interface	IP address on this router that AURP uses for all of its connections.
Open Reqs Accepted	Number of Open Requests the router has accepted on this interface.
Open Reqs Rejected	Number of Open Requests the router has rejected on this interface.
In Packets No Peer	Number of packets received from UDP for which there is no valid connection.

Sample Display – show aurp base

```
AURP Base Information
---------------------

                                Configured    Open Reqs  Open Reqs  In Packets
    Protocol        State     IP Interface    Accepted   Rejected   No Peer
 ---------------- ---------- --------------- ---------- ---------- ----------
 AURP             Up         192.32.14.19             1          0          0
```

connection [*<IP address>*]

Displays information about all AURP connections or a specific connection. State can be Disabled, Down, Init (initializing), Not Pres (enabled but not yet started), or Up. For the remaining column definitions, see the **alerts** command.

<IP address>	Limits the information to the connection with the specified IP address.

Sample Display – show aurp connection

```
AURP Connections
----------------

   Connection       State     Timeout     Retry    Update Rate LHF Timeout
 ---------------- ---------- ---------- ---------- ----------- -----------
 192.32.14.85     Down                3          3          30          90
 192.32.14.86     Disabled            3          3          30          90
 205.1.10.1       Up                  3          3          30          90

3 total entries.
```

Sample Display – show aurp connection 192.32.14.85

```
AURP Connections
----------------

   Connection       State     Timeout     Retry    Update Rate LHF Timeout
 --------------- ----------- ---------- ---------- ----------- -----------
 192.32.14.85    Down                3          3          30          90

1 entry displayed.
```

disabled

Displays the AURP connections that a user has manually disabled. For definitions of the columns in the display, see the **alerts** command.

Sample Display – show aurp disabled

```
Disabled AURP Connections
-------------------------

   Connection       State     Timeout     Retry    Update Rate LHF Timeout
 --------------- ----------- ---------- ---------- ----------- -----------
 192.32.14.86    Disabled            3          3          30          90

1 entries found.
3 total entries.
```

enabled

Displays the AURP connections that a user has manually enabled. State can be Disabled, Down, Init (initializing), Not Pres (enabled but not yet started), or Up. For the remaining column definitions, see the **alerts** command.

Sample Display – show aurp enabled

```
Enabled AURP Connections
------------------------

   Connection       State     Timeout     Retry    Update Rate LHF Timeout
 -------------- ----------- ---------- ---------- ----------- -----------
 192.32.14.85    Down                3          3          30          90
 205.1.10.1      Up                  3          3          30          90

2 entries found.
3 total entries.
```

filters zone

Displays information about the zone filters for all AURP connections. The table includes the following information:

Connection	Connection with the specified IP address.
Connection Filter Mode	Zone filter type: Include, Exclude, 5.x series Include, or 5.x series Exclude.
Filtered Zones(s)	Zones that are filtered for this connection.
Total zones	Number of zones that are filtered on this connection.

Sample Display – show aurp filters zone

```
Connection: 192.32.14.2

Connection Filter Mode: Include


  Filtered Zone(s) for this connection
 ---------------------------------
                           MARKETING
                               SALES

Total zones for connection 192.32.14.2     is 2


Connection: 192.32.14.1

Connection Filter Mode: Include

  Filtered Zone(s) for this connection
 ---------------------------------
                           MARKETING
                               SALES

Total zones for connection 192.32.14.1       is 2


Connection: 192.32.14.3

Connection Filter Mode: 5.x series Include
  Filtered Zone(s) for this connection
 ---------------------------------
                           MARKETING

Total zones for connection 192.32.14.3    is 1
```

stats [**traffic** | **peer** | **transport**] [*<IP address>*]

Displays statistical information about AURP connections. You can display statistics for all connections or for a specified connection. Entered without options, the **stats** command displays traffic statistics.

<IP address> Limits the display to the specified connection.

Sample Display – show aurp stats

```
AURP Traffic Statistics
-----------------------

                  In DDP    Out DDP    In AURP    Out AURP
   Connection     Packets    Packets    Packets    Packets
 --------------- ---------- ---------- ---------- ----------
 192.32.14.85             0          0          0          8
 192.32.14.86             0          0          0          4
 205.1.10.1           13276      13459        102        100
```

traffic Displays incoming and outgoing data (DDP) packets and incoming and outgoing AURP packets for all connections or for a specified connection.

Sample Display – show aurp stats traffic

```
AURP Traffic Statistics
-----------------------

                  In DDP    Out DDP    In AURP    Out AURP
   Connection     Packets    Packets    Packets    Packets
 --------------- ---------- ---------- ---------- ----------
 192.32.14.85             0          0          0          8
 192.32.14.86             0          0          0          4
 205.1.10.1           13310      13497        102        100
```

Sample Display – show aurp stats traffic 205.1.10.1

```
AURP Traffic Statistics
-----------------------

                  In DDP    Out DDP    In AURP    Out AURP
   Connection     Packets    Packets    Packets    Packets
 -------------- ---------- ---------- ---------- ----------
 205.1.10.1          16293      16497        155        152
```

peer Displays information about AURP peer routers.

The display includes the following information:

Connection	IP address of the peer router.
Peer Domain ID	Domain identifier for the domain this router resides in.
Rate	Rate in tens of seconds that the peer router specified in its Open Response.
Environ. Flags	Environment Flags in the peer router's Open Response. • *None* – No flags active. • *HCR* – Hop Count Reduction is active. • *Remap* – Network number remapping is active on the peer. • *Remap, HCR* – Both HCR and Remap are in effect.
SUI Flags	Send Update Information flags in the peer router's Open Request and Routing Information Request. The possible values are: • *Add* – Network added. • *Delete* – Network deleted. • *Dist* – Distance changed. • *Zone* – Zone changed.

Sample Display – show aurp stats peer

```
AURP Connection Peer Information
--------------------------------

                    Peer          Update    Environ.
  Connection      Domain ID       Rate      Flags         SUI Flags
 -------------- -------------- ---------- ---------- --------------------
 192.32.14.85    0.0.0.0                0 <none>     <none>
 192.32.14.86    0.0.0.0                0 <none>     <none>
 205.1.10.1      205.1.10.1            30 <none>     Zone,Dist,Delete,Add
```

transport Displays information about AURP transports. The table includes counts of delayed duplicates, command retries, and updates received and generated for each connection.

Sample Display – show aurp stats transport

```
AURP Transport Statistics
-------------------------

                 Delayed    Command    Updates    Updates
  Connection    Duplicates  Retries    Received  Generated
 -------------- ---------- ---------- ---------- ----------
 192.32.14.85            0          7          0          0
 192.32.14.86            0          3          0          0
 205.1.10.1              0          4          2          1
```

version

Displays the current version and modification date of the *aurp.bat* script.

Sample Display – show aurp version

```
AURP.bat Version: 1.5 Date: 8/16/94.
```

show autoneg

The **show autoneg** *<option>* commands display the status of automatic line speed negotiation on 100Base-T Ethernet interfaces. Some Ethernet modules can run at either 10 Mb/s or 100 Mb/s using a hardware process to detect the speed to use. For more information, refer to *Configuring Line Services*.

The **show autoneg** command supports the following subcommand options:

alerts	disabled
base [circuit <circuit name>]	enabled
capabilities [circuit <circuit name>]	version

alerts

Displays Ethernet circuits that are capable of auto-negotiation but are not currently up. The table includes the following information:

Slot	Slot identifier; ranges vary according to router model.
Conn	Connector's instance identifier; ranges vary according to router model and Ethernet module. For routers other than ASN, indicates the physical connector number on the slot.
Circuit	Name of the circuit associated with this line.
State	Current state of the circuit: Disabled, Down, Init (initializing), Not Present (enabled but not yet started), or Up.
Auto-Negotiation State	Current state of automatic line speed negotation: Disabled, Configuring, Complete.
Remote Signaling	Current state of signalling at the remote end of the link: True or False
Capability in Use	The configured line speed. Options are: 100Base-X (100Base-TX or 100Base-FX) 100Base-X FD (Full Duplex) 100Base-X FD Cong Ctrl (Full Duplex with congestion control)

Sample Display – show autoneg alerts

```
Auto-Negotiation Interfaces on Alert:
-------------------------------------

                            Auto-Negotiation     Remote     Capability
Slot Conn Circuit   State   State                Signaling  In Use
---- ---- -------- -------- -------------------- ---------- -------------
   2   31 E231     Down     Disabled             FALSE      100Base-X

Found     1 match out of     2 entries in table.
```

base [**circuit** *<circuit name>*]

Displays the base record information for auto-negotiation.

Note: *The* **alerts**, **base**, **disabled**, *and* **enabled** *tables all include the same information. See the description with the* **show autoneg alerts** *command.*

Sample Display – show base

```
Auto-Negotiation Information:
-----------------------------

                            Auto-Negotiation   Remote
Slot Conn Circuit   State   State              Signaling   Capability In Use
---- ---- -------- -------- ------------------ --------- ----------------------
   2    1 E21      Not Pres **NOT SUPPORTED**
   3    1 E31      Up       Disabled           FALSE     100Base-X FD Cong Ctrl
   4    1 E41      Disabled **NOT SUPPORTED**
   5    1 E51      Up       Disabled           FALSE     100Base-X

    4 entries in table
```

capabilities [**circuit** *<circuit name>*]

Displays Ethernet line capabilities. You can display this information for all circuits or for a specific circuit. The table includes the following information.

Slot	Slot identifier; ranges according to router model.
Conn	Connector's instance identifier; ranges vary according to router model and Ethernet module. For routers other than ASN, indicates the physical connector number on the slot.
Circuit	Name of the circuit associated with this line.
State	State of the line driver: Disabled, Down, Init (initializing), Not Present (enabled but not yet started), or Up.
*Local Capabilities	The line capabilities of the circuit.
*Advertised Capabilities	The line capabilities the circuit is advertising on the bus.
*Remote Capabilities	The advertised capabilities of the remote station.
*Capability in Use	The agreed-upon line capability.

*See the line capability codes in the sample display.

Sample Display – show autoneg capabilties

```
Auto-Negotiation Interface Capabilities:
----------------------------------------

                            Local        Advertised   Remote       Capability
Slot Conn Circuit   State   Capabilities Capabilities Capabilities In Use
---- ---- -------- -------- ------------ ------------ ------------ ----------
   5    1 E51      Up       cd           cd           cd           d
   5    2 E52      Up       cd                        cd           d

Capability Codes:
  a = 10BASE-T
  b = 10BASE-T Full Duplex
  c = 100BASE-X
  d = 100BASE-X Full Duplex
  e = 100BASE-T4

Found     2 matches out of     3 entries in table.
```

disabled

Displays all Ethernet circuits that have auto-negotiation disabled.

Note: *The* **alerts**, **base**, **disabled**, *and* **enabled** *tables all include the same information. See the description with the* **show autoneg alerts** *command.*

Sample Display – show autoneg disabled

```
Auto-Negotiation Interfaces Disabled:
-------------------------------------

                           Auto-Negotiation   Remote
Slot Conn Circuit   State   State              Signaling   Capability In Use
---- ---- -------- -------- ------------------ --------- ----------------------
   3    1 E31      Up       Disabled           FALSE     100Base-X FD Cong Ctrl
   5    1 E51      Up       Disabled           FALSE     100Base-X

Found     2 matches out of     4 entries in table.
```

enabled

Displays all Ethernet circuits that have auto-negotiation enabled.

Note: *The* **alerts**, **base**, **disabled**, *and* **enabled** *tables all include the same information. See the description with the* **show autoneg alerts** *command.*

Sample Display – show autoneg enabled

```
Auto-Negotiation Interfaces Enabled:
------------------------------------

                            Auto-Negotiation   Remote
Slot Conn Circuit   State   State              Signaling   Capability In Use
---- ---- -------- -------- ------------------ --------- ----------------------
   5    1 E51      Up       Complete           FALSE     100Base-X

Found     1 match out of     4 entries in table
```

version

Displays the current version and modification date of the *at.bat* script.

Sample Display – show autoneg version

```
autoneg.bat Version: 1.5 Date: 6/15/95.
```

show bgp

The **show bgp** *<option>* commands display state, configuration, and statistical information about the Border Gateway Protocol (BGP). For detailed information about the Bay Networks implementation of BGP, refer to *Configuring IP Services*.

The **show bgp** command supports the following subcommand options:

errors	summary
peers	timers
routes [<address> | from <peer address> | find <search pattern>]	version
stats	weights

errors

Displays the error message generated the last time a connection between a router and its BGP peer failed. This message was either received from or sent to the BGP peer. The report includes the address of the local router and the peer, as well as the last error code, subcode, and message.

Sample Display – show bgp errors

```
BGP Last Errors
---------------

     Local          Remote      Last Error
    Address         Address     Code Subcode       Error Message
--------------- --------------- ---- -------  --------------------------
195.1.1.1       195.1.1.2          4       0  Hold Timer Expired
195.1.1.1       195.1.1.3          -       -  No Error
200.1.1.1       200.1.1.2          2       1  Unsupported Version Number
201.1.1.1       10.1.1.6           -       -  No Error
201.1.1.1       201.1.1.5          -       -  No Error

5 peers configured.
```

peers

Displays information about each of the router's BGP peers and virtual peers. Virtual peers are peers connected by means of a route server. The table includes the following information:

Local Addr	Router's local interface address and port.
Remote Addr	Peer's IP address and port.
Remote AS	Autonomous System in which the peer resides.
Hold Time Cfg	Configured hold time.
Hold Time Act	Negotiated hold time.
Keep Alive Time Cfg	Configured keep alive time.
Keep Alive Time Act	Negotiated keep alive time.
Connection State	State of the connection between the peers: Idle, Connect, Active, Open Sent, Open Confrmd, or Established.

Total Routes	Number of routes the router received from this peer and is maintaining.
Peer Mode	Route server mode of the BGP peer: None (the peer is not a route server), Client (the peer is an RS client), Internal (the peer is a route server in the local RS cluster), external (the peer is a route server in another RS cluster).
Identifer	BGP identifier of the virtual peer.
Last update	The time elapsed since the last update.

Sample Display – show bgp peers

```
BGP Peers
---------

       Local                Remote          Remote Peer    Connection BGP Total
    Address/Port          Address/Port         AS   Mode      State    Ver Routes
-------------------- -------------------- ------ ------- ---------- --- -----
-
55.55.0.48/46105      55.55.0.47/179            1 Intern  Estab        4     0
55.56.0.48/179        55.56.0.51/20257          1 Client  Estab        4     0
55.56.0.48/179        55.56.0.52/19096          1 Client  Estab        4     0
55.56.0.48/179        55.56.0.173/26893         1 Client  Estab        4   241
55.80.0.48/32799      55.80.0.53/179            1 Client  Estab        4     0
55.90.0.48/52506      55.90.0.54/179            1 Client  Estab        4     0

BGP Virtual Peers
-----------------

       Local              Remote             Identifier      Total  Last Update
------------------- ------------------ ------------------ ------ ------------
55.55.0.48          55.55.0.47         192.32.13.173        240     0h  7m 10s
```

routes [*<address>* | **from** *<peer address>* | **find** *<search pattern>*]

Displays information about routes received from BGP peers. Some information relates to all peers; some is specific to the type of entry displayed. Following is a list of options you can use with the **routes** command.

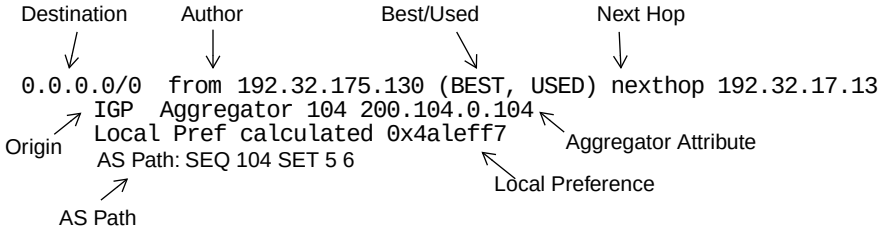
<address>	Displays only routes to the specified Internet network prefix (network number). For example, **show bgp routes 192.32.0.0** shows all routes to 192.32.0.0.
from *<peer address>*	Displays only routes received from the specified BGP peer. The peer address is the same as the Remote Address entry in the show bgp peers table. For example, **show bgp routes** from 200.1.2.3 shows all routes received from peer 200.1.2.3.
find *<search pattern>*	Displays only routes that match the specified search pattern. For example, the command **show bgp routes find 200.*.*.*** displays routes 200.1.5.0, 200.1.6.0, and 200.1.190.0.

The table includes the following information for each entry:

Destination network	IP address and the length of the prefix of the destination network in the dot notation form x.x.x.x/n, where x.x.x.x is the Internet address and n is the prefix length; for example, 200.4.0.0/16.
Author of address	IP address of the peer that provided the route.
Best/Used indication	BEST means that the route is the best BGP route to the destination; USED means that the route is in the IP routing table.
Next hop	IP address of the next hop route. This is the forwarding address for the route.
Origin of route	Ultimate origin of the route as follows:
INC	Origin is undetermined.
IGP	Network is interior to the originating Autonomous System (AS).
EGP	Network is learned from EGP.
MED indicator	If available, the value in hexadecimal of the Multi Exit Discriminator (MED) for BGP-4 or the Inter-AS Metric for BGP-3 associated with the path.

Aggregator	If it exists, the aggregator attribute; displayed in the form Aggregator n x.x.x.x, where n is the AS number and x.x.x.x is the Internet address.
Atomic	Whether the aggregate is atomic; if it is, the word Atomic appears.
Local preference	Local preference of the route, as received from IBGP or as calculated for EBGP routes. On IBGP connections, the value is in the form Local Pref received x, where x is a hexadecimal value. If a different value was calculated for policy reasons, calculated x also appears. On EBGP links, Local Pref calculated x appears.
AS Path	AS Path of the route as a sequence of AS numbers preceded and possibly intermingled with SEQ and SET. SEQ indicates that the following AS path segment is sequence type. SET indicates set type.

The **show bgp routes** command displays the routing information in the following format:



Sample Display – show bgp routes

```
BGP Routes
----------

0.0.0.0/0 from 192.32.28.104 (BEST, USED) nexthop 192.32.28.104
     IGP  Aggregator 104 200.104.0.104
     Local Pref calculated 0x4a01fe7
     AS Path: SEQ 104 SET 5 6
200.5.0.0/24 from 192.32.28.5 (BEST, USED) nexthop 192.32.28.5
     IGP
     Local Pref calculated 0x4a01ff7
     AS Path: SEQ 5
200.5.0.0/24 from 192.32.28.6  nexthop 192.32.28.5
     IGP
     Local Pref calculated 0x80000000
     AS Path: SEQ 6 5
200.5.23.0/24 from 192.32.28.5 (BEST, USED) nexthop 192.32.28.5
     IGP
     Local Pref calculated 0x4a01ff7
     AS Path: SEQ 5
200.5.23.0/24 from 192.32.28.6  nexthop 192.32.28.5
     IGP
     Local Pref calculated 0x80000000
     AS Path: SEQ 6 5
200.5.24.0/24 from 192.32.28.5 (BEST, USED) nexthop 192.32.28.5
     IGP
     Local Pref calculated 0x4a01ff7
     AS Path: SEQ 5
200.5.24.0/24 from 192.32.28.6  nexthop 192.32.28.5
     IGP
     Local Pref calculated 0x80000000
     AS Path: SEQ 6 5
200.6.0.0/24 from 192.32.28.5  nexthop 192.32.28.6
     IGP
     Local Pref calculated 0x80000000
     AS Path: SEQ 5 6

8 BGP Route entries.  IGP: 8  EGP: 0  Incomplete: 0.
```

stats

Displays statistics for each peer router. The table displays the Internet address of the configured local and remote BGP peers and the total number of BGP messages and updates received and sent between them. Message totals include updates.

Sample Display – show bgp stats

```
BGP Peer Statistics
-------------------

     Local          Remote            Messages                Updates
    Address         Address         Rx         Tx         Rx         Tx
--------------- --------------- ---------- ---------- ---------- ----------
192.32.174.65   192.32.174.66         4206       4193        217        181
192.32.174.97   192.32.174.99         4174       4228         64        205
192.32.175.129  192.32.175.130        4360       4189        292        162

3 peers configured.
```

summary

Displays a brief summary of BGP information including the following items:

- State of BGP: Absent, Disabled, Down, Init (initializing), Invalid, or Up.
- Local BGP identifier.
- Local Autonomous System number.
- Whether Intra-AS IBGP routing is enabled or disabled.
- Number of peers configured.
- Number of routes BGP has received, used and total.
- Number of different path attributes BGP has.
- State of BGP-3 and BGP-4: Configured, Not Configured, Enabled, or Disabled.
- Whether BGP is running in Route Server mode as a server or client

Sample Display – show bgp summary

```
BGP Up    ID: 192.32.174.98    AS: 2    IBGP Hack Disabled

2 peers configured.

Using 244 Routes out of a total of 245.
14 unique paths maintained.

BGP-3 Configured, Enabled.   BGP-4 Configured, Enabled.
Route Server - Client.
```

timers

Displays the timers associated with each peer router. The table includes the following information:

Local Address	Internet address of the local peer.
Remote Address	Internet address of the remote peer.
Hold	Number of seconds to wait for a Keep Alive or Update packet before terminating the connection.
Keep Alive	Number of seconds between sending Keep Alive packets to maintain an open connection.
Time	Amount of time in hours/minutes/seconds that the connection between the two peers has been up or down.
Last Update	Time in hours/minutes/seconds since this peer received the last update.

Sample Display – show bgp timers

```
BGP Peer Timers
-------------------

     Local          Remote                Keep       Time          Last
    Address         Address       Hold     Alive    Up/Down        Update
                                 Cfg  Act  Cfg  Act
--------------- --------------- --------- -------- ------------ ------------
210.10.10.1     210.10.10.2      90   90   30   30  67h 56m 30s    0h  0m 20s

1 peer configured.
```

version

Displays the current version number and date of the *bgp.bat* script.

Sample Display – show bgp version

```
BGP.bat Version: 1.17 Date: 10/13/94
```

weights

Displays the BGP AS Weights table, which includes the Autonomous System, its state and its weight. The weight value helps determine the preferred route and aids in selecting a route. The State of the AS Weight entry is Down, Init (initializing), Invalid, Not Present (not yet functioning), or Up.

Sample Display – show bgp weights

```
BGP AS Weights
--------------

               Class Class Class Class Class Class Class Class
   AS   State    1     2     3     4     5     6     7     8
 ----- ------- ----- ----- ----- ----- ----- ----- ----- -----
  1000 Up         10     8     8     8     8     8     8     8
  2000 Up          2     8     8     8     8     8     8     8
  3000 Up          6     8     8     8     8     8     8     8

3 entries
```

show bisync

The **show bisync** *<option>* commands display configuration, status, and statistical information about Binary Synchronous (BISYNC) lines. For detailed information about configuring BISYNC, refer to *Configuring BSC Transport Services*.

The **show bisync** command supports the following subcommand options:

alerts	receive errors [circuit <circuit name>]
base [circuit <circuit name>]	sample [<period in seconds>] [circuit <circuit name>]
disabled	stats [circuit <circuit name>]
enabled	transmit errors [circuit <circuit name>]
interrupt errors [circuit <circuit name>]	version

alerts

Displays all BISYNC circuits that are enabled but not up. Use this display to identify the interfaces that are not working. The table includes the following information:

Slot	Slot identifier
Conn	Connector identifier
Circuit	Name of the circuit associated with this line.
State	State of the line driver, as follows: • *Disabled* – User has manually disabled the driver. • *Down* – Driver is not operational. • *DSR Wait* – External equipment, such as a modem, DSU, or CSU, is not currently up and thus is not asserting a Data Set Ready signal. • *Init* – Driver is initializing. • *Not Pres* – Driver is enabled but not yet started. This state occurs for several reasons. For example, the Link Module may not be physically present in the chassis. The software may be booting and has not yet initialized the driver software. The slot may be running diagnostics. Or there may be a problem with the configuration. • *Up* – Driver is functioning fully
Line Number	Line number for this line.
MTU	Maximum transfer unit size — the buffer size for the BISYNC port (also the largest frame that can be transmitted or received across the BISYNC port). The value ranges from 1 to 4568 bytes.
Media Type	Media type this BISYNC module uses, as follows: • *default* – Normal connection • *raiseddtr*– Connection to a modem that dials out when Data Terminal Ready (DTR) gets raised. • *V25* – Connection to a V25 BIS modem.
Char Mode	Code set that the BSC protocol uses: EBCDIC or ASCII

Sample Display – show bisync alerts

```
BISYNC Modules on Alert:
----------------------

                             Line          Media    Char
Slot Conn Circuit  State    Number   MTU  Type     Mode
---- ---- -------- -------- -------- ---- -------- --------
1    1    S11      Init     01501101 1580 DEFAULT  EBCDIC

Found     0 matches out of     1 entry in table.
```

base [**circuit** *<circuit name>*]

Displays the base level information for all BISYNC circuits or a specific BISYNC circuit.

Sample Display – show bisync base

```
BISYNC Modules:
-------------
                             Line          Media    Char
Slot Conn Circuit  State    Number   MTU  Type     Mode
---- ---- -------- -------- -------- ---- -------- --------
1    1    S11      Up       01501101 1580 DEFAULT  EBCDIC

    1 entry in table.
```

For column definitions, see the **alerts** command.

disabled

Displays BISYNC circuits that a user has manually disabled.

Sample Display – show bisync disabled

```
BISYNC Modules Disabled:
----------------------


                            Line          Media    Char
Slot Conn Circuit  State    Number   MTU  Type     Mode
---- ---- -------- -------- -------- ---- -------- --------
1    1    S11      Disabled 01591101 1580  DEFAULT  EBCDIC

Found     1 match out of     1 entry in table.
```

For column definitions, see the **alerts** command.

enabled

Displays BISYNC circuits that a user has manually enabled.

Sample Display – show bisync enabled

```
BISYNC Modules Enabled:
---------------------


                            Line          Media    Char
Slot Conn Circuit  State    Number   MTU  Type     Mode
---- ---- -------- -------- -------- ---- -------- --------
1    1    S11      Up       01501101 1580 DEFAULT  EBCDIC

Found     1 match out of     1 entry in table.
```

For column definitions, see the **alerts** command.

interrupt errors [**circuit** *<circuit name>*]

Displays interrupt errors in character reception. The BISYNC driver uses an interrupt procedure to check for control characters in the information stream.

The table includes the following information:

Slot	Slot identifier
Conn	Connector identifier
Circuit	Name of the circuit associated with this line.
BCZero	Number of error situations where no characters appear in the buffer
BCSix	Number of error situations where six or more bytes of data were received
BCInvalid	Number of error situations where the fifth byte of information is not a control character
BCErrors	Total number of errors; sum of BCZero, BCSix, and BCInvalid values

Sample Display – show bisync interrupt

```
BISYNC Module Interrupt Errors:
------------------------------

Slot Conn Circuit  BCZero     BCSix      BCInvalid  BCErrors
---- ---- -------- ---------- ---------- ---------- ----------
1    1    S11      0          0          0          0

    1 entry in table.
```

receive errors [**circuit** *<circuit name>*]

Displays receive errors for all circuits or for a specific circuit.

The table includes the following information:

Slot	Slot identifier
Conn	Connector identifier
Circuit	Name of the circuit associated with this line.
Bad Frames	Number of bad receive frames, caused by Frame Check Sequence (FCS) errors or nonoctet aligned errors.
Runt Frames	Number of incomplete frames received on this line.
Receive Errors	Number of frame reject errors received on this line.
Replen Misses	Number of times the buffer fails to clear after receiving information.
Overflow Frames	Number of overflow errors received on this line in which the device's FIFO buffer overflowed before obtaining the next DMA cycle. No buffer resources are available.
LackRescs Chars	Number of characters received and discarded due to lack of resources, such as buffers.

Sample Display – show bisync receive

```
BISYNC Module Receive Errors:
---------------------------

                      Bad       Runt    Receive    Replen   Overflow  LackRescs
Slot Conn Circuit   Frames    Frames     Errors    Misses    Frames   Chars
---- ---- -------- --------- --------- --------- --------- --------- ---------
1    1    S11      0         0         0         0         0         0

    1 entry in table.
```

sample [<**period in seconds**>] [**circuit** *<circuit name>*]

Displays data sampled from BISYNC over a period of 10 seconds. You can change the number of seconds over which you want to sample the data, and you can display sampled data for a specific circuit only.

The table includes the following information:

Slot	Slot identifier
Conn	Connector identifier
Circuit	Name of the circuit associated with this line.
Rx Frames	Number of frames received on this line.
Tx Frames	Number of frames sent on this line.
Rx Lack of Resources	Number of packets received and discarded because of lack of resources; for example, buffers.
Tx Lack of Resources	Number of transmit packets discarded because of lack of resources; for example, buffers.

Sample Display – show bisync sample

```
BISYNC Sampled Data over  10 seconds
-----------------------------------

                        Rx         Tx     Rx Lack of Tx Lack of
Slot Conn Circuit    Frames     Frames   RescsChar  RescsFrms
---- ---- -------- ---------- ---------- ---------- ----------
1    1    S11      16         4          0          0

    1 entry in table.
```

stats [**circuit** *<circuit name>*]

Displays BISYNC input/output statistical information for all BISYNC modules or for a specific circuit.

The table includes the following information:

Slot	Slot identifier
Conn	Connector identifier
Circuit	Name of the circuit associated with this line.
Receive Bytes	Number of octets received without error.
Receive Frames	Number of frames received without error.
Transmit Bytes	Number of octets transmitted without error.
Transmit Frames	Number of frames transmitted without error.
Total Errors	Total number of errors of all types.

Sample Display – show bisync stats

```
BISYNC Module I/O Statistics:
---------------------------

                    Receive    Receive    Transmit   Transmit    Total
Slot Conn Circuit    Bytes      Frames     Bytes      Frames     Errors
---- ---- -------- ---------- ---------- ---------- ---------- ----------
1    1    S11      18697      1163       1254       413        0

    1 entry in table.
```

transmit errors [**circuit** *<circuit name>*]

Displays statistical information about transmission errors for all circuits or for a specific circuit. The table includes the following information:

The table includes the following information:

Slot	Slot identifier
Conn	Connector identifier
Circuit	Name of the circuit associated with this line.
Transmit Errors	Number of frame reject errors transmitted on this line.
Lack Rescs	Number of characters not transmitted due to lack of resources, such as buffers.
Underflow Frames	Number of retransmission underflow errors. These occur when the device's FIFO buffer empties before the device obtains the next DMA request.

Sample Display – show bisync transmit errors

```
BISYNC Module Transmit Errors:
------------------------------

                  Transmit   Lack       Underflow
Slot Conn Circuit Errors     Rescs      Frames
---- ---- -------- ---------- ---------- ----------
1    1    S11      0          0          0

    1 entry in table.
```

version

Displays the current version and modification date for the *bisync.bat* script.

Sample Display – show bisync version

```
bisync.bat Version: 1.12 Date: 10/31/94.
```

show bootp

The **show bootp** *<option>* commands display configuration, state, and statistical information about Bootstrap Protocol (BOOTP) services and Dynamic Host Configuration Protocol (DHCP) services. For details on the Bay Networks implementation of BOOTP and DHCP, refer to *Configuring SNMP, BOOTP, DHCP, and RARP Services*.

The **show bootp** command supports the following subcommand options:

base	prefserv
clients	stats
prefserv	version

base

Displays information about the IP interfaces which you have configured for BOOTP or DHCP services. The table includes the following information:

Interface Address	IP address of an interface that receives BOOTREQUEST or DHCP packets from clients.
State	State of BOOTP services on the interface: Absent, Down, Init (initializing), Invalid, Not Present (enabled but not yet started), or Up.
Min Seconds	Minimum number of seconds the router waits before forwarding any BOOTREQUEST or DHCP packet to the server. If this value exceeds the value in the *seconds* field of a BOOTREQUEST or DHCP packet from the client, the router drops the packet.
Max Hops	Maximum number of hops a BOOTREQUEST or DHCP packet can take between the client and the server. If this value is less the value in the *hops* field of a BOOTREQUEST or DHCP packet from the client, the router drops the packet.
PassThruMode	Type of packets that this interface accepts: BOOTP only, DHCP only, or both BOOTP and DHCP.

Sample Display – show bootp base

```
Bootp Base Information
----------------------

    Interface                   Min     Max
     Address        State    Seconds   Hops  PassThruMode
 ---------------- ---------- -------- ------ ------------
 192.32.14.92     Up                0      4 BOOTP/DHCP

1 entries
```

clients

Displays information about each BOOTP Data Link Control Interface (DLCI) client. The table includes the following information:

Client DLCI	DLCI for the virtual circuit that this BOOTP client uses.
Client IP Address	IP address for this BOOTP client.

Sample Display – show bootp clients

```
BOOTP Clients
-------------

  Client        Client
   DLCI       IP Address
----------  ---------------
        20  192.32.4.1
        24  192.32.5.1

2 Entries
```

prefserv

Displays information about each entry in the preferred servers table. The table includes the following information:

Agent Address	IP address of an interface which receives BOOTREQUEST or DHCP packets from clients.
Pref Server Address	IP address of the server to which the router forwards BOOTREQUEST or DHCP packets it receives on the above interface.
State	State of the forwarding entry: Enabled or Disabled.
Request Mode	Type of packets that the router forwards to the server: BOOTP only, DHCP only, or both BOOTP and DHCP.

Sample Display – show bootp prefserv

```
Bootp Preferred Server
----------------------

  Agent Address   Pref Server Address  State   RequestMode
 --------------- ------------------- -------- -----------
 192.32.14.92     206.2.2.2           Enabled  DHCP
```

ragents

Displays information about each entry in the BOOTP relay agent forwarding table. The table includes the following information:

Agent Address	IP interface address of an interface that accepts BOOTPREQUEST or DHCP packets from clients.
Outbound Address	IP address of the interface through which the router forwards BOOTREQUEST or DHCP packets that it receives on the above interface.

State	State of the forwarding entry: Enabled or Disabled.
PassthruMode	Type of packets that the BOOTP router forwards through this outbound address: BOOTP only, DHCP only, or both BOOTP and DHCP

Sample Display – show bootp ragents

```
Bootp Relay Agents
------------------

  Agent Address   Outbound Address  State   PassThruMode
 --------------- --------------- -------- ------------
 192.32.14.92     206.1.1.1        Enabled  BOOTP

1 entries
```

stats

Displays statistical information for each BOOTP relay agent. The table includes the following information:

Interface Address	IP address of the interface on the router that receives BOOTPREQUEST or DHCP packets from clients.
Dropped Packets	Number of packets the router has dropped at this interface.
Requests Received	Number of BOOTREQUEST or DHCP packets that this interface has received from clients.
Replies Received	Number of BOOTREPLY or DHCP packets that this interface has received from servers.

Sample Display – show bootp stats

```
Bootp Statistics
----------------

   Interface      Dropped    Requests   Replies
    Address       Packets    Received   Received
---------------- ---------- ---------- ----------
192.32.1.2                0         10         10

1 entries
```

version

Displays the current version number and modification date of the *bootp.bat* script.

Sample Display – show bootp version

```
BOOTP.bat Version: 1.7 Date: 4/12/94
```

show bot

The **show bot** *<option>* commands display information about the Binary Synchronous Communication (BSC) transport services. For detailed information on the Bay Networks implementation of BSC transport services, refer to *Configuring BSC Transport Services*.

The **show bot** command supports the following subcommand options:

alerts	enabled
base	peers
circuit [<circuit name>]	stats [<circuit name>]
CUs	version
disabled	

alerts

Displays all BTS circuits that are enabled but not up. Use this command to identify interfaces that are not working.

The table includes the following information:

slot.cct	Number of the slot that contains the link or net module, followed by the number of the connector.
Circuit Name	Name of the circuit the port is on.
Enable	Status of the protocol on the interface: enabled or disabled
State	State of the protocol, as follows: • *Down* – Protocol is not functioning. • *Init* – Protocol is initializing. • *Up* – Protocol is functioning fully.
Interface Type	Type of interface, as follows: • Point to Point indicates one TCP connection • Multipoint indicates many TCP connections (primary interface only)
Interface Attached To	Type of BSC device this interface connects to, as follows: • Primary indicates a host • Secondary indicates a control unit or other BSC device
Packet Count	Number of BTS packets that this interface has received.

Sample Display – show bot alerts

```
BOT Alerts
----------

          Circuit                    Interface     Interface     Packet
 slot.cct Name     Enable   State    Type          Attached To   Count
 -------- -------- -------- -------- ------------- ------------- ----------
 1.2      S11      Enabled  Down       Multi-Point   Primary       796

Total entries: 0
```

base

Displays the base record information for BTS. The base record controls BTS for the entire system.

Sample Display – show bot base

```
BOT Base Record Information
---------------------------

 Protocol         Enable      State
 -------------    --------    -------
 BOT Service      Enabled     Up
```

For column definitions, see the **alerts** command.

circuit [*<circuit name>*]

Displays circuit and state information for all BTS ports or for a specific port.

Sample Display – show bot circuit

```
 BOT Circuits
 ------------

          Circuit                    Interface     Interface     Packet
 slot.cct Name     Enable   State    Type          Attached To   Count
 -------- -------- -------- -------- ------------- ------------- ----------
 1.2      S11      Enabled  Up       Multi-Point   Primary       689


Total entries: 1
```

For column definitions, see the **alerts** command.

CUs

Displays all BTS connections from this router to control units. The table includes the following information:

cctname	Name of the circuit
Enable	Status of the connection to this control unit: enabled or disabled
Peer IP	IP address of the BTS interface on the peer router
Local Listen Port	Number of the TCP port that the router uses for BTS
Peer Listen Port	Number of the TCP port that the peer router uses for BTS
Control Unit Address	Address of the control unit, in hexadecimal format

Sample Display – show bot CUs

```
 BOT CU Table
 --------------

                                  Local    Peer     Control
                                  Listen   Listen   Unit
cctname  Enable   Peer IP         Port     Port     Address
-------- -------- --------------- -------- -------- --------
S11      Enabled  193.32.33.2     0        1027     0x40


Total entries: 1
```

disabled

Displays all disabled circuits that contain an BTS port. A circuit is disabled if you set the Enable parameter to disable and the state is down.

Sample Display – show bot disabled

```
BOT Disabled Circuits
 ---------------------

          Circuit                    Interface     Interface     Packet
 slot.cct Name     Enable   State    Type          Attached To   Count
 -------- -------- -------- -------- ------------- ------------- ----------
 1.2      S11      Disabled Disabled  Multi-Point   Primary       742

Total entries: 1
```

For column definitions, see the **alerts** command.

enabled

Displays all enabled circuits that contain an BTS port. A circuit is enabled if you set the Enable parameter to enable and the state is up.

Sample Display – show bot enabled

```
BOT Enabled Circuits
 --------------------

          Circuit                    Interface     Interface     Packet
 slot.cct Name     Enable   State    Type          Attached To   Count
 -------- -------- -------- -------- ------------- ------------- ----------
 1.2      S11      Enabled  Up       Multi-Point   Primary       742

Total entries: 1
```

For column definitions, see the **alerts** command.

peers

Displays all BTS peer connections for this router.

Sample Display – show bot peers

```
 BOT Peer Table
 --------------

                                          Local    Peer     Local    Peer
                                  Conn    Listen   Listen   TCP      TCP
cctname  Enable   Peer IP         Origin  Port     Port     Port     Port
-------- -------- --------------- ------- -------- -------- -------- --------

S11      Enabled  193.32.33.2     Self    0        1027     17271    1027

Total entries: 1
```

stats [*<circuit name>*]

Displays general statistical information for all BTS connections or for a specific circuit. The table includes the following information:

cctname	Name of the circuit.
Enable	
Peer IP	IP address of the BTS interface on the peer router.
Conn Origin	Originator of TCP connection, as follows: • Self - this router initiates the connection • Partner - peer router initiates the connection
Local Listen Port	Number of the TCP port that you specified for BTS on the local router: 0 indicates that this router originates the connection.
Peer Listen Port	Number of the TCP port that you specified for BTS on the peer router: 0 indicates that the peer router originates the connection.

Local TCP Port	Number of the TCP port that the router assigns for BTS on the router. If the peer router initiates the TCP connection, this value is the same as the number of the TCP port that you specified for BTS on the local router.
Remote TCP Port	Number of the TCP port that the router assigns for BTS on the router. If the local (and not the peer) router initiates the TCP connection, this value is the same as the number of the TCP port that you specified for BTS on the peer router.

Sample Display – show bot stats

```
 BOT Circuit Statistics
----------------------

         Circuit                    Interface     Interface     Packet
slot.cct Name     Enable   State    Type          Attached To   Count
-------- -------- -------- -------- ------------- ------------- ----------
1.2      S11      Enabled  Up       Multi-Point   Primary       796


Total entries: 1
```

version

Displays the current version and modification date for the *BOT.bat* script.

Sample Display – show bot version

```
BOT.bat Version: 1.1 Date: 08/16/95.
```

show bridge

The **show bridge** <*option*> commands display configuration, state, and statistical information about Bridging services. For more information on Bridging services, refer to *Configuring Bridging Services*.

The **show bridge** command supports the following subcommand options:

alerts	enabled
base	forwarding tables [<MAC address> | <pattern>]
circuits [<circuit name>]	stats
disabled	version

alerts

Displays all circuits that are enabled but not up. Use this display to identify the interfaces that are not working. The table includes the following information:

Circuit	Name of the circuit this interface runs on.
Port	Port number.
State	State of the interface. In this case, State is Down.
Frame Length	Maximum size of the INFO (non-MAC) field that this port will receive or transmit.
802.9 Translations	State of the translation bridging parameter: Enabled or Disabled. The default is Disabled.

Sample Display – show bridge alerts

```
Bridge Circuit Table
--------------------

                                Frame      802.9
Circuit    Port      State      Length  Translations
-------- -------- ------------ -------- ------------

0 Entries found.
```

base

Displays the Bridge global parameters. The base record controls Bridging services for the entire system. The table includes the following information:

Protocol	Name of the protocol, in this case Bridge.
State	Current state of the protocol: Disabled (manually disabled), Down, Init (initializing), Not Present (enabled but not yet started), or Up.
FDB Entries	Current number of forward table entries.
FDB Size	Maximum available entries in the forwarding table.

Sample Display – show bridge base

```
Bridge Base Record Information
------------------------------

    Protocol       State    FDB Entries  FDB Size
--------------- ---------- ----------- ----------
Bridge           Up                   0       1024
```

circuits [<*circuit name*>]

Displays Bridge circuit parameters for all circuits or for a specific circuit. State is Down, Init (initializing), Not Present (enabled but not yet started), or Up. For the remaining column definitions, see the **alerts** command.

Sample Display – show bridge circuits

```
Bridge Circuit Table
--------------------

                                 Frame      802.9
Circuit    Port      State       Length  Translations
-------- -------- ------------ -------- ------------
S21             1 Up                  0 Disabled
0               0 Down                0 Disabled
0               0 Down                0 Disabled
0               0 Down                0 Disabled

4 Entries.
```

disabled

Displays circuits that a user has manually disabled. State is Down; for remaining column definitions, see the **alerts** command.

Sample Display – show bridge disabled

```
Bridge Circuit Table
--------------------

                                 Frame      802.9
Circuit    Port      State       Length  Translations
-------- -------- ------------ -------- ------------

0 Entries found.
```

enabled

Displays circuits that are currently enabled. State is Down, Init (initializing), Not Present (enabled but not yet started) or Up. For the remaining column definitions, see the **alerts** command.

Sample Display – show bridge enabled

```
Bridge Circuit Table
--------------------

                                  Frame      802.9
Circuit    Port      State       Length  Translations
-------- -------- ------------ -------- ------------
S21             1 Up                  0 Disabled
0               0 Down                0 Disabled
0               0 Down                0 Disabled
0               0 Down                0 Disabled

4 Entries found.
```

forwarding tables [<*MAC address*> | <*pattern*>]

Displays the bridge forwarding tables for all ports, for a specified port, or for ports that match a specified address pattern.

<MAC address>	Limits the display to the specified Media Access Control address.
< pattern>	Limits the display to ports that match the specified address pattern. You can also use the ***** wildcard in your pattern definition.

This display includes the following information:

MAC Address	Media Access Control address of the port.
Port	Port number.
Circuit Name	Name of the circuit the port is on.

Sample Display – show bridge forwarding tables

```
Bridge Forwarding Tables
------------------------

   MAC Address      Port    Circuit Name
----------------- -------- --------------
No Entries.
```

stats

Displays bridge traffic statistics for each port. The table includes the following information:

Circuit	Name of the circuit the interface runs on.
Port	Number of the port.
Rx frames	Nmber of frames that this interface has received from its circuit.
Tx frames	Number of frames that this interface has transmitted to its circuit.
Discards	Number of valid frames that this interface received but then discarded.

Sample Display – show bridge stats

```
Bridge Statistics
-----------------

Circuit    Port   Rx Frames Tx Frames Discards
-------- -------- --------- --------- --------
S21             1         0         0        0
0               0         0         0        0
0               0         0         0        0
```

version

Displays the current version and modification date of the *bridge.bat* script.

Sample Display – show bridge version

```
BRIDGE.bat Version: 1.14 Date: 1/26/95.
```

show circuits

The **show circuits** *<option>* commands display specific configuration, state, and statistical information for all drivers on the router : CSMA/CD, DS1E1, E1, FDDI, HSSI, SYNC, T1, and/or Token Ring modules. For example, you can display the receive error statistics for all drivers by entering only one command: **show circuits receive errors**.

You can also display selected information for a specific circuit without knowing the circuit's type. The **show circuits** command looks up the circuit in the MIB and invokes the correct driver to display the information you have requested.

Refer to the sections on the specific driver commands for more sample displays and for the definitions of display columns generated by the **show circuits** *<option>* commands.

The **show circuits** command supports the following subcommand options:

alerts	receive errors [<circuit name>]
base [<circuit name>]	stats [<circuit name>]
configuration [<circuit name>]	system errors [<circuit name>]
disabled	transmit errors [<circuit name>]
enabled	version
hwfilters	

alerts

Displays all enabled circuits whose state is not Up.

Sample Display – show circuits alerts

```
CSMACD Modules on Alert:
------------------------
                                                BOFL          HW
Slot Conn Circuit   State      MAC Address     TMO  MTU   Filter
---- ---- -------- -------- ----------------- ---- ---- --------
   3    2 E32      Down     00-00-A2-03-00-6F    5 1518 Disabled

Found     1 match out of     4 entries in table.

HSSI Modules on Alert:
----------------------
                                                BOFL           WAN       Line
Slot Conn Circuit   State      MAC Address     TMO  MTU   Protocol    Number
---- ---- -------- -------- ----------------- ---- ---- ----------- --------
   0    0          Not Pres (nil)             Off  4608 FRAME RELAY        0
   0    0          Not Pres (nil)                1 4608 FRAME RELAY        0

Found     2 matches out of     2 entries in table.


TOKEN RING Modules on Alert:
----------------------------
                                                     Ring   Early Token
Slot Conn  Circuit  State      MAC Address     MTU   Speed    Release
---- ---- -------- -------- ----------------- ---- ------- -----------
   2    1 O21      CableFlt 00-00-A2-01-4B-4E 4568 16 Mbps Enabled

Found     1 match out of     1 entry in table.
```

base [<*circuit name*>]

Displays the circuit base record information for all circuits or for a specific circuit.

Sample Display – show circuits base

```
CSMACD Modules:
---------------
                                                BOFL          HW
Slot Conn Circuit   State      MAC Address     TMO  MTU   Filter
---- ---- -------- -------- ----------------- ---- ---- --------
   3    1 E31      Up       00-00-A2-03-00-6E    5 1518 Disabled
   3    2 E32      Down     00-00-A2-03-00-6F    5 1518 Disabled
   3    3 E33      Up       00-00-A2-03-00-70    5 1518 Disabled
   3    4 E34      Up       00-00-A2-03-00-71    5 1518 Disabled

    4 entries in table.

HSSI Modules:
-------------
                                                BOFL           WAN       Line
Slot Conn Circuit   State      MAC Address     TMO  MTU   Protocol    Number
---- ---- -------- -------- ----------------- ---- ---- ----------- --------
   0    0          Not Pres (nil)             Off  4608 FRAME RELAY        0
   0    0          Not Pres (nil)                1 4608 FRAME RELAY        0

    2 entries in table.

TOKEN RING Modules:
-------------------
                                                      Ring   Early Token
Slot Conn  Circuit  State      MAC Address     MTU   Speed    Release
---- ---- -------- -------- ----------------- ---- ------- -----------
   2    1 O21      CableFlt 00-00-A2-01-4B-4E 4568 16 Mbps Enabled

    1 entry in table.
```

configuration [*<circuit name>*]

Displays the circuits used on the router. The table includes the circuit type, circuit number, interface type and the protocols configured to run on each circuit in the display. You can also display this information for a specific circuit.

Sample Display – show circuits configuration

```
     Name: E33
   Number: 1
     Type: Normal
  IF Type: CSMACD
Protocols:  1. IP              2. IP RIP

     Name: E31
   Number: 2
     Type: Normal
  IF Type: CSMACD
Protocols:  1. IP              3. VINES           5. IPX RIP
            2. IP RIP          4. IPX
```

disabled

Displays all circuits that a user has manually disabled.

Sample Display – show circuits disabled

```
CSMACD Modules Disabled:
------------------------

                                                BOFL          HW
Slot Conn Circuit   State      MAC Address     TMO  MTU   Filter
---- ---- -------- -------- ----------------- ---- ---- --------

Found     0 matches out of     4 entries in table.

HSSI Modules Disabled:
----------------------

                                                BOFL           WAN       Line
Slot Conn Circuit   State      MAC Address     TMO  MTU   Protocol    Number
---- ---- -------- -------- ----------------- ---- ---- ----------- --------

Found     0 matches out of     2 entries in table.

TOKEN RING Modules Disabled:
----------------------------

                                                     Ring   Early Token
Slot Conn  Circuit  State      MAC Address     MTU   Speed    Release
---- ---- -------- -------- ----------------- ---- ------- -----------

Found     0 matches out of     1 entry in table.
```

enabled

Displays all currently enabled circuits.

Sample Display – show circuits enabled

```
CSMACD Modules Enabled:
-----------------------

                                                BOFL         HW
Slot Conn Circuit   State      MAC Address     TMO  MTU   Filter
---- ---- -------- -------- ----------------- ---- ---- --------
   3    1 E31      Up       00-00-A2-03-00-6E    5 1518 Disabled
   3    2 E32      Down     00-00-A2-03-00-6F    5 1518 Disabled
   3    3 E33      Up       00-00-A2-03-00-70    5 1518 Disabled
   3    4 E34      Up       00-00-A2-03-00-71    5 1518 Disabled

Found     4 matches out of     4 entries in table.

HSSI Modules Enabled:
---------------------

                                                BOFL          WAN       Line
Slot Conn Circuit   State      MAC Address     TMO  MTU   Protocol    Number
---- ---- -------- -------- ----------------- ---- ---- ----------- --------
   0    0          Not Pres (nil)             Off  4608 FRAME RELAY        0
   0    0          Not Pres (nil)                1 4608 FRAME RELAY        0

Found     2 matches out of     2 entries in table.

TOKEN RING Modules Enabled:
---------------------------

                                                      Ring   Early Token
Slot Conn  Circuit  State      MAC Address     MTU   Speed    Release
---- ---- -------- -------- ----------------- ---- ------- -----------
   2    1 O21      CableFlt 00-00-A2-01-4B-4E 4568 16 Mbps Enabled

Found     1 match out of     1 entry in table.
```

hwfilters

Displays all hardware filter configurations on the router.

Sample Display – show circuits hwfilters

```
Hardware Filters Modules:
-------------------------
                             Line  Maximum Current  Used    Dropped
Slot Conn Circuit   State    Type  Tbl Siz Tbl Siz Entries   Frames
---- ---- -------- -------- ------ ------- ------- ------- ----------

    0 entries in table.
```

receive errors [*<circuit name>*]

Displays the receive error statistics for all circuits or for a specific circuit.

Sample Display – show circuits receive errors

```
CSMACD Module Receive Errors:
-----------------------------
                    Checksum  Alignment   Overflow    Frames
Slot Conn Circuit    Errors     Errors     Errors    Too Long
---- ---- -------- ---------- ---------- ---------- ----------
   3    1 E31               7          7          0          0
   3    2 E32               0          0          0          0
   3    3 E33               0          0          0          0
   3    4 E34               0          0          0          0

    4 entries in table.
HSSI Module Receive Errors:
---------------------------
                                                      Frames
Slot Conn Circuit  CRC Errors  Overruns    Aborts    Too Long
---- ---- -------  ---------- ---------- ---------- ----------
   0    0                   0          0          0          0
   0    0                   0          0          0          0

    2 entries in table.
TOKEN RING Receive Errors:
--------------------------
                      Line      Burst
Slot Conn Circuit    Errors     Errors
---- ---- -------- ---------- ----------
   2    1 O21              0          0

    1 entry in table.
```

stats [*<circuit name>*]

Displays the Input/Output statistics for all circuits or for a specific circuit.

Sample Display – show circuits stats

```
CSMACD Module I/O Statistics:
-----------------------------

                     Receive    Receive  Transmit   Transmit  Transmit    Total
Slot Conn Circuit     Bytes     Frames     Bytes     Frames   Deferred   Errors
---- ---- -------- ---------- --------- ---------- --------- --------- ---------
   3    1 E31       383755961   1689896   76728438    242760       592        15
   3    2 E32               0         0          0         0         0     77438
   3    3 E33               0         0   72749532    208962         0         1
   3    4 E34        69919188    199953   72770404    208060        20         1

    4 entries in table.

HSSI Module I/O Statistics:
---------------------------

                     Receive    Receive    Transmit   Transmit    Total
Slot Conn Circuit     Bytes      Frames     Bytes      Frames     Errors
---- ---- -------  ---------- ---------- ---------- ---------- ----------
   0    0                   0          0          0          0          0
   0    0                   0          0          0          0          0

    2 entries in table.

TOKEN RING I/O Statistics:
--------------------------

                     Receive    Receive  Transmit   Transmit   MAC Rx     Total
Slot Conn Circuit     Bytes     Frames     Bytes     Frames    Frames    Errors
---- ---- -------- ---------- --------- ---------- --------- --------- ---------
   2    1 O21               0         0          0         0         0         0

    1 entry in table.
```

system errors [*<circuit name>*]

Displays the system error statistics for all circuits or for a specific circuit.

Sample Display – show circuits system errors

```
CSMACD Module System Errors:
----------------------------

                     Memory   Collision   Internal   Loss of
Slot Conn Circuit    Errors     Errors     Buffer    Carrier
---- ---- -------- ---------- ---------- ---------- ----------
   3    1 E31               0          1          0          0
   3    2 E32               0          1          0      77458
   3    3 E33               0          1          0          0
   3    4 E34               0          1          0          0

    4 entries in table.

HSSI Module System Errors:
--------------------------

                     Rx Ring    Tx Ring   Internal     Host       Port
Slot Conn Circuit    Errors     Errors   Op Errors    Errors     Errors
---- ---- -------  ---------- ---------- ---------- ---------- ----------
   0    0                   0          0          0          0          0
   0    0                   0          0          0          0          0

    2 entries in table.

TOKEN RING System Errors:
-------------------------

                    Adapter    DMA Bus   DMA Parity  Command   Host Iface
Slot Conn Circuit    Checks     Errors     Errors    Timeouts    Errors
---- ---- -------- ---------- ---------- ---------- ---------- ----------
   2    1 O21               0          0          0          0          0

    1 entry in table.
```

transmit errors [*<circuit name>*]

Displays the transmit error statistics for all circuits or for a specific circuit.

Sample Display – show circuits transmit errors

```
CSMACD Module Transmit Errors:
------------------------------

                      Late     Excessive    Frames   Underflow
Slot Conn Circuit  Collision  Collision   Too Long    Errors
---- ---- -------- ---------- ---------- ---------- ----------
   3    1 E31               0          0          0          0
   3    2 E32               0          0          0          0
   3    3 E33               0          0          0          0
   3    4 E34               0          0          0          0

    4 entries in table.

HSSI Module Transmit Errors:
----------------------------

Slot Conn Circuit    Aborts   Underruns
---- ---- -------  ---------- ----------
   0    0                   0          0
   0    0                   0          0

    2 entries in table.

TOKEN RING Transmit Errors:
---------------------------

                       Lost
Slot Conn Circuit  Frame Errs
---- ---- -------- ----------
   2    1 O21               0

    1 entry in table.
```

version

Displays the current version number and modification date of the *circuits.bat* script.

Sample Display – show circuits version

```
CIRCUITS.bat Version: 1.13 Date: 1/20/95.
```

show console

The **show console** *<option>* commands display console port configuration, state, and statistics information. For more information, refer to *Using Technician Interface Software*.

The **show console** command supports the following subcommand options:

alerts	enabled
configuration [<port number>]	stats [<port number>]
disabled	version

alerts

Displays the port number, port name, and state of any serial port that is enabled but not currently up. Use this command to detect potential problems with the serial ports configured on your system. The listing of a serial port in the display doesn't necessarily mean that a problem exists with the port; it means only that a problem could exist. For example, all the ports could be initializing, which would be normal as long as the ports go into the Up state within a reasonable period of time.

The table also includes the number of serial port alerts and the total number of ports configured on the system. For more information on port states, see the **configuration** command.

Sample Display – show console alerts

```
Console Serial Port Alert Information
-------------------------------------

  Port     Port     Port
 Number    Name    State
-------- -------- --------
       2 MODEM1   Init
       3 MODEM2   Init
       4 PRINTER  Init

3 serial port alerts.  4 serial ports configured.
```

configuration [*<port number>*]

Displays serial port configuration and Technician Interface environment information for the serial ports configured on your system or for a specific port. Entered without an option, this subset of commands displays the total number of ports configured on the system.

<port number>	Limits the display to a specified port number, currently 1 through 4.

The table includes the following information:

Port Number	Port number for the information being displayed. Valid ports are 1, 2, 3, and 4. Not all systems have four physical ports. A configured port that doesn't exist is in the Absent state.
Port State	Port's current state, as follows: • *Absent* – Not physically present • *Disabled* – Unavailable • *Down* – Unavailable • *Init* – Initializing • *Up* – Available

Port Name	Name that the system has given to the port. Users may not specify a name. You can use the name to correlate a port number to a physical port. The name of the port should be printed next to the physical port connection, as follows: • *Port 1* – CONSOLE • *Port 2* – MODEM1 (VME platform only) • *Port 3* – MODEM2 (VME platform only) • *Port 4* – PRINTER (VME platform only) The names do not specify the port's use. All ports are serial ports used for Technician Interface sessions only. For example, port MODEM1 may be a modem connection or a dummy terminal connection depending on its configuration. While port 4 is called PRINTER, it is exactly like ports 1, 2, and 3. Port 4 doesn't support a printer. It has that name because that's what is printed near the port connector on the link module.
Slot Number	Slot on which the login session for the serial port is running.
Baud Rate	Current baud rate setting for the serial port.
Data Bits	Number of data bits in the serial port's configuration.
Parity	Serial port's current parity setting.
Stop Bits	Number of stop bits in the serial port's configuration.
Modem Control	Configuration of modem control, as follows: • *Disabled* – Port is directly connected to a device, such as a dummy terminal or a terminal server. • *Enabled* – Port is attached to a modem and modem leads are enabled.
Screen Size	Number of lines the serial port displays before displaying the more prompt.
More	Setting of the Technician Interface **more** feature: Enabled or Disabled (according to the MIB record). The Technician Interface **more** command affects only the current login session, doesn't change the MIB, and therefore doesn't affect the setting of this field.
Port Prompt	Technician Interface prompt.
Max. Login Retries	Maximum number of login retries; relevant only if modem control is enabled. This value determines the maximum number of failed login attempts a system allows on the serial port. If the maximum occurs, the system hangs up on the line, causing a modem connection to lose carrier detect.

Login Time Out	Number of minutes allowed between when the system displays the login banner and a user enters a login ID; relevant only if modem control is enabled. If this timeout occurs, the system hangs up on the line.
Password Time Out	Number of minutes allowed for a user to enter a password. If this timeout period occurs, the system hangs up on the line.
Command Time Out	Command line timeout value; relevant only if modem control is enabled. If someone doesn't enter a command in this number of minutes, the system hangs up on the serial port.
User Abort Logout	Switch to execute control (^C) to break out of the user autoscript. When a user autoscript is in effect and this parameter is enabled, you can break out of the script when logged in as User, not Manager. Also, if this parameter is enabled and the script terminates due to an error, the system automatically logs you out.
Initial Search Path	List of file system volumes to be searched when you run a script without a volume specifier or if an autoscript does not contain a volume specifier. The environment variable PATH is set to this string. The string format is as follows: *<vol>*:[;*<vol>*: ...] Example: 2:;3:;4:;5:
Manager's AutoScript	Name of the script to run when the Manager account logs in to the router. If the script name does not contain a volume specifier, the system searches the volumes listed in "Initial Search Path."
User's AutoScript	Name of the script to run when the User account logs in to the router. If the script name does not contain a volume specifier, the system searches the volumes listed in "Initial Search Path."

Sample Display – show console configuration

```
Console Serial Port Configuration Information
---------------------------------------------

        Port Number: 1
         Port State: Up
          Port Name: CONSOLE
        Slot Number: 2
          Baud rate: 9600
          Data bits: 8
             Parity: None
          Stop Bits: 1
      Modem Control: Disabled
        Screen Size: 24
               More: Enabled
        Port prompt: "[%slot%:1]$ "
 Max. Login Retries: 3
     Login Time Out: 1 minutes.
  Password Time Out: 1 minutes.
   Command Time Out: 15 minutes.
  User Abort Logout: Enabled
Initial Search Path: "1:;2:;3:;4:".
Manager's AutoScript "automgr.bat".
   User's AutoScript "autouser.bat".

1 serial port configured.
```

disabled

Displays the port number, port name, and state for all disabled serial ports. Also displays the number of disabled serial ports and the total number of serial ports configured.

Sample Display – show console disabled

```
Console Serial Port Disabled Information
----------------------------------------

  Port     Port     Port
 Number    Name    State
-------- -------- --------
       2 MODEM1   Disabled
       4 PRINTER  Disabled

2 serial ports disabled.  4 serial ports configured.
```

enabled

Displays the port number, port name, and state of all enabled serial ports. Also displays the number of enabled serial ports and the total number of serial ports configured on the system.

Sample Display – show console enabled

```
Console Serial Port Enabled Information
---------------------------------------

  Port     Port     Port
 Number    Name    State
-------- -------- --------
       1 CONSOLE  Up
       3 MODEM2   Up

2 serial ports enabled.  4 serial ports configured.
```

stats [*<port number>*]

Displays login information and serial port error statistics for all serial ports configured on your system or for a specific port.

<port number>	Limits the display to a specified port number, currently 1 through 4.

The table includes the following information:

Port Number	Port number for the information displayed.
Port Name	Corresponding port name.
Port State	Port's current state : Absent, Disabled, Down, Init, or Up.
Total Logins	Number of logins (failed and successful) on the serial port.
User Login Errors	Number of failed login attempts the User login account has made on the serial port.

Manager Login Errors	Number of failed login attempts the Manager login account has made on the serial port.
Other Login Errors	Number of failed login attempts made by login accounts other than User and Manager on the serial port.
TTY I/O Errors	Number of data errors on the serial port; the sum of all frame, parity, overrun, and FIFO errors that the serial port DUART chip has detected. A high number of errors over a short period of time indicates a possible problem with the line.

Sample Display – show console stats

```
Console Serial Port Statistical Information
-------------------------------------------
                                      User   Manager   Other
  Port     Port     Port    Total    Login    Login    Login   TTY I/O
 Number    Name    State    Logins   Errors   Errors   Errors   Errors
-------- -------- -------- -------- -------- -------- -------- --------
       1 CONSOLE  Up              1        0        0        0        0
       2 MODEM1   Disabled        0        0        0        0        0
       3 MODEM2   Up              0        0        0        0        0


       4 PRINTER  Disabled        5        0        0        5        0

4 serial ports configured.
```

version

Displays the current version number and modification date of the *console.bat* script.

Sample Display – show console version

```
CONSOLE.bat Version: 1.9 Date: 6/23/94.
```

show csmacd

The **show csmacd** *<option>* commands display configuration, status, and statistical information about the Carrier Sense Multiple Access with Collision Detection protocol (CSMA/CD). Ethernet uses this protocol to control access to the medium. End stations use CSMA/CD to monitor the medium and wait until it is idle before transmitting data. For more information, refer to *Configuring Line Services*.

The **show csmacd** command supports the following subcommand options:

alerts	receive errors [circuit <circuit name>]
autoneg [circuit <circuit name>]	sample [<period in seconds>] [circuit <circuit name>]
base [circuit <circuit name>]	stats [circuit <circuit name>]
collisions [circuit <circuit name>]	system errors [circuit <circuit name>]
disabled	transmit errors [circuit <circuit name>]
enabled	version
hwfilters	

alerts

Displays all circuits that are enabled but not up. Use this display to identify interfaces that are not working. The table includes the following information:

Slot	Slot identifier; ranges vary according to router model. For routers other than the ASN, indicates the physical slot number.
Conn	Connector's instance identifier. For an Ethernet Link Module, the range is 1 or 2. For a Net Module, the value is 11 to 44.
Circuit	Name of the circuit associated with this line.

State	State of the line driver: Disabled, Down, Init (initializing), Not Present (enabled but not yet started), or Up. The Not Present state occurs for several reasons. For example, the Link Module may not be physically present in the chassis. The software may be booting and has not yet initialized the driver software. The slot may be running diagnostics. Or there may be a problem with the configuration.
MAC Address	Line's physical address. The driver assigns this address.
BOFL TMO	Time in seconds between transmissions of Breath of Life messages from this interface. A timeout occurs if five periods elapse without a successful frame transmission. When timeout occurs, the interface is disabled and and then enabled again automatically.
MTU	Maximum transfer unit size for frames on this line.
HW Filter	Status of hardware filtering: Enabled or Disabled. When enabled, the Link Module filtering hardware prevents the copying of local frames into system memory. Filtering hardware drops local frames at the interface. Bridging software performance is improved because it no longer uses resources to receive and reject local frames.
Line Speed	Circuit's configured line speed: 10 Mb/s or 100 Mb/s.

Note: *The* **alerts**, **base**, **disabled**, *and* **enabled** *tables all include the same information.*

Sample Display – show csmacd alerts

```
CSMACD Modules on Alert:
------------------------
                                                 BOFL          HW    Line
Slot Conn Circuit   State      MAC Address      TMO  MTU   Filter  Speed
---- ---- -------- -------- ----------------- ---- ---- -------- -----
   0    0          Not Pres (nil)                5 1518 Disabled 10Mbps
   2   31          Down     00-00-A2-0B-67-0C    5 1518 Disabled 100Mbps

Found     2 matches out of     2 entries in table.
```

autoneg [**circuit** *<circuit name>*]

Displays the line speed characteristics of Ethernet circuits that are configured with automatic line negotiation. Some Ethernet modules can run at either 10 Mb/s or 100 Mb/s using a hardware process to detect the speed to use. Use this command to identify the status of auto-negotiation. The table includes the following information:

Slot	The Ethernet module's slot identifier. For routers other than the ASN, indicates the Link Module's physical slot on the router backplane; ranges vary from 1 - 14, according to router model. For an ASN, indicates the Net Module's configured slot ID; ranges from 1 - 4.
Conn	Specifies this line's connector on the Ethernet module. For a Link Module in a router other than the ASN, the range is 1 - 4. For an ASN, the value is a two-digit decimal number, 11 to 44. The first digit is the Net Module number and the second digit is the connector number.
Circuit	Name of the circuit associated with this line.
State	State of the line driver: Disabled, Down, Init (initializing), Not Present (enabled but not yet started), or Up.
Auto-Negotiation State	Disabled, Configuring, Complete.
Remote Signaling	True or False
Capability in Use	100Base-X (100Base-TX or 100Base-FX) 100Base-X FD (Full Duplex) 100Base-T FD Cong (with congestion control)

Sample Display – show csmacd autoneg

```
Auto-Negotiation Information:
-----------------------------

                           Auto-Negotiation     Remote     Capability
Slot Conn Circuit   State  State                Signaling  In Use
---- ---- -------- -------- -------------------- ---------- -------------
   2    1 E21      Up       **NOT SUPPORTED**
   5    1 E51      Up       Complete             TRUE       100Base-X FD
   5    2 E52      Up       Complete             TRUE       100Base-X FD

    3 entries in table.
```

base [**circuit** *<circuit name>*]

Displays base level information about CSMACD. You can also display base information for a specific circuit. For definitions of the columns in the table, refer to the **alerts** command.

Sample Display – show csmacd base

```
CSMACD Modules:
---------------

                                              BOFL         HW    Line
Slot Conn Circuit   State      MAC Address    TMO  MTU   Filter  Speed
---- ---- -------- -------- ----------------- ---- ---- -------- -----
   2    1 E21      Up       00-00-A2-00-DC-A9    5 1518 Disabled 10Mbps
   5    1 E51      Up       00-00-A2-0B-66-AF    8 1518 Disabled 100Mbps
   5    2 E52      Up       00-00-A2-0B-66-B0    8 1518 Disabled 100Mbps

    3 entries in table.
```

collisions [**circuit** *<circuit name>*]

Displays status on bus collisions. You can display collision information for a specific circuit or all circuits. The table includes the following information:

Slot	Slot identifier; ranges vary according to router model.
Conn	Connector's instance identifier; ranges vary according to router model and Ethernet module. For routers other than ASN, indicates the physical connector number on the slot.
Circuit	Name of the circuit associated with this line.
Single Collision Frames	Number of frames that encountered a single collision before it was successfully transmitted. This is normal CSMA/CD activity.
Multiple Collision Frames	Number of frames that encountered 2 to 16 collisions before they were transmitted successfully. This could indicate a network problem, or that the network is simply heavily loaded.
Excessive Collisions	Number of frames that encountered more than 16 collisions and were therefore not transmitted. The transmission is aborted and the packet is dropped. This could indicate a network problem or be the result of an overloaded network.
Late Collision Transmit	Number of transmits that occur after an out-of-window collision. These collisions usually indicate wiring or other hardware problems.
Late Collision Receive	Number of transmitter out-of-window collisions while receiving the next packet. Usually indicates wiring or other hardware problems.

Sample Display – show csmacd collisions

```
CSMACD Module Collision Information:
------------------------------------

                  Single     Multiple              Late       Late
                  Collision  Collision  Excessive  Collision  Collision
Slot Conn Circuit Frames     Frames     Collisions Transmit   Receive
---- ---- -------- ---------- ---------- ---------- ---------- ----------
   2    1 E21               0          0          0          0          0
   5    1 E51               0          0          0          0          0
   5    2 E52               0          0          0          0          0

    3 entries in table.
```

disabled

Displays the circuits that a user has manually disabled. In this case, State is Disabled. For definitions of the columns in the table, refer to the **alerts** command.

Sample Display – show csmacd disabled

```
CSMACD Modules Disabled:
------------------------

                                                BOFL         HW     Line
Slot Conn Circuit   State      MAC Address      TMO  MTU   Filter   Speed
---- ---- -------- -------- ----------------- ---- ---- -------- --------
   1   11 E111     Disabled 00-00-A2-0D-73-37    5 1518 Disabled 100 Mbps

Found     1 match out of     3 entries in table.
```

enabled

Displays circuits that a user has enabled. In this case, State is Down, Init, Not Present, or Up. For definitions of the columns in the table, refer to the **alerts** command.

Sample Display – show csmacd enabled

```
CSMACD Modules Enabled:
-----------------------

                                                BOFL          HW    Line
Slot Conn Circuit   State      MAC Address     TMO  MTU   Filter  Speed
---- ---- -------- -------- ----------------- ---- ---- -------- -----
   2    1 E21      Up       00-00-A2-00-DC-A9    5 1518 Disabled 10Mbps
   5    1 E51      Up       00-00-A2-0B-66-AF    8 1518 Disabled 100Mbps
   5    2 E52      Up       00-00-A2-0B-66-B0    8 1518 Disabled 100Mbps

Found     3 matches out of     3 entries in table.
```

hwfilters

Displays status and statistical information about the hardware filters in use, if any. The table includes the following information:

Slot	Slot identifier; ranges vary according to router model.
Conn	Connector's instance identifier; ranges vary according to router model and Ethernet module. For routers other than ASN, indicates the physical connector number on the slot.
Circuit	Name of the circuit associated with this line.
State	Status of the filtering hardware on the line: Down, Full or Up.
Line Type	CSMACD.
Maximum Tbl Siz	Maximum number of table entries that a line can use, based on the hardware filter devices present and available.
Current Tbl Siz	Current capacity of the hardware filter table. The protocol dynamically allocates hardware filter table resources as needed in increments of 256 up to the available table size.
Used Entries	Number of hardware filter table entries used.
Dropped Frames	Number of frames dropped because they matched the hardware filter.

Sample Display – show csmacd hwfilters

```
Hardware Filters Modules:
-------------------------

                              Line  Maximum Current  Used    Dropped
Slot Conn Circuit   State     Type  Tbl Siz Tbl Siz Entries   Frames
---- ---- -------- -------- ------ ------- ------- ------- ----------
   2    1 E21      Down     CSMACD    1024       0       0          0

    1 entry in table.
```

receive errors [**circuit** *<circuit name>*]

Displays receive errors for all circuits or for a specific circuit. The table includes the following information:

Slot	Slot identifier; ranges vary according to router model.
Conn	Connector's instance identifier; ranges vary according to router model and Ethernet module. For routers other than ASN, indicates the physical connector number on the slot.
Circuit	Name of the circuit associated with this line.
Checksum Errors	Number of frames received with a CRC error.
Alignment Errors	Number of frames received that did not contain an integral number of octets. Normally a frame alignment error also causes a checksum error on the frame.
Overflow Errors	Number of overflow errors received on this line in which the device FIFO buffer overflowed before obtaining the next DMA cycle.
Frames Too Long	Number of frames received that exceed 1518 octets.
Receive Symbol Errors	Number of errors in hardware MLT3 encoding. Indicates a problem. Only relevant on 100 Mb/s lines.
Internal MAC Receive Errors	Number of frames containing less than 64 octets (*runt packets*).

Sample Display – show csmacd receive

```
CSMACD Module Receive Errors:
-----------------------------

                                                                 Internal
                                                         Receive  MAC
                   Checksum Alignment Overflow Frames    Symbol   Receive
Slot Conn Circuit  Errors   Errors    Errors   Too Long Errors   Errors
---- ---- -------- -------- --------- -------- -------- -------- --------
   2    1 E21             0         0        0        0        0        0
   5    1 E51             0         0        0        0        0        0
   5    2 E52             0         0        0        0        0        0

    3 entries in table.
```

sample [*<period in seconds>*] [**circuit** *<circuit name>*]

Displays data sampled over a period of 10 seconds from CSMACD. You can change the number of seconds over which you want to sample the data, and you can display sampled data for a specific circuit only. The table includes the following information:

Slot	Slot identifier; ranges vary according to router model.
Conn	Connector’s instance identifier; ranges vary according to router model and Ethernet module. For routers other than ASN, indicates the physical connector number on the slot.
Circuit	Name of the circuit associated with this line.
Rx Frames	Number of frames received.
Tx Frames	Number of frames transmitted.
Rx Lack of Resources	Number of packets received and discarded because of lack of system resources; for example, buffers.
Tx Lack of Resources	Number of transmit packets discarded because of lack of system resources; for example, buffers.

Sample Display – show csmacd sample

```
CSMACD Sampled Data over  10 seconds
-----------------------------------

                       Rx         Tx     Rx Lack of Tx Lack of
Slot Conn Circuit    Frames     Frames   Resources  Resources
---- ---- -------- ---------- ---------- ---------- ----------
   2    1 E21             401          3          0          0
   5    1 E51               2          2          0          0
   5    2 E52               2          2          0          0

    3 entries in table.
```

Sample Display – show csmacd sample 5 circuit E51

```
CSMACD Sampled Data over   5 seconds
-----------------------------------

                       Rx         Tx     Rx Lack of Tx Lack of
Slot Conn Circuit    Frames     Frames   Resources  Resources
---- ---- -------- ---------- ---------- ---------- ----------
   5    1 E51               1          1          0          0

Found     1 match out of     3 entries in table.
```

stats [**circuit** *<circuit name>*]

Displays transmission and receive statistical information for all circuits or for a specific circuit. The table includes the following information:

Slot	Slot identifier; ranges vary according to router model.
Conn	Connector's instance identifier; ranges vary according to router model and Ethernet module. For routers other than ASN, indicates the physical connector number on the slot.
Circuit	Name of the circuit associated with this line.
Receive Bytes	Number of octets received without error.
Receive Frames	Number of frames received without error.

Transmit Bytes	Number of octets transmitted without error.
Transmit Frames	Number of frames transmitted without error.
Transmit Deferred	Number of transmissions delayed for a short time because the network was busy.
Total Errors	Total number of errors of all types.

Sample Display – show csmacd stats

```
CSMACD Module I/O Statistics:
-----------------------------

                    Receive    Receive  Transmit   Transmit  Transmit    Total
Slot Conn Circuit    Bytes     Frames     Bytes     Frames   Deferred   Errors
---- ---- -------- ---------- --------- ---------- --------- --------- ---------
   2    1 E21       208227053    404889     755536      2393       284         1
   5    1 E51           30336       474     688894      1747         0         0
   5    2 E52          688958      1748      30400       475         0         0

    3 entries in table.
```

system errors [**circuit** *<circuit name>*]

Displays statistical information about system errors for all circuits or for a specific circuit. The table includes the following information:

Slot	Slot identifier; ranges vary according to router model.
Conn	Connector’s instance identifier; ranges vary according to router model and Ethernet module. For routers other than ASN, indicates the physical connector number on the slot.
Circuit	Name of the circuit associated with this line.
Memory Errors	Number of internal memory errors. If this error persists, replace the Ethernet interface hardware.

Collision Errors	Number of times the driver detects that the external transceiver has not performed the SQE test after frame transmissions. When the SQE test is enabled on the transceiver, the transceiver asserts collision to the Ethernet interface after every transmission to provide an ongoing confidence test of the collision detection circuitry. An increase in this statistic may mean only that you need to enable the SQE test on the transceiver.
Internal Buffer	Number of internal buffer errors. If this error persists, replace the Ethernet interface hardware.
Loss of Carrier	Number of loss of carrier errors, in which the transceiver fails to sense the carrier signal on the interface.

Sample Display – show csmacd system

```
CSMACD Module System Errors:
----------------------------

                     Memory   Collision   Internal   Loss of
Slot Conn Circuit    Errors     Errors     Buffer    Carrier
---- ---- -------- ---------- ---------- ---------- ----------
   2    1 E21               0          1          0          0
   5    1 E51               0          0          0          0
   5    2 E52               0          0          0          0

    3 entries in table.
```

transmit errors [**circuit** *<circuit name>*]

Displays statistical information about transmission errors for all circuits or for a specific circuit. The table includes the following information:

Slot	Slot identifier; ranges vary according to router model.
Conn	Connector’s instance identifier; ranges vary according to router model and Ethernet module. For routers other than ASN, indicates the physical connector number on the slot.
Circuit	Name of the circuit associated with this line.
Late Collision	Number of collisions that occur after the timeslot of the channel has elapsed.

Excessive Collision	Number of times the transmitter failed in 16 attempts to successfully transmit a message due to repeated collisions on the interface.
Frames Too Long	Number of frames transmitted larger than 1518 octets.
Underflow Errors	Number of frames in which the transmitter was unable to obtain an entire packet from memory fast enough to keep up with the interface.
Internal MAC Transmit Errors	Number of excessive deferrals. An excessive deferral indicates that during the previous transmission the deferral time was greater than 2.46 ms and the transmission was aborted.

Sample Display – show csmacd transmit

```
CSMACD Module Transmit Errors:
------------------------------

                                                                  Internal MAC
                   Late       Excessive  Frames     Underflow  Transmit
Slot Conn Circuit  Collision  Collision  Too Long   Errors     Errors
---- ---- -------- ---------- ---------- ---------- ---------- -------------
   2    1 E21               0          0          0          0             0
   5    1 E51               0          0          0          0             0
   5    2 E52               0          0          0          0             0

    3 entries in table.
```

version

Displays the current version number and modification date of the *csmacd.bat* script.

Sample Display – show csmacd version

```
csmacd.bat Version: 1.14 Date: 7/25/95.
```

show dcmmw

The **show dcmmw** *<option>* commands display information about an installed N11 Data Collection Module (DCM) option on a Bay Networks 8-Port Access Node Hub (ANH).

The DCM board contains Flash memory for its own boot image and configuration file. To communicate with software on the DCM board, the ANH uses a special software subsystem on the ANH baseboard, DCM *middleware* (DCMMW). For information on configuring and managing the DCM software subsystem with Site Manager, refer to *Connecting AN and ANH Systems to a Network.*

The DCM board gathers statistics through promiscuous monitoring of packets on an Ethernet segment. It then stores the information according to the RMON MIB specification. You use Optivity® LAN or a third-party SNMP-based network management software (NMS) application to view and work with these statistics. You can use Technician Interface **set** and **get** commands to view collected statistics.

Caution: *The Technician Interface does not verify that the value you enter for a parameter is valid. Entering an invalid value using* **set** *and* **get** *commands can corrupt your configuration.*

In addition, limit the use of Technician Interface queries to view RMON statistics while running an RMON NMS application. Too many queries could overload system buffers with RMON data, causing the system to restart.

For information on the Bay Networks implementation of RMON services in the 8-Port ANH, refer to *Configuring SNMP, BOOTP, DHCP, AND RARP Services* and the user guide for Optivity LAN software. For detailed information on RMON topics, refer to the Remote Network Monitoring MIB, RMON RFC 1757.

The **show dcmmw** command supports the following subcommand options:

base	dcm

base

Displays the base record information for the DCM software subsystem. The table includes the following information:

Application	DCMMW (DCM middleware) software subsystem.
State	State of the DCMMW software: Enabled or Disabled.
BootOption	Indicates whether DCM boots from the boot image in its Flash memory (LOCAL), or downloads an image in the DCM board's shared DRAM (DOWNLOAD).
ImgSaveMode	Indicates whether DCM saves the boot image in shared memory to the DCM board Flash memory (SAVE), or leaves it in RAM to be lost at the next boot (NO_SAVE).
CfgOption	Indicates whether DCM uses the configuration information in its Flash memory (LOCAL), or a configuration file in the DCM board's shared DRAM (SHARED).
CfgSaveMode	Indicates whether DCM saves configuration information currently in RAM to the DCM board flash memory (WRITE), or leaves it in RAM to be lost at the next boot (NO_WRITE).
RMONMaxHost	Indicates the maximum number of host address entries in the RMON Host Control table. This limit changes according to the amount of memory available to DCM. If the table reaches the maximum value, DCM deletes entries based on an LRU (least recently used) algorithm.
RMONDfltHost	Indicates whether DCM sets up the RMON Default Host table at every boot (ENABLED), or lets an RMON application set up the table (DISABLED). Some RMON network management applications expect the DCM to set up a host configuration. Others enable and disable their own configurations during normal operations. Note that the DCM allows only one host table.
RMONDfltMtrix	Indicates whether DCM sets up the RMON Matrix Control table at every boot (ENABLED), or lets an RMON application set up the table (DISABLED). Some RMON network management applications expect the DCM to set up a matrix configuration. Others enable and disable their own configurations during normal operations. Note that the DCM allows only one matrix table.

Sample Display – show dcmmw base

```
DCMMW Base Information
----------------------

 Application   State
 ----------- ---------
 DCMMW         Enabled


 BootOption  ImgSaveMode    CfgOption     CfgSaveMode
 ----------  -----------    ---------  -----------
    LOCAL          SAVE        LOCAL       WRITE

 RMONMaxHost RMONDfltHost RMONDfltMtrix
 ----------- ------------ -------------
     500         Enabled     Enabled
```

dcm

Displays information about the current state of the DCM board. The table includes the following information:

DCM MemSize	Indicates the size, in bytes, of the DCM board's Flash memory.
DCM HWRev	Indicates the revision of the DCM firmware.
DCM AgntImageVer	Indicates the version of the Agent Image software.
RMON Hosts Configured	Indicates the maximum number of hosts in the RMON Default Host table. (Default is 500)
RMON Agent	Indicates whether an RMON agent application is Active or Not Active.

Sample Display – show dcmmw dcm

```
DCM Information
---------------

 DCM MemSize    DCM HWRev     DCM AgntImageVer
-------------    ---------    ------------------
   2097152          a-8E        V1.3.0-4A

 RMON Hosts Configured   RMON Agent
----------------------- ------------
     500                    ACTIVE
```

show decnet

The **show decnet** *<option>* commands display configuration, state, and statistical information about DECnet Phase IV services. For detailed information on the Bay Networks implementation of DECnet, refer to *Configuring DECnet Services*.

The **show decnet** command supports the following subcommand options:

adjacency	enabled
alerts	node routes [find <area.node>]
area routes [find <area>]	static adjacency
base	stats [hello | update | error]
circuits [<circuit name>]	traffic filters [<circuit name>]
designated router	version
disabled	

adjacency

Displays attributes of the adjacency table. An adjacency is a directly connected circuit-neighbor pair toward which the router forwards packets. The table includes the following information:

Circuit	Name of the circuit the adjacency is on.
Adjacency Address	Destination address; a valid DECnet address.
State	State of the adjacency: UP or INIT (initializing).
Adjacency Type	Adjacency type as follows: • *AREA* – Adjacency is a level 2 router. • *ROUTING IV* – Adjacency is a level 1 router. • *NONROUTING IV* – Adjacency is an end node.
Class	Adjacency's class: *DYNAMIC* or *STATIC*.

Sample Display – show decnet adjacency

```
DECnet Adjacency Information
----------------------------
              Adjacency          Adjacency
Circuit  Address  State       Type      Class
------   -------- -----    ----------  --------
E21           3.2    UP    AREA        DYNAMIC
E41           2.2    UP    AREA        DYNAMIC

Total of  2 Adjacency(s)
```

alerts

Displays all circuits configured as enabled but not currently up. Use this command to display information about the physical circuits. State in this case is Down.

Sample Display – show decnet alerts

```
DECnet Circuits
-----------------

Circuit   State   DECnet Address
-------- -------- --------------
E21      Down               3.1

1 Entries found.
```

area routes [find *<area>*]

Displays attributes of the level 2 routing table. You can use the following option to display area routes for a specific area.

find *<area>*	where *<area>* is the number of a specific area. Use this option to search through the routing table and display information about the specified area number or display an empty table if the area number does not exist.

The table includes the following information:

Area	Route's area number.
Circuit	Circuit that the route uses. If the node or area is directly connected within a router, this column shows two dashes (--).
State	State of the route, as follows: • *Reachable* – Destination area is reachable. • *Unreachable* – The destination area is unreachable, in which case you should display the adjacency that corresponds to the next hop.
Cost	Cost of the route to the destination area.

Hops	Number of hops to the destination area.
Next Node	Next address for getting to the area.
Type	Adjacency's class: DYNAMIC or STATIC.

Sample Display – show decnet area routes

```
DECnet Area (Level II Routing) Information
------------------------------------------

  Area  Circuit     State     Cost    Hops   Next Node   Type
 ------ -------- ----------- ------ -------- --------- --------
     12 --       Reachable        0        0 0.0       DYNAMIC
     13 S41      Reachable       10        1 13.12     DYNAMIC

       2 Level II Route(s) in table.
```

Sample Display – show decnet area routes

```
DECnet Node (Level I Routing) Information
-----------------------------------------

 Area Node ID Circuit  Address    Cost     Hops   Next Node   Type
 ---- ------- -------- -------- -------- -------- --------- --------
   12      12 --          12.12        0        0       0.0 DYNAMIC

       1 Level I Route(s) in table.
```

base

Displays state information in the DECnet base record. The base record controls DECnet for the router. State is Down, Init (initializing), Not Present (enabled but not yet started), or Up.

Sample Display – show decnet base

```
DECnet Base Record Information
------------------------------

 Protocol           State
 --------         ---------
 DECNET           Up
```

circuits [*<circuit name>*]

Displays the attributes of all DECnet circuits or a specified DECnet circuit configured on the router. The table includes the following information:

Circuit	Name of the circuit.
State	State of the circuit as follows: • *Up* – Interface is operating. • *Disable* – User has manually disabled the interface. • *Down* – Interface is malfunctioning. • *INIT* – Interface is initializing. • *Not Present* – Interface is not operating because another subsystem is malfunctioning. You should check the state of the physical circuit.
Area	DECnet Phase IV Area ID for this circuit; the first six bits of a DECnet Phase IV node address.
Node ID	DECnet Phase IV Node ID for this circuit; the last ten bits of a DECnet Phase IV node address.
Type	Media type of this circuit; for example, Ethernet.

Sample Display – show decnet circuit

```
DECnet Circuit Information
---------------------------

Circuit    State   Area     Node ID    Type
--------- --------- ----     -------  --------
E21       Up           3           1  Ethernet
E41       Up           1           1  Ethernet
```

Sample Display – show decnet ciruit e21

```
DECnet Circuit Information
---------------------------

Circuit    State   Area     Node ID    Type
--------- --------- ----     -------  --------
E21       Up           3           1  Ethernet
```

designated router

Displays information about the designated router for each circuit. The table includes the following information:

Circuit	Name of the circuit this router is on.
Designated Router	Address of the designated router on this circuit.
Priority	Place of this router for becoming the designated router on this circuit. The value ranges from 1 through 127. The default value is 64.
Exec Cost	Relative cost of routing over the circuit. The value ranges from 1 through 63. The default value is 10.
Circuit Address	DECnet address of the circuit.

Sample Display – show decnet designated router

```
DECnet Designated Router Information
------------------------------------

         Designated           Exec   Circuit
Circuit    Router   Priority  Cost   Address
-------- ---------- -------- ------- --------
E21      3.2              64      10 3.1
E41      1.1              64      10 1.1
```

disabled

Displays all the circuits whose state is disabled. The table includes the name of the circuit and its DECnet address.

Sample Display – show decnet disabled

```
DECnet Circuits
-----------------

 Circuit   State   DECnet Address
 -------- -------- --------------
 E21      Disabled            3.1

1 Entries found.
```

enabled

Displays all the circuits whose state is enabled. State is Down, INIT (initializing), Not Present (not yet started), or Up.

Sample Display – show decnet enabled

```
DECnet Circuits
-----------------

 Circuit   State   DECnet Address
-------- -------- --------------
 E21      UP                 3.1

1 Entries found.
```

node routes [find *<area.node>*]

Displays attributes of level 1 routing tables or a specific address.

find *<area.node>*	where *<area.node>* is an optional DECnet address. Using this option limits the display to a specified destination address.

The displays include the following information:

Area	DECnet Phase IV Area ID for this circuit; the first six bits of a DECnet Phase IV node address.
Node ID	DECnet Phase IV Node ID for this circuit; the last ten bits of a DECnet Phase IV node address.
Circuit	Circuit name of the node.
Address	DECnet address of the node about which routing information is contained in this level 1 routing table.
Cost	Total cost of the path to the destination node.
Hops	Total number of hops in the path to the destination node.
Next Node	Next hop address that the route uses to get to the destination node.

Sample Display – show decnet node routes

```
DECnet Node (Level I Routing) Information
-----------------------------------------

 Area Node ID Circuit  Address    Cost     Hops   Next Node
 ---- ------- -------- -------- -------- -------- ---------
    1       1 #3       1.1             0        0 0.0
    3       1 #3       3.1             0        0 0.0
    3       2 E21      3.2            10        1 3.2

       3 Level I Route(s) in table.
```

Sample Display – show decnet node routes find 3.2

```
DECnet Node (Level I Routing) Information
-----------------------------------------

 Area Node ID Circuit  Address    Cost     Hops   Next Node
 ---- ------- -------- -------- -------- -------- ---------
    3       2 E21      3.2            10        1 3.2

       1 Entries found.
```

static adjacency

Displays all the static adjacencies configured. The table includes the following information:

Circuit	Circuit name where static adjacency is configured.
Area	Area part of this static adjacency's DECnet address.
Node ID	Node ID part of this static adjacency's DECnet address.
Mode	Adjacency's operating state as follows: • *Disabled* – User has manually disabled the static adjacency. • *Enabled* – Static adjacency is enabled.

Adjacent Addr	DECnet Phase IV address of the adjacent node.
Destination MAC	Specifies the destination MAC address of the static adjacency if the circuit type is ATM, Frame Relay, or SMDS.

Sample Display – show decnet static adjacency

```
DECnet Static Adjacency Information
-----------------------------------

Circuit  Area  Node ID    Mode   Adjacent Addr  Destination MAC
-------  -----  -------- -------- ------------- -------------------
E21          2        1  Enabled           2.1               (nil)
```

stats [**hello** | **update** | **error**]

Displays statistics tables for each circuit. The information displayed is specific to the **stats** subcommand entered. The **stats** command displays the following items for each circuit:

Packets Received	Number of transit packets received.
Packets Sent	Number of transit packets sent.
Packets Dropped	Number of dropped packets.
Hello Router Received	Number of hellos received.
Hello Router Sent	Number of hellos sent.
Hello End Node Received	Number of end node hellos received.
Hello End Node Sent	Number of end node hellos sent.

Sample Display – show decnet stats

```
DECnet Statistics
-----------------
                                        Hello    Hello    Hello     Hello
         Packets   Packets  Packets   Router   Router  End Node  End Node
Circuit  Received    Sent    Dropped Received   Sent   Received   Sent
-------  -------- --------  ------- -------- -------- -------- --------
E21             0        0        0      431      429        0        0
E41             0        0        0      433      435        0      433
```

stats hello Displays the number of hellos sent and received on each circuit.

The table includes the following items for each circuit:

Sent Router	Number of router hellos sent.
Received Router	Number of router hellos received.
Send Endnode	Number of end node hellos sent.
Received Endnode	Number of end node hellos received.

Sample Display – show decnet stats hello

```
DECnet Hello Statistics
-----------------------

           Sent   Received   Sent   Received
Circuit   Router   Router   Endnode Endnode
-------  -------- --------  ------- --------
E21           430      432        0        0
E41           436      434      434        0
```

stats update Displays the counters for update packets sent and received on each circuit as follows:

Sent Level 1	Number of level 1 updates sent.
Received Level 1	Number of level 1 updates received.
Sent Level 2	Number of level 2 updates sent.
Received Level 2	Number of level 2 updates received.

Sample Display – show decnet stats update

```
DECnet Routing Update Statistics
--------------------------------
             Sent    Received     Sent     Received
Circuit    Level 1    Level 1   Level 2    Level 2
-------  ---------- ---------- ---------- ----------
E21              82         80         84         40
E41              80         78         88         40
```

stats errors Displays the error counters for each circuit as follows:

Aged Out	Number of aged packets lost.
Node Unreachable	Number of node unreachable packets lost.
Node Out of Range	Number of node out-of-range packets lost.
Oversized Packets	Number of oversized packets lost.
Format error	Number of packet format errors.
Total Dropped	Number of dropped packets.

Sample Display – show decnet stats error

```
DECnet Error Statistics
-----------------------

         Aged     Node          Node     Oversized  Format     Total
Circuit  Out   Unreachable Out of Range   Packets    Error    Dropped
-------  ----- ----------- ------------- --------- --------- ---------
E21          0           0             0         0         0         0
E41          0           0             0         0         0         0
```

traffic filters [*<circuit name>*]

Displays attributes of filters configured on each circuit or a specified circuit. The table includes the following information:

Circuit	Name of the circuit containing the traffic filter.
Status	Status of the circuit as follows: • *Active* – Filtering rule is in use. • *Inactive* – Filtering rule is not in use. • *Error* – Application detected an error in the filtering rule.
Matches	Number of packets received that match this rule.
Rule	Rule identifier.

Sample Display – show decnet traffic filters

```
DECnet Traffic Filter Information
---------------------------------

Circuit    Status  Matches   Rule
-------   -------  -------  -------
E41        Active        0        1
```

Sample Display – show decnet traffic filters e41

```
DECnet Traffic Filter Information
---------------------------------

Circuit    Status  Matches   Rule
-------   -------  -------  -------
E41        Active        0        1
```

version

Displays the current version and modification date of the *decnet.bat* script.

Sample Display – show decnet version

```
DECNET.bat Version: 1.13 Date: 10/31/94.
```

show dls

The **show dls** *<option>* commands display configuration, state, and statistical information about Data Link Switching (DLSw) services. For detailed information on the items displayed, refer to *Configuring DLSw Services*.

The **show dls** command supports the following subcommand options:

alerts	local
base	mac
circuits [<circuit name>]	netbios
configuration	peers
connections	saps
disabled	slots
enabled	version
filters	

alerts

Displays all enabled DLSw circuits whose state is not up. The table does not show configured DLSw circuits that have been disabled.

Circuit	The name of the circuit on which DLSw is running.
State	State of the circuit, which is Down.
Bridge ID	Identification number of the Source Routing Bridge.
LAN ID	Identification number of the Internal LAN.
DLC Type	The type of circuit on which DLSw is running.

Sample Display – show dls alerts

```
DLS Circuits
------------

 Circuit     State     Bridge ID  LAN ID  DLC Type
 -------- ----------- ----------- ------ ----------
 O11.llc2 UP                  0xF  0x278 LLC SRB
```

base

Displays information on the DLSw base record state. The base record controls DLSw for the entire system.

State is any of the following.

Disabled	User has manually disabled DLSw.
Down	DLSw is malfunctioning.
Init	DLSw is initializing on the system.
Not Present	DLSw is configured but has not started.
Up	DLSw is operating on the system.

TCP Window	Maximum amount of DLSw data that local or remote TCP entities can send before requiring an acknowledgment or receive before acknowledging. This number is in octets.
Uncfg Peer	Specifies the current accept or reject unconfigured peers setting.
Int Ring	Specifies the bridge's internal LAN ID.
Bridge	Identification number of the Bridge.
Virt Ring	Virtual ring identifier for the network.
Virt MTU	Specifies a Maximum Transmission Unit (MTU) size for frames sent from local, LAN-attached systems to systems on remote LANs. The smallest MTU size supported among all remote LANs in your configuration determines the maximum value of the Virtual Ring MTU parameter for the local router.
ProtoPriority	Enabled or disabled protocol prioritization for configured DLSw peers setting.
PPriUnCfgPeer	Enabled or disabled protocol prioritization for unconfigured DLSw peers setting.
PkgMaxSize	Specifies the maximum package size (in bytes) when sending multiple DLSw frames in a single TCP frame for transmission over a wide area network.
MAC Age	Specifies the maximum number of seconds that inactive MAC addresses can exist in the MAC-to-DLSw Peer (mapping) cache.
NB Age	Specifies the maximum number of seconds that inactive NetBIOS names can exist in the NetBIOS-to-DLSw Peer (mapping) cache.
WanKeepAlive	Specifies the time interval after which the router sends a DLSw keepalive message to inactive, established TCP connections to verify that the connection is still available.
PkgTimeOut	Specifies the time interval (in milliseconds) to delay a package before sending it to TCP.

Sample Display – show dls base

```
DLS Base Information
--------------------

    State    TCP Window Uncfg Peer  Int Ring Bridge Virt Ring Virt MTU
 ----------- ---------- ----------- -------- ------ --------- --------
 Up          8000       Accept         0x154    0xF      0x64     1532

ProtoPriority PPriUnCfgPeer PkgMaxSize
------------- ------------- ----------
Enabled       Enabled             1532

Timers   MAC Age  NB Age  WanKeepAlive  PkgTimeOut
(Sec):   -------- ------- ------------- -----------
           300     300            60          1
```

circuits [*<circuit name>*]

Displays the state of DLSw on all circuits or a specific circuit. State is either Up or Down; these are the only possible states for DLSw on the circuit. For definitions of the remaining columns, see the **alerts** command.

Sample Display – show dls circuit

```
DLS Circuits
------------

 Circuit     State     Bridge ID  LAN ID  DLC Type
 -------- ----------- ----------- ------ ----------
 O11.llc2 Down                0xF  0x278 LLC SRB
 S12      Up                  0xF    0x0 SDLC
```

configuration

Displays the configuration information for the DLSw base record, circuits, slots, peers, SAPs, MACs, NetBIOS names, filters, and SDLC local devices, Refer to the appropriate **show dls** command for definitions.

connections

Displays connections currently established between two stations using DLSw.

Circuit	Name of the circuit for the DLSw connection.
Status	Status of the connection. In this case the status is always Connected.
Destination MAC/Source MAC	MAC destination address on the top line and the source MAC address on the bottom line.
Remote IP/local IP	Remote internet (IP) address on the top line and the local IP address on the bottom line.
Tx/Rx - IFrames	The number of IFrames sent and received on this circuit.
Tx/Rx - RNRs	The number of Receiver Not Ready frames sent and received on this circuit.

Sample Display – show dls connections

```
DLSw Connections
----------------

                        Destination MAC/ Remote IP/    Tx-IFrames/ Tx-RNRs/
Circuit     Status        Source MAC     local IP      Rx-IFrames  Rx-RNRs
-------- ----------- -----------------   ------------ ----------- --------
S12      Established  40-00-00-03-17-22 154.154.154.154       0        0
                      40-00-00-00-00-D1 78.78.78.78          0        0
```

disabled

Displays all DLSw circuits that the user has manually disabled. In this case, State is Disabled. For information on the remaining column definitions in the display, see the **alerts** command.

Sample Display – show dls disabled

```
DLS Circuits
------------

 Circuit     State     Bridge ID  LAN ID  DLC Type
 -------- ----------- ----------- ------ ----------
 O11.llc2 Disabled            0xF  0x278 LLC SRB
```

enabled

Displays all DLSw circuits currently with their current state enabled. State is Down, INIT (initializing), Not Present (not yet started), or Up. For information on the remaining column definitions in the display, see the **alerts** command.

Sample Display – show dls enabled

```
DLS Circuits
------------

 Circuit     State     Bridge ID  LAN ID  DLC Type
 -------- ----------- ----------- ------ ----------
 O11.llc2 Down                0xF  0x278 LLC SRB
 S12      Up                  0xF    0x0 SDLC
```

filters

Displays the currently configured DLSw traffic filters.

Filter Name	Name of the configured traffic filter.
Status	Status of the connection, either up or down.
Filter Hits	The number of successful criteria matches on this filter.
Rule	The current filter sequence number.
Circuit	The configured circuit number on which the filter is active.

Sample Display – show dls filters

```
DLSw Traffic Filters
--------------------

  Filter Name     Status    Filter Hits     Rule  Circuit
---------------  ------  ----------------  ----  -------
Drop_NB_storm     UP                 1230     1        3

Accept_10Macs     UP                  440     2        3
```

local

Displays the currently configured DLSw local devices .

Circuit	Indicates the circuit name for the DLSw connection.
Address	Indicates the address of this link station.
State	Specifies the current state of the local device: up, down, disabled, not present, or init.
Destination MAC Source MAC	Specifies the MAC destination address on the top line and the source MAC address on the bottom line. The Destination MAC identifies the Token Ring or Ethernet host the local device will reach via SDLC services.The Source MAC specifies the source MAC address of an emulated Token Ring endstation for this device.
DSAP	Identifies the destination service access point (SAP) Token Ring or Ethernet host the local device will reach via SDLC services.

SSAP	Identifies the source SAP of an emulated Token Ring or Ethernet endstation for this device.
PU Type	Specifies the type of the XID-sending node. This parameter is used with the IDBLOCK, IDNUM, and XID Format parameters to determine the station exchange identification (XID) value.
IDBLOCK	Specifies the block number, which must match the host's IDBLOCK parameter value that identifies incoming connection requests. This parameter is used with the PU Type, IDNUM, and XID Format parameters to determine the station exchange identification (XID) value.
IDNUM	Specifies the ID number, which must match the host's IDNUM parameter value that identifies incoming connection requests. This parameter is used with the PU Type, IDBLOCK, and XID Format parameters to determine the station exchange identification (XID) value.

Sample Display – show dls local

```
DLSw Local SDLC Devices
-----------------------

                          Destination MAC/   DSAP/
 Circuit  Addr    State    Source MAC         SSAP    PU Type   IDBLOCK IDNUM
 -------- ---- ---------- ------------------ ----- ---------- ------- -----
 S12      0xD1 UP         40-00-00-03-17-22      4 Type 2.0        017 A004A
                          40-00-00-00-00-D1      4
```

mac

Displays the MAC address of a destination link station , its IP address, and the current number of CANUREACH queries.

Destination MAC	The Destination MAC identifies the Token Ring or Ethernet host the local device will reach via SDLC services.
Remote IP Address	The IP address of the destination link station.
CANUREACH MAC Queries	Specifies the current number of canureach messages sent to a remote DLSw peer.

Sample Display – show dls mac

```
DLSw MAC Entries
----------------

     Destination          Remote          CANUREACH
     MAC Address        IP Address       Mac Queries
 ------------------ ------------------ ----------------
 40-00-00-03-17-22  154.154.154.154                167
```

netbios

Displays the names and IP addresses of remote NetBIOS peers, and the current number of queries to each remote NetBIOS peer.

Remote Station Name	The name of the NetBIOS peer.
Remote IP Address	The IP address of the NetBIOS peer.
NETBIOS_NQ Queries	The current number of NetBIOS queries sent to the remote NetBIOS peer.

Sample Display – show dls netbios

```
DLSw Netbios Name Entries
-------------------------

      Remote           Remote         NETBIOS_NQ
   Station Name      IP Address        Queries
 ---------------- ---------------- ----------------
 CHEERS           154.154.154.154  1
```

peers

Displays the IP addresses of all configured DLSw peers and the state of each. State is Down, Init (initializing), Not Present (not started), or Up.

Sample Display – show dls peers

```
DLS Peers
--------

   Peer           Peer
   State       IP Address
----------- ----------------
Up          200.200.201.100
```

saps

Displays all session access points (SAPs) registered with the LLC SAP services and the credit of each. SAP Credit is the number of LLC2 frames that DLSw and the local LLC2 circuit can exchange.

Sample Display – show dls saps

```
DLS Saps
--------

       SAP
SAP  Credit
---- -------
  4      10
  8      10
 12      10
240      10
```

slots

Displays the slot number, IP address, and memory information that corresponds on the slot to DLSw.

Slot	Specifies the slot number you want to associate with the IP interface address you reserved for that slot.
Slot IP Address	Specifies an IP address associated with a specific DLSw peer (slot) in the router. TCP uses this IP address for connections associated with that slot.
Current Memory	The current memory consumption on the router.
Max Mem Allowed	The maximum memory allocated on the slot.
HiWater	The maximum memory on the router.

Sample Display – show dls slots

```
DLSw Slots
----------

 Slot Slot IP Address  Current Memory Max Mem Allowed HiWater
 ---- ---------------  -------------- --------------- -------
    1 78.78.78.78      0              All of it       0
```

version

Displays the current version of the *dls.bat* script.

Sample Display – show dls version

```
DLS.bat Version: 1.14 Date: 9/12/95.
```

show ds1e1

The **show ds1e1** *<option>* commands display configuration, status, and statistical information about the MCT1 and MCE1 drivers. For detailed information about DS1E1 parameters, refer to the section on configuring MCT1 and MCE1 circuits in *Configuring Line Services*.

The **show ds1e1** command supports the following subcommand options:

alerts	sample [<period in seconds>] [circuit <circuit name>]
base [circuit <circuit name>]	stats [circuit <circuit name>]
clock	system errors [circuit <circuit name>]
disabled	t1framer [current] [total] [interval [<interval number>]]
e1framer [current] [total] [interval [<interval number>]]	t1port
e1port	timeslots [circuit <circuit name>]
enabled	transmit errors [circuit <circuit name>]
fdl [ansi1 | ansi2 | att1 | att2]	version
receive errors [circuit <circuit name>]	

alerts

Displays all DS1E1 logical lines that are enabled but not up. Use this display to identify the logical lines that are not working. The table includes the following information:

Slot	Slot identifier.
Conn	Connector identifier.
Log Line	Logical line number for this line.
Line Type	Type of line in use: Unframed T1, ESF, SF, E1, E1CRC, E1MF, E1CRCMF, or Unframed E1.
Circuit	Name of the circuit associated with this line.
State	State of the logical line as follows: Up, Down, Init (initializing), LMI Wait, Loopback, Dying, Dead, or Not Pres (not present).
Line Number	Line number for this line; assigned during configuration. This line number uniquely identifies this interface and is not equal to any of the line numbers assigned to logical lines configured through this port.
WAN Protocol	WAN protocol enabled on this interface: ATM, FRM RLAY (Frame Relay), LAPB, PASSTHRU, PPP, SMDS, WF STND (Wellfleet Standard), or X.25. Wellfleet Standard is a proprietary protocol used between two Bay Networks routers. Based on the CCITT HDLC (High-level Data Link Control) protocol, Wellfleet Standard provides LLC1 (connectionless, datagram) service.
Rate Adapt	Rate adaption — the number of bits and their positions within the timeslot, as follows: • *64K* – Uses all 8 bits in the timeslot. • *56K MSB* – Uses 7 of the 8 bits in the timeslot; does not use the most significant bit. • *56K LSB* – Uses 7 of the 8 bits in the timeslot; does not use the least significant bit.

Loc Adr	This parameter is used only when the logical line HDLC service is LLC1. It is a value in the range 1 through 7 in the address field of the HDLC packet. 1 indicates DCE. 3 indicates DTE. All other numbers indicate Explicit. Explicit indicates that the user has selected the address.
Rem Adr	This parameter is used only when the logical line HDLC service is LLC1. It is a value in the range 1 through 7 in the address field of the HDLC packet. 1 indicates DCE. 3 indicates DTE. All other numbers indicate Explicit. Explicit indicates that the user has selected the address.

Sample Display – show ds1e1 alerts

```
DS1E1 Logical Lines on Alert:
-----------------------------

          Log  Line                          Line     WAN      Rate  Loc Rem
Slot Conn Line Type   Circuit    State     Number  Protocol  Adapt  Adr Adr
---- ---- ---- ---- ---------- -------- --------- -------- ------- --- ---

Found     0 matches out of     3 entries in table.
```

base [**circuit** *<circuit name>*]

Displays the base level information for all DS1E1 circuits or a specific circuit. For definitions of the columns in the table, see the **alerts** command. In addition to the states listed under the **alerts** command, State can also be Up.

Sample Display – show ds1e1 base

```
DS1E1 Logical Lines:
--------------------

          Log  Line                          Line     WAN      Rate  Loc Rem
Slot Conn Line Type   Circuit    State     Number  Protocol  Adapt  Adr Adr
---- ---- ---- ---- ---------- -------- --------- -------- ------- --- ---
   2    1    1  T1  Boston     Up        10902101 WF STND  56K-LSB   7   7
   2    1    2  T1  Chicago    Up        20902101 WF STND  56K-LSB   7   7
   2    2    1  T1  Seattle    Up        10902102 WF STND  56K-LSB   7   7

    3 entries in table.
```

Sample Display – show ds1e1 base circuit Boston

```
DS1E1 Logical Lines:
--------------------

          Log  Line                          Line     WAN      Rate  Loc Rem
Slot Conn Line Type   Circuit    State     Number  Protocol  Adapt  Adr Adr
---- ---- ---- ---- ---------- -------- --------- -------- ------- --- ---
   2    1    1  T1  Boston     Up        10902101 WF STND  56K-LSB   7   7

Found     1 match out of     3 entries in table.
```

clock

Displays the DS1E1 clock status. The table includes the following information:

Slot	Slot identifier.
Current clock	Clock source currently in use.
Primary clock	Primary source for transmit timing.
Secondary clock	Secondary source for transmit timing.
External clock	Indicates whether the external clock is operational.

Loop1 clock	Indicates whether the timing source from the first port is operational.
Loop2 clock	Indicates whether the timing source from the second port is operational.

Sample Display – show ds1e1 clock

```
DS1E1 Clock Status:
-------------------
       Current    Primary   Secondary   External     Loop1       Loop2
Slot    clock      clock      clock      clock       clock       clock
---- ---------- ---------- ---------- ----------- ----------- -----------

    0 entries in table.
```

disabled

Displays DS1E1 circuits that a user has manually disabled. For definitions of the columns in the table, see the **alerts** command. In this case, State is Disabled.

Sample Display – show ds1e1 disabled

```
DS1E1 Logical Lines Disabled:
-----------------------------

          Log  Line                          Line     WAN      Rate  Loc Rem
Slot Conn Line Type   Circuit    State     Number  Protocol  Adapt  Adr Adr
---- ---- ---- ---- ---------- -------- --------- -------- ------- --- ---

Found     0 matches out of     3 entries in table.
```

e1framer [**current**] [**total**] [**interval** [*<interval number>*]]

Displays error information about the E1 framer.

Sample Display – show ds1e1 e1framer current

```
E1 Current Framer Statistics
----------------------------

             Bipolar   CRC-4   Far End  Loss of  Loss of   Alarm   Remote
           Violation  Error    Block   Frame    Signal   Indicat  Alarm
Slot Conn   Counts    Counts   Errors  Failures Failures Failures Failures
---- ---- --------- -------- -------- -------- -------- -------- --------
   3    1         0        0        0        0        0        0        0
   3    2         0        0        0        0        0        0        0

    2 entries in table.
```

Sample Display – show ds1e1 e1framer total

```
E1 Total Framer Statistics
--------------------------

             Num   Bipolar   CRC-4   Far End  Loss of  Loss of   Alarm   Remote
             Vld  Violation  Error     Block  Frame    Signal   Indicat  Alarm
Slot Conn Intv  Counts    Counts   Errors  Failures Failures Failures Failures
---- ---- ---- --------- -------- -------- -------- -------- -------- --------
   3    1   96         0        0        0        0        0        0        0
   3    2   96     65580    15656        0        0        0        0        0

    2 entries in table.
```

Sample Display – show ds1e1 e1framer interval

```
E1 Interval Framer Statistics
-----------------------------

                Bipolar   CRC-4    Far End Loss of  Loss of   Alarm   Remote
                  Violation  Error    Block   Frame    Signal   Indicat  Alarm
Slot Conn Intv  Counts    Counts   Errors  Failures Failures Failures Failures
---- ---- ---- --------- -------- -------- -------- -------- -------- --------
   3    1    1         0        0        0        0        0        0        0
   3    1    2         0        0        0        0        0        0        0
   3    1    3         0        0        0        0        0        0        0
   3    1    4         0        0        0        0        0        0        0
   3    1    5         0        0        0        0        0        0        0
   3    1    6         0        0        0        0        0        0        0
   3    1    7         0        0        0        0        0        0        0
   3    1    8         0        0        0        0        0        0        0
   3    1    9         0        0        0        0        0        0        0
   3    1   10         0        0        0        0        0        0        0
   3    1   11         0        0        0        0        0        0        0
   3    1   12         0        0        0        0        0        0        0
   3    1   13         0        0        0        0        0        0        0
   3    1   14         0        0        0        0        0        0        0
   3    1   15         0        0        0        0        0        0        0
   3    1   16         0        0        0        0        0        0        0
   3    1   17         0        0        0        0        0        0        0
   3    1   18         0        0        0        0        0        0        0

18 entries in table.
```

e1port

Displays E1 port information.

Sample Display – show ds1e1 e1port

```
E1 Port Status:
---------------
                          BERT    Line
Slot Conn   State     MTU  Mode  Type    Coding  I-Bit
---- ---- ----------- ---- ---- --------- ------ --------
   3    1 Up          1600 Off  E1-CRC-MF HDB3   DISABLED

    1 entry in table.
```

enabled

Displays DS1E1 modules that a user has manually enabled. For definitions of the columns in the table, see the **alerts** command. State can also be Up.

Sample Display – show ds1e1 enabled

```
DS1E1 Logical Lines Enabled:
----------------------------

          Log  Line                          Line     WAN      Rate  Loc Rem
Slot Conn Line Type   Circuit    State     Number  Protocol  Adapt  Adr Adr
---- ---- ---- ---- ---------- -------- --------- -------- ------- --- ---
   2    1    1  T1  Boston     Up        10902101 WF STND  56K-LSB   7   7

Found     1 match out of     3 entries in table.
```

fdl [**ansi1** | **ansi2** | **att1** | **att2**]

Displays the Facility Data Link (FDL) error statistics in both ANSI-403 and AT&T-54016 modes.

ansi1	Displays only the first half of ANSI-403 mode FDL errors.
ansi2	Displays only the second half of ANSI-403 mode FDL errors.
att1	Displays only the first half of AT&T-54016 mode FDL errors.
att2	Displays only the second half of AT&T-54016 mode FDL errors.

The tables display the following information:

DS1E1 Facility Data Link (FDL) Errors (first half) — ANSI-403 mode:

Slot	Slot identifier.
Conn	Connector identifier.
CRC Counts	Number of CRC-6 errors. The FDL calculates CRC-6 on the incoming data. Each time the calculation does not match the CRC-6 code word in the incoming enhanced super frame (ESF) data stream, this count increments.
BPV Counts	Number of bipolar (line code) violations. The FDL counts bipolar violations whether its synchronizer is in sync or not. If the FDL is set to receive B8ZS code words, it does not count these code words as bipolar violations.
OOF Counts	Number of out-of-frame errors. An out-of-frame error occurs whenever two or more framing bits out of six in the Framing Pattern Sequence (FPS) are incorrect. This event causes the FDL to resynchronize to the incoming data stream.
FE Counts	Number of individual bit errors in the FPS.
ES Counts	Number of Errored Seconds (ES). An ES is any one-second time interval with either a frame bit error or a CRC-6 error.

DS1E1 Facility Data Link (FDL) Errors (second half) — ANSI-403 mode:

Slot	Slot identifier.
Conn	Connector identifier.
SES Counts	Number of Severely Errored Seconds (SES). An SES is any 1-second time interval with an OOF error or more than 320 CRC-errors.
UAS Counts	Number of Unavailable Seconds (UAS). A UAS is the number of seconds between ten consecutive SES events (inclusive) and ten consecutive non-SES events (exclusive). For more information, refer to the 1989 ANSI T1.403 specification (Carrier-to-Customer installation DS1 Metallic Interface).
PRMES Counts	Number of Errored Seconds reported in the Performance Report Messages (PRMs).
PRMSES Counts	Number of Severely Errored Seconds reported in the PRMs.
PRME Counts	Number of PRMs received in error. “In error” means that the calculated CRC does not match the incoming CRC word.

DS1E1 Facility Data Link (FDL) Errors (first half) — AT&T-54016 mode:

Slot	Slot identifier.
Conn	Connector identifier.
Valid Intervals	Number of previous time intervals for which valid data was collected. The value is 96 unless the interface was brought on line within the last 24 hours. In this case, the value is the number of complete 15-minute intervals since the interface has been on line.
Total ESs	Number of Errored Seconds that a DS1 interface encountered in the previous 24-hour interval.
Total SESs	Number of Severely Errored Seconds that a DS1 interface encountered in the previous 24-hour interval.
Total SEFs	Number of Severely Errored Framing Seconds that a DS1 interface encountered in the previous 24-hour interval.
Total UASs	Number of Unavailable Seconds that a DS1 interface encountered in the previous 24-hour interval.
Total CSSs	Number of Controlled Slip Seconds that a DS1 interface encountered in the previous 24-hour interval.

DS1E1 Facility Data Link (FDL) Errors (second half) — AT&T-54016 mode:

Slot	Slot identifier.
Conn	Connector identifier.
Valid Intervals	Number of previous time intervals for which valid data was collected. The value is 96 unless the interface was brought on line within the last 24 hours. In this case, the value is the number of complete 15-minute intervals since the interface has been on line.
Totals PCVs	Number of Path Code Violations that a DS1 interface encountered in the previous 24-hour interval.
Totals LESs	Number of Line Errored Seconds that a DS1 interface encountered in the previous 24-hour interval.
Total BESs	Number of Burst Errored Seconds that a DS1 interface encountered in the previous 24-hour interval.
Totals DMs	Number of Degraded Minutes that a DS1 interface encountered in the previous 24-hour interval.
Total LCVs	Number of Line Code Violations that a DS1 interface encountered in the previous 24-hour interval.

Sample Display – show ds1e1 fdl

```
DS1E1 Facility Data Link (FDL) Errors (first half) - ANSI-403 mode:
-------------------------------------------------------------------

              CRC        BPV        OOF        FE         ES
Slot Conn   Counts     Counts     Counts     Counts     Counts
---- ---- ---------- ---------- ---------- ---------- ----------
   2    1      56581     196653       3581      22504      32965

DS1E1 Facility Data Link (FDL) Errors (second half) - ANSI-403 mode:
--------------------------------------------------------------------

              SES        UAS       PRMES     PRMSES      PRME
Slot Conn   Counts     Counts     Counts     Counts     Counts
---- ---- ---------- ---------- ---------- ---------- ----------
   2    1       2561       2154         24         23        129

Found     1 match out of     2 entries in table.

DS1E1 Facility Data Link (FDL) Errors (first half) - AT&T-54016 mode:
---------------------------------------------------------------------

             Valid      Total      Total      Total      Total      Total
Slot Conn Intervals      ESs        SESs       SEFs       UASs       CSSs
---- ---- ---------- ---------- ---------- ---------- ---------- ----------
   2    2          1          1          0          0        368        256
DS1E1 Facility Data Link (FDL) Errors (second half) - AT&T-54016 mode:
---------------------------------------------------------------------

             Valid      Total      Total      Total      Total      Total
Slot Conn Intervals      PCVs       LESs       BESs       DMs        LCVs
---- ---- ---------- ---------- ---------- ---------- ---------- ----------
   2    2          1          0          0          1          0          0
Found     1 match out of     2 entries in table.
```

Sample Display – show ds1e1 fdl att1

```
DS1E1 Facility Data Link (FDL) Errors (first half) - AT&T-54016 mode:
-----------------------------------------------------------------------

             Valid      Total      Total      Total      Total      Total
Slot Conn Intervals      ESs        SESs       SEFs       UASs       CSSs
---- ---- ---------- ---------- ---------- ---------- ---------- ----------
   2    2          1          1          0          0        368        256

Found     1 match out of     2 entries in table.
```

receive errors [**circuit** *<circuit name>*]

Displays receive errors for all circuits or for a specific circuit. The table includes the following information:

Slot	Slot identifier.
Conn	Connector identifier.
Log Line	Logical line number for this line.
Circuit	Name of the circuit associated with this line.
Null Frames	Number of frames containing no data bytes received.
Short Frames	Number of frames received with only one or two data bytes.
CRC Errors	Number of frames received with CRC errors.
Long Frames	Number of frames received that exceeded the MTU size.
Abort Frames	Number of frames received with abort errors.

Sample Display – show ds1e1 receive

```
DS1E1 Logical Line Receive Errors:
----------------------------------

          Log                  Null     Short      CRC      Long     Abort
Slot Conn Line   Circuit     Frames    Frames    Errors    Frames    Frames
---- ---- ---- ---------- --------- --------- --------- --------- ---------
   2    1    1 Boston             0      1256         0         0         0
   2    1    2 Chicago            0         0         0         0         0
   2    2    1 Seattle            0        40         0         0         0

    3 entries in table.
```

Sample Display – show ds1e1 receive errors circuit Boston

```
DS1E1 Logical Line Receive Errors:
----------------------------------

          Log                  Null     Short      CRC      Long     Abort
Slot Conn Line   Circuit     Frames    Frames    Errors    Frames    Frames
---- ---- ---- ---------- --------- --------- --------- --------- ---------
   2    1    1 Boston             0      1256         0         0         0

Found     1 match out of     3 entries in table.
```

sample [*<period in seconds>*] [**circuit** *<circuit name>*]

Displays data sampled from DS1E1 over a period of 10 seconds. You can change the number of seconds over which you want to sample the data, and you can display sampled data for a specific circuit only. The table includes the following information:

Slot	Slot identifier.
Conn	Connector identifier.
Log Line	Logical line number for this line.
Circuit	Name of the circuit associated with this line.
Rx Frames	Number of frames received on this line.

Tx Frames	Number of frames sent on this line.
Rx Lack of Resources	Number of packets received and discarded because of lack of resources; for example, CPU is overworked.
Tx Lack of Resources	Number of transmit packets discarded because of lack of resources; for example, transmit queue length is too small.

Sample Display – show ds1e1 sample

```
Taking first sample...                      Waiting 10
seconds...                        Taking second sample...
DS1E1 Sampled Data over  10 seconds
-------------------------------------

          Log                Rx         Tx     Rx Lack of Tx Lack of
Slot Conn Line   Circuit    Frames     Frames   Resources  Resources
---- ---- ---- ---------- ---------- ---------- ---------- ----------
   2    1    1 Boston              2          2          0          0
   2    1    2 Chicago             3          3          0          0
   2    2    1 Seattle             2          9          0          0

    3 entries in table.
```

Sample Display – show ds1e1 sample 5

```
Taking first sample...                      Waiting  5
seconds...                        Taking second sample...
DS1E1 Sampled Data over   5 seconds
-------------------------------------

          Log                Rx         Tx     Rx Lack of Tx Lack of
Slot Conn Line   Circuit    Frames     Frames   Resources  Resources
---- ---- ---- ---------- ---------- ---------- ---------- ----------
   2    1    1 Boston              1          8          0          0
   2    1    2 Chicago             2          8          0          0
   2    2    1 Seattle             1          1          0          0

    3 entries in table.
```

stats [**circuit** *<circuit name>*]

Displays DS1E1 input/output statistical information for all DS1E1 circuits or for a specific circuit. The table contains the following information:

Slot	Slot identifier.
Conn	Connector identifier.
Log Line	Logical line number for this line.
Circuit	Name of the circuit associated with this line.
Receive Bytes	Number of octets received without error.
Receive Frames	Number of frames received without error.
Transmit Bytes	Number of octets transmitted without error.
Transmit Frames	Number of frames transmitted without error.
Total Errors	Total number of errors of all types.

Sample Display – show ds1e1 stats

```
DS1E1 Logical Line I/O Statistics:
----------------------------------

           Log             Receive    Receive    Transmit   Transmit      Total
Slot Conn Line   Circuit    Bytes      Frames     Bytes      Frames      Errors
---- ---- ---- ---------- ---------- ---------- ---------- ---------- ----------
   2    1    1 Boston          7124        274     190596        700        1257
   2    1    2 Chicago         7124        274     190636        700           0
   2    2    1 Seattle       153838        557     179276        644          43

    3 entries in table.
```

Sample Display – show ds1e1 stats circuit Boston

```
DS1E1 Logical Line I/O Statistics:
----------------------------------

          Log             Receive    Receive    Transmit   Transmit      Total
Slot Conn Line   Circuit    Bytes      Frames     Bytes      Frames      Errors
---- ---- ---- ---------- ---------- ---------- ---------- ---------- ----------
   2    1    1 Boston           7150        275     190622        701       1257

Found     1 match out of     3 entries in table.
```

system errors [**circuit** *<circuit name>*]

Displays statistical information about system errors for all circuits or for a specific circuit. The table includes the following information:

Slot	Slot identifier.
Conn	Connector identifier.
Log Line	Logical line number for this line.
Circuit	Name of the circuit associated with this line.
Unaligned Frames	Number of frames containing a bit count not divisible by eight.
Internal Overflows	Number of frames received with internal overflow errors.
Overflow Frames	Number of overflow errors received on this line in which the device's FIFO buffer overflowed before obtaining the next DMA cycle. No buffer resources are available.
Losses of Sync	Number of instances of sync losses detected on this line. This error statistic is equivalent to the "red alarm received" statistic on T1.

Sample Display – show ds1e1 system errors

```
DS1E1 Logical Line System Errors:
---------------------------------


          Log             Unaligned  Internal  Overflow  Losses
Slot Conn Line   Circuit   Frames   Overflows  Frames   of Sync
---- ---- ---- ---------- --------- --------- --------- ---------
   2    1    1 Boston             0         0         0         0
   2    1    2 Chicago            0         0         0         0
   2    2    1 Seattle            0         0         0         0

    3 entries in table.
```

Sample Display – show ds1e1 system errors circuit Boston

```
DS1E1 Logical Line System Errors:
---------------------------------


          Log             Unaligned  Internal  Overflow  Losses
Slot Conn Line   Circuit   Frames   Overflows  Frames   of Sync
---- ---- ---- ---------- --------- --------- --------- ---------
   2    1    1 Boston             0         0         0         0

Found     1 match out of     3 entries in table.
```

t1framer [**current**] [**total**] [**interval** [*<interval number>*]]

Displays T1 framer error information.

Sample Display – show ds1e1 t1framer current

```
T1 Current Framer Statistics
----------------------------

           Bipolar   Out of   Frame   Loss of  Loss of   Alarm   Remote
          Violation  Frame    Error   Frame    Signal   Indicat  Alarm
Slot Conn  Counts    Counts   Counts  Failures Failures Failures Failures
---- ---- --------- -------- -------- -------- -------- -------- --------
   2    1         0        0        0        0        0        0        0
   2    2         0        0        0        0        0        0        0

    2 entries in table.
```

Sample Display – show ds1e1 t1framer total

```
T1 Total Framer Statistics
--------------------------

          Num   Bipolar   Out of   Frame   Loss of  Loss of   Alarm   Remote
          Vld  Violation  Frame    Error   Frame    Signal   Indicat  Alarm
Slot Conn Intv  Counts    Counts   Counts  Failures Failures Failures Failures
---- ---- ---- --------- -------- -------- -------- -------- -------- --------
   2    1   96         5        0        0        0        0        0        0
   2    2   96         7        0        0        0        0        0        0

    2 entries in table.
```

Sample Display – show ds1e1 t1framer interval

```
T1 Interval Framer Statistics
-----------------------------
                Bipolar   Out of   Frame   Loss of  Loss of   Alarm   Remote
               Violation  Frame    Error   Frame    Signal   Indicat  Alarm
Slot Conn Intv  Counts    Counts   Counts  Failures Failures Failures Failures
---- ---- ---- --------- -------- -------- -------- -------- -------- --------
   2    1    1         0        0        0        0        0        0        0
   2    1    2         0        0        0        0        0        0        0
   2    1    3         0        0        0        0        0        0        0
   2    1    4         0        0        0        0        0        0        0
   2    1    5         0        0        0        0        0        0        0
   2    1    6         0        0        0        0        0        0        0
   2    1    7         0        0        0        0        0        0        0
   2    1    8         0        0        0        0        0        0        0
   2    1    9         0        0        0        0        0        0        0
   2    1   10         0        0        0        0        0        0        0
   2    1   11         0        0        0        0        0        0        0
   2    1   12         0        0        0        0        0        0        0
   2    1   13         0        0        0        0        0        0        0
   2    1   14         0        0        0        0        0        0        0
   2    1   15         0        0        0        0        0        0        0
   2    1   16         0        0        0        0        0        0        0
   2    1   17         0        0        0        0        0        0        0
   2    1   18         0        0        0        0        0        0        0

18 entries in table.
```

t1port

Displays T1 port information.

Sample Display – show ds1e1 t1port

```
T1 Port Status:
---------------
                              Loopback     Accept  BERT   Line     Line  FDL  FDL
Slot Conn   State     MTU     State     Loopback Mode   Type    Coding Type Addr
---- ---- ----------- ---- ----------- -------- ---- --------- ------ ---- ----
   2    1 Red Alarm   1600 No Loop     Enabled  Off  ESF       B8ZS   ANSI BY

    1 entry in table.
```

timeslots [circuit *<circuit name>*]

Displays timeslot assignments for all circuits or for a specific circuit. The table includes the following information:

Slot	Slot identifier.
Conn	Connector identifier.
Log Line	Logical line number for this line.
Circuit	Name of the circuit associated with this line.
Timeslots	Circuit's timeslot assignment. An X under the timeslot indicates that the logical line is using the timeslot. T1 lines have 24 slots and E1 lines have 31. The following examples are for T1 lines.

Sample Display – show ds1e1 timeslots

```
DS1E1 Timeslot Assignment:
--------------------------
                           |----------Timeslots----------|
          Log                       11111111112222222223
Slot Conn Line   Circuit   12345678901234567890123456789 01
---- ---- ---- ----------  ------------------------------
   2    1    1 Boston      X__X_______________X___
   2    1    2 Chicago     _X________X____________
   2    2    1 Seattle     X_________________________

    3 entries in table.
```

Sample Display – show ds1e1 timeslots circuit Boston

```
DS1E1 Timeslot Assignment:
--------------------------
                           |----------Timeslots----------|
          Log                       11111111112222222223
Slot Conn Line   Circuit   12345678901234567890123456789 01
---- ---- ---- ----------  ------------------------------
   2    1    1 Boston      X__X_______________X___

Found     1 match out of     3 entries in table.
```

transmit errors [**circuit** *<circuit name>*]

Displays statistical information about transmission errors for all circuits or for a specific circuit. The table includes the following information:

Slot	Sot identifier.
Conn	Connector identifier.
Log Line	Logical line number for this line.
Circuit	Name of the circuit associated with this line.

Underflow Frames	Number of retransmission underflow errors. These occur when the device's FIFO buffer empties before the device obtains the next DMA request.
Descriptor Errors	Internal device error.

Sample Display – show ds1e1 transmit errors

```
DS1E1 Logical Line Transmit Errors:
-----------------------------------

          Log          Underflow  Descriptor
Slot Conn Line Circuit   Frames     Errors
---- ---- ---- ------- ---------- ----------
   2    1    1 Boston           1          0
   2    1    2 Chicago          0          0
   2    2    1 Seattle          1          0

    3 entries in table.
```

Sample Display – show ds1e1 transmit errors circuit Boston

```
DS1E1 Logical Line Transmit Errors:
-----------------------------------

          Log          Underflow  Descriptor
Slot Conn Line Circuit   Frames     Errors
---- ---- ---- ------- ---------- ----------
   2    1    1 Boston           1          0

Found     1 match out of     3 entries in table.
```

version

Displays the current version and modification date for the *ds1e1.bat* script.

Sample Display – show ds1e1 version

```
ds1e1.bat Version: 1.14 Date: 1/23/95.
```

show dvmrp

The **show dvmrp** *<option>* commands display configuration, state, and statistical information about the Distance Vector Multicast Routing Protocol (DVMRP). For detailed information about the Bay Networks implementation of DVMRP, refer to *Configuring IP Services*.

The **show dvmrp** command supports the following subcommand options:

base	stats circuits [<circuit name>]
circuits [<circuit name> | enabled | disabled]	stats tunnels [<circuit name>]
neighbors [<circuit name>]	stats vifs [<IP address> | <search pattern>]
routes main [<IP address> | <search pattern>]	tunnels [<circuit name> | enabled | disabled]
routes vifs [<IP address> | <search pattern>]	version

base

Displays the base level information for DVMRP. The table provides the following information:

Protocol	Name of the protocol, which in this case is DVMRP.
State:	State of DVMRP on the router: Up, Down, Init (initializing), or Not Present.
Full Update Interval	Specifies, in seconds, how often route updates containing complete routing tables are sent.
Triggered Update Interval	Specifies, in seconds, how often triggered route updates, generated in response to routing changes, are sent.

Leaf Timeout	Specifies, in seconds, the virtual interface hold down timer.
Neighbor Timeout	Specifies, in seconds, how long a router neighbor is considered “up” without the receipt of a subsequent DVMRP packet from that neighbor.
Route Switch Timeout	How long to wait, without receiving a subsequent route update from the original best-hop neighbor, before switching to a different neighbor.
Route Expiration Timeout	Specifies, in seconds, how long a route is considered valid for forwarding purposes without the receipt of a subsequent route update specifying that the route is reachable.
Garbage Timeout	Specifies, in seconds, how long a route exists in the routing table without the receipt of a subsequent route update specifying that the route is reachable.
Estimated Routes	Estimated number of routes.
Actual Routes	Number of entries currently in the route table.

Sample Display – show dvmrp base

```
DVMRP Base Information
----------------------

 Protocol State
 -------- -----------
 DVMRP    Up

Full Update Interval      = 60
Triggered Update Interval = 5
Leaf Timeout              = 200
Neighbor Timeout          = 140
Neighbor Probe Interval   = 190
Route Switch Timeout      = 140
Route Expiration Timeout  = 200
Garbage Timeout           = 340
Estimated Routes          = 25
Actual Routes             = 2833
```

circuits [<*circuit name*>| **enabled** | **disabled**]

Displays the DVMRP circuit information for all circuits, a specified circuit, enabled circuits, or disabled circuits. The table contains the following information:

Circuit	Circuit name of this virtual interface.
State	Current state of the virtual interface: Up, Down, Init (initializing), Invalid, or Not Pres (not present).
Metric	Cost of using this hop.
Threshold	Threshold for forwarding datagrams out of this circuit. If the time to live (TTL) is less than the threshold, the datagram is dropped.
Route Enabled	Indicates whether this route is enabled. If enabled, this circuit will be used to propagate routing information, information about the locally attached network to this circuit will be incorporated into routing updates, and multicast datagrams will be forwarded "in native mode" via this circuit. If disabled, this circuit exists only to support unicast tunnels; in this case, all other parameters are ignored.

Sample Display – show dvmrp circuits

```
DVMRP Circuits
--------------

 Circuit     State     Metric   Threshold   Route Enabled
 --------   --------   ------   ---------   -------------
 E22        Up         1        1           Yes
 E31        Up         1        1           Yes
 E32        Up         1        1           Yes
 E33        Up         1        1           Yes
 E34        Up         1        1           Yes

5 Total entries.
```

neighbors [< *circuit name*>]

Displays all DVMRP neighbor information or neighbor information for a specified circuit. The table displays the following information:

Circuit	Circuit name of this virtual interface.
Local Tunnel IP	Local tunnel ID of the virtual interface. This value is Physical for non-tunneled interfaces. Otherwise, it contains the IP address of the local tunnel endpoint.
Neighbor IP	IP address of the neighboring router.
Neigh Timer	Current value of the neighbor timer.

Sample Display – show dvmrp neighbors

```
DVMRP Neighbors
---------------

 Circuit    Local Tunnel IP   Neighbor IP       Neigh Timer
 --------   ---------------   ---------------   -----------
 E21        Physical          192.32.28.221     135
 E21        192.32.28.33      192.32.1.2        140

2 Total entries.
```

routes main [< *IP address*> | < *search pattern*>]

Displays the main DVMRP routing table. You can specify routes that match an IP address or routes with a source network number matching a portion of an IP address (for example, **192.34.***). The table includes the following information:

Source Network	Source network of multicast datagrams.
Mask	Mask for the specified source network.
Next Hop Addr	Next-hop multicast router to the specified source network.
Next Hop CCT	Circuit name of the next-hop virtual interface. In the case of tunneled interfaces, the remote tunnel endpoint is the value in the Next Hop Address field.

Age	Current value of the route timer
Cost	Current route metric.
State	Set of flags indicating the state of the entry:
T	Timed route — route timer is running.
L	Local route — specified network is local to this router.
G	Garbage timer — route is unreachable; garbage timer is running.

Sample Display – show dvmrp routes main

```
DVMRP Main Routes
-----------------

State:  L = Local interface
            T = Timed route
        G = Garbage route

Source Network  Mask            Next Hop Addr   Next Hop CCT    Age Cost State
--------------- --------------- --------------- --------------- --- ---- -----
192.32.28.0     255.255.255.0   192.32.28.33    E21               0    1 L
192.32.29.0     255.255.255.0   192.32.1.2      E23              20    2  T

2 Entries found.
```

routes vifs [< *IP address*> | < *search pattern*>]

Displays all DVMRP Virtual Interface (VIF) routes, or just VIF routes for a specified IP address or source network number matching a portion of an IP address (for example, **192.34.***). The table displays the following information:

Source	Source network for multicast datagrams.
State	State of the interface for this route, as follows: • *L (Leaf)* – No neighboring routers consider this local network or tunnel to be on the shortest path to the specified source network. • *C (Child)* – The router is responsible for forwarding datagrams saved by the specified network associated with this interface. If the leaf flag is also set, datagrams will only be forwarded when there are any local hosts belonging to the particular multicast group specified by the destination address. • *H* – Hold-down timer is running.
Circuit	Circuit name of this virtual interface.
Remote Tunnel	Remote tunnel ID of this virtual interface. This value is Physical for non-tunneled interfaces. Otherwise, it contains the unicast IP address of the remote tunnel endpoint.
Dom Router	Address of the dominant router for this virtual interface. The specified router will forward packets onto the local network or tunnel that are sourced by the specified source network.
Sub Router	Address of a subordinate router for this virtual interface. This indicates that at least one neighboring router considers this local network or tunnel to be on the shortest path to the specified source network.

Sample Display – show dvmrp routes vifs

```
DVMRP Virtual Interface Routes
------------------------------

State:   C = Child
         L = Leaf
         H = Hold-down

Source          State   Circuit Remote Tunnel   Dom Router      Sub Router
--------------- ------- ------- --------------- --------------- -------------
10.0.0.0          C     E21     Physical        None            192.32.28.22
10.0.0.0                E21     192.32.1.2      None            None
13.0.32.0         C     E21     Physical        None            192.32.28.22
13.0.32.0               E21     192.32.1.2      None            None
```

stats circuits [< *circuit name*>]

Displays statistics for all DVMRP circuits or a specified DVMRP circuit. The table displays the following information:

Circuit	Circuit name of this virtual interface.
In Pkts	Number of datagrams received on this interface.
Out Pkts	Number of datagrams sent on this interface.
Updates rec	Number of DVMRP route update messages received.
Updates sent	Number of DVMRP route update messages sent.
In Drops	Number of inbound datagrams discarded because the source route was not found.
Out Drops	Number of outbound datagrams discarded because the source route was not found.

Sample Display – show dvmrp stats circuits

```
DVMRP Circuit Statistics
------------------------

Circuit   In Pkts   Out Pkts  Updates rec   Updates sent  In Drops   Out Drops
--------  --------  --------  ------------  ------------  ---------  ---------
E21         134235   1079169          6795          8022          0          0

1 Total entries.
```

stats tunnels [< *circuit name*>]

Displays all DVMRP tunnel statistic for all circuits or for a specified circuit. The table displays the following information:

Circuit	Circuit name of this virtual interface.
Remote IP Address	Unicast IP address of remote tunnel endpoint of this virtual interface.
Packets In	Number of datagrams received on this interface.

Packets Out	Number of datagrams sent on this interface.
Updates Rec'd	Number of DVMRP route update messages received.
Updates Sent	Number of DVMRP route update messages sent.
Drop In	Number of inbound datagrams discarded because the source route was not found, or because of an invalid inner address (that is, the destination address of the encapsulated datagram was not a multicast address).
Drop Out	Number of outbound datagrams discarded because the source route was not found.

Sample Display – show dvmrp stats tunnels

```
DVMRP Tunnel Statistics
-----------------------

 Circuit Remote IP       Packets  Packets  Updates  Updates  Drop     Drop
         Address         In       Out      Rec'd    Sent     In       Out
 ------- --------------- -------- -------- -------- -------- -------- --------
 E21     192.32.1.2       1090940    37273     8875    37267     1117        0

1 Total entries.
```

stats vifs [< *IP address*> | < *search pattern*>]

Displays the DVMRP routing table's virtual interface statistics for all routes or for a specified IP address or source network number matching a portion of an IP address (for example, **192.34.***). The table displays the following information:

Source Network	Source network of multicast datagrams.
Circuit	Circuit name of this virtual interface.
Remote Tunnel Endpoint	Remote tunnel ID of this virtual interface. This value is Physical for non-tunneled interfaces. Otherwise, it contains the IP address of the remote tunnel endpoint.
In Packets	Number of inbound packets accepted for forwarding.
Out Packets	Number of outbound packets accepted for forwarding.

In Drop	Number of inbound packets discarded because the interface is not on the shortest path.
Out Drop	Number of outbound packets discarded because the interface is not on shortest path.
Thrshld Drop	Number of outbound packets discarded because of the threshold.

Sample Display – show dvmrp stats vifs

```
DVMRP Virtual Interface Route Statistics
----------------------------------------

Source          Circuit Remote Tunnel   In      Out     In      Out     Thrshld
Network                 Endpoint        Packets Packets Drop    Drop    Drop
--------------- ------- --------------- ------- ------- ------- ------- -------
10.0.0.0        E21     Physical              0       0       0       0       0
10.0.0.0        E21     192.32.1.2            0       0       0       0       0

2 Entries found.
```

tunnels [< *circuit name*> | **enabled** | **disabled**]

Displays the DVMRP tunnel configuration information for all circuits, a specified circuit, enabled circuits, or disabled circuits. The table displays the following information:

Circuit	Circuit name of this virtual interface.
Local IP	Unicast IP address of the local network endpoint of this virtual interface.
Remote IP	Unicast IP address of remote network endpoint of this virtual interface.
State	Current state of the virtual interface: Up, Down, Init (initializing), Invalid, or Not Pres (not present).
Encaps	Indicates if these tunneled datagrams will be encapsulated within an IP datagram, or will they be loosely encapsulated using the LSSR option (for the latter, refer to RFC 1075; this is needed for backward compatibility).

Metric	Cost of using this tunnel.
Threshold	Threshold for forwarding datagrams through this tunnel. If the time to live (TTL) is less than the threshold, the datagram is dropped.

Sample Display – show dvmrp tunnels

```
DVMRP Tunnels
-------------

Circuit  Local IP         Remote IP        State     Encaps  Metric  Threshold
-------  ---------------  ---------------  --------  ------  ------  ---------
E21      192.32.28.33     192.32.1.2       Up        IPinIP       1          1

1 Total entries.
```

version

Displays the current version and modification date for the *dvmrp.bat* script.

Sample Display – show dvmrp version

```
dvmrp.bat Version: 1.1 Date: 1/30/95.
```

show e1

The **show e1** *<option>* commands display configuration, status, and statistical information about the E1 lines. For more information about E1, refer to *Configuring Routers*.

The **show e1** command supports the following subcommand options:

alerts	frame errors [circuit <circuit name>]
base [circuit <circuit name>]	line errors [circuit <circuit name>]
disabled	version
enabled	

alerts

Displays all circuits that are enabled but not up. Use this display to identify the interfaces that are not working. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier: 1 or 2.
Circuit	Name of the circuit associated with this line.
HDB3 Support	Status of High Density Bipolar Coding: Enabled or Disabled. HDB3 maintains sufficient “ones” density within the E1 data stream without disturbing data integrity.
Clock Mode	Source of the E1 transmit clock as follows: • *Internal* – Clock is generated internally. • *Slave* – Clock is derived from the incoming data stream. • *Manual* – Jumpers on the E1 link module determine the clock source (internal or slave.)

MiniDacs Configuration

Function assigned to each of 31 E1 channels (timeslots). The table shows these functions in a string of 31 characters, one character per timeslot. The characters and their meaning are as follows:

- *1* – Assigns the timeslot to the first HDLC controller (Circuit 1).
- *2* – Assigns the timeslot to the second HDLC controller (Circuit 2).
- *D* – Assigns the timeslot to data passthrough (HDLC controller to HCLC controller).
- *I* – Assigns the timeslot to idle.
- *V* – Assigns the timeslot to voice passthrough (HDLC controller to HCLC controller).

For example, the sample display for the **base** command shows the MiniDacs Configuration as:

```
11111111IIIIIIII11111111IIIIIII.
```

This string shows that timeslots 1 - 8 and 17 - 24 are assigned to the first HDLC controller (1) and timeslots 9 - 16 and 25 - 31 are idle (I).

Sample Display – e1 alerts

```
E1 Modules on Alert:
--------------------

                     HDB3    Clock
Slot Conn Circuit Support    Mode       MiniDacs Configuration
---- ---- ------- -------- -------- -------------------------------

Found     0 matches out of     2 entries in table.
```

base [**circuit** *<circuit name>*]

Displays the base level information for all E1 circuits or a specific circuit. For definitions of the columns in the table, see the **alerts** command.

Sample Display – show e1 base

```
E1 Modules:
-----------
                     HDB3    Clock
Slot Conn Circuit Support    Mode       MiniDacs Configuration
---- ---- ------- -------- -------- ------------------------------
   2    1 E1-21   Disabled Internal 11111111IIIIIIII11111111IIIIIII
   2    2 E1-22   Disabled Slave    22222222IIIIIIII22222222IIIIIII

2 entries in table.
```

Sample Display – show e1 base circuit e1-21

```
E1 Modules:
-----------

                     HDB3    Clock
Slot Conn Circuit Support    Mode       MiniDacs Configuration
---- ---- ------- -------- -------- ------------------------------
   2    1 E1-21   Disabled Internal 11111111IIIIIIII11111111IIIIIII

Found     1 match out of     2 entries in table.
```

disabled

Displays E1 circuits that a user has manually disabled. For definitions of the columns in the table, see the **alerts** command.

Sample Display – show e1 disabled

```
E1 Modules Disabled:
--------------------

                     HDB3    Clock
Slot Conn Circuit Support    Mode       MiniDacs Configuration
---- ---- ------- -------- -------- --------------------------------

Found     0 matches out of     2 entries in table.
```

enabled

Displays E1 circuits that a user has manually enabled. For definitions of the columns in the table, see the **alerts** command.

Sample Display – show e1 enabled

```
E1 Modules Enabled:
-------------------

                     HDB3    Clock
Slot Conn Circuit Support    Mode       MiniDacs Configuration
---- ---- ------- -------- -------- --------------------------------
   2    1 E1-21   Disabled Internal 11111111IIIIIIII11111111IIIIIII
   2    2 E1-22   Disabled Slave    22222222IIIIIIII22222222IIIIIII

Found     2 matches out of     2 entries in table.
```

frame errors [**circuit** *<circuit name>*]

Displays E1 frame errors for all circuits or for a specific circuit. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier: 1 or 2.
Circuit	Name of the circuit associated with this line.
Frame Errors	Number of frame errors on this line. This counter indicates errors in the frame alignment signal.
Signalling All 1's Received	Number of occurrences of receive signaling all 1's. This error occurs when timeslot 16 has been all 1's for two consecutive frames. This statistic is relevant only for Channel Associated Signalling (CAS) mode.
Unframed All 1's Received	Number of occurrences of receive unframed all 1's. This occurs when less than three bit positions of the last aligned and nonaligned frames have been 0.

Sample Display – show e1 frame

```
E1 Module Frame Errors:
-----------------------

                              Signalling  Unframed
                    Frame       All 1's    All 1's
Slot Conn Circuit   Errors     Received   Received
---- ---- ------- ---------- ---------- ----------
   2    1 E1-21            0          0          0
   2    2 E1-22            0          0          0

2 entries in table.
```

line errors [**circuit** *<circuit name>*]

Displays several categories of line errors for all circuits or for a specific circuit. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier: 1 or 2.
Circuit	Name of the circuit associated with this line.
BiPolar Violtns	Number of bipolar violations on this line. On an E1 line, ones are transmitted as alternating negative and positive pulses, and zeros are simply the absence of pulses. Thus a bipolar violation occurs if there are two or more consecutive pulses of the same polarity. This error count indicates the quality of the E1 line.
Remote Alarms Received	Number of remote alarms received on this line. This error is equivalent to a “yellow alarm” in T1. It means that we have not lost sync but that the remote side of the connection has detected a problem with the line.
Multiframe Alarms Received	Number of multiframe alarms received on this line. This error statistic is relevant only in CAS mode and occurs when bit 6 of timeslot 16 in frame 0 is set for two consecutive multiframes.
Multiframe Errors	Number of multiframe errors on this line. This error occurs whenever two consecutive CAS multiframe alignment words are received with an error.
Sync Losses	Number of instances of sync losses detected on this line. This error statistic is equivalent to the “red alarm received” statistic on T1.

Sample Display – show e1 line errors

```
E1 Module Line Errors:
----------------------

                                Remote   Multiframe
                    BiPolar     Alarms     Alarms   Multiframe    Sync
Slot Conn Circuit   Violtns    Received   Received    Errors     Losses
---- ---- ------- ---------- ---------- ---------- ---------- ----------
   2    1 E1-21            0          0          0          1          0
   2    2 E1-22            0          0          0          1          0

    2 entries in table.
```

version

Displays the current version number and modification date for the *e1.bat* script.

Sample Display – show e1 version

```
e1.bat Version: 1.7 Date: 10/31/94.
```

show egp

The **show egp** *<option>* commands display information about the Exterior Gateway Protocol (EGP). For detailed information about the Bay Networks implementation of EGP, refer to *Configuring IP Services*.

The **show egp** command supports the following subcommand options:

base	stats
neighbors	version

base

Displays the base record for EGP. The table includes the following information:

Protocol	Name of the protocol, in this case EGP.
State	State of the protocol on the router: Enabled or Disabled.
Local AS	Local Autonomous System (the AS to which this router belongs). NIC assigns this decimal number.

Sample Display – show egp base

```
EGP Base Information
--------------------

Protocol  State   Local AS
--------- -------- --------
EGP       Enabled      1001
```

neighbors

Displays information about each of the neighbors configured for this router. The table includes the following information:

Local Address	Local IP interface address for this neighbor.
Neighbor Address	Neighbor's IP address.
State	State of the interface: Absent (not yet started), Disabled (manually), Down, Init (initializing), Up.
Local Acquisition Mode	Whether or not the router initiates EGP connections: Active or Passive. Active means the router is the initiator.
Local Poll Mode	Type of neighbor reachability algorithm this local neighbor executes as follows: • *Active* – Router sends Hello and Poll commands to request reachability status from its neighbor. • *Passive* – Router responds to Hello and Poll commands with I-H-U and Update messages. • *Both* – Router sends and responds to Hello and Poll commands.

Sample Display – show egp neighbors

```
EGP Configured  Neighbors
-------------------------

                  Neighbor                    Local          Local
 Local Address    Address        State    Acquisition Mode  Poll Mode
--------------- --------------- ---------- ----------------  ---------
192.32.28.1     192.32.28.65    Up         Active            Active

1 Entries.
```

stats

Displays statistical information for EGP. The table includes the following information:

EGP In Good	Number of error-free incoming messages.
EGP In Error	Number of incoming messages with errors.
EGP Out Good	Number of error-free messages transmitted.
EGP Out Error	Number of messages transmitted with errors.
Total EGP Messages	Total number of messages sent and received (sum of first four columns).

Sample Display – show egp stats

```
EGP Statistics
--------------

  EGP In     EGP In     EGP Out   EGP Out   Total EGP
   Good       Error      Good      Error     Messages
---------- ---------- ---------- ---------- ----------
        24          1         24          0         49
```

version

Displays the version number and modification date of the *egp.bat* script.

Sample Display – show egp version

```
EGP.bat Version: 1.8 Date: 5/13/94
```

show fddi

The **show fddi** *<option>* commands display information about Fiber Distributed Data Interface (FDDI) line services. For detailed information about the Bay Networks implementation of FDDI, refer to *Configuring Line Services*.

The **show fddi** command supports the following subcommand options:

alerts	receive errors [circuit <circuit name>]
base [circuit <circuit name>]	sample [<period in seconds>] [circuit <circuit name>]
disabled	smt [circuit <circuit name>]
enabled	stats [circuit <circuit name>]
hwfilters	system errors [circuit <circuit name>]
mac [circuit <circuit name>]	transmit errors [circuit <circuit name>]
port	version

alerts

Displays all FDDI modules that are enabled but not up. Use this display to identify the interfaces that are not working. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier: 1 or 2.
Circuit	Name of the circuit associated with this line.
State	State of the line driver: Disabled, Down, Init (initializing), LLC off, or Not Pres (not present). The Not Pres state occurs for several reasons. For example, the Link Module may not be physically present in the chassis. The software may be booting and has not yet initialized the driver software. The slot may be running diagnostics. Or there may be a problem with the configuration.
MAC Address	Physical address of the line.
BOFL TMO	Number of seconds the driver waits before notifying protocol level software of a service loss, if service is lost for some reason. If service is restored before this number expires, the driver does not notify the protocol level software.
MTU	Maximum transfer unit size — the maximum frame length allowed on the wire, excluding frame delimiters, such as preamble and the ending delimiter. The MTU of a FDDI frame is 4495 octets.
HW Filter	State of hardware filtering: Enabled or Disabled. When enabled, the Link Module filtering hardware prevents the software from copying local frames into system memory. Filtering hardware drops local frames at the interface. Bridging software performance is improved because it no longer uses resources to receive and reject local frames.

Sample Display – show fddi alerts

```
FDDI Modules on Alert:
----------------------

                                                BOFL        HW
Slot Conn Circuit State       MAC Address       TMO  MTU  Filter
---- ---- ------- -------- ----------------- ---- ---- ------
   3    1 F31     Init     00-00-A2-03-01-79    3 4495 Enabled

Found     1 matches out of     1 entry in table.
```

base [**circuit** *<circuit name>*]

Displays the base level information for all FDDI circuits or a specific FDDI circuit. For definitions of the columns in the table, see the **alerts** command. State can also be Up.

Sample Display – show fddi base

```
FDDI Modules:
-------------
                                                BOFL        HW
Slot Conn Circuit State       MAC Address       TMO  MTU  Filter
---- ---- ------- -------- ----------------- ---- ---- ------
   3    1 F31     Init     00-00-A2-03-01-79    3 4495 Enabled

1 entry in table.
```

disabled

Displays FDDI circuits that a user has manually disabled. For definitions of the columns in the table, see the **alerts** command. In this case, State is Down.

Sample Display – show fddi disabled

```
FDDI Modules Disabled
---------------------
                                                BOFL        HW
Slot Conn Circuit State       MAC Address    TMO  MTU  Filter
---- ---- ------- -------- ----------------- ---- ---- ------

Found     0 matches out of     3 entries in table.
```

enabled

Displays FDDI circuits that a user has manually enabled. For definitions of the columns in the table, see the **alerts** command. State can also be Up.

Sample Display – show fddi enabled

```
FDDI Modules Enabled
--------------------
                                                BOFL        HW
Slot Conn Circuit State       MAC Address    TMO  MTU  Filter
---- ---- ------- -------- ----------------- ---- ---- ------
   2    1 F21     Up       00-00-A2-02-9F-D6    3 4495 Disabled

Found     1 match out of     1 entry in table.
```

hwfilters

Displays status and statistical information about the hardware filters in use, if any. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier; ranges from 1 to 4.
Circuit	Name of the circuit associated with this line.
State	State of the filtering hardware on the line: Down, Full or Up.
Line Type	FDDI.
Maximum Tbl Siz	Maximum number of table entries that a line can use, based on the hardware filter devices present and available.
Current Tbl Siz	Current capacity of the hardware filter table. The protocol dynamically allocates hardware filter table resources as needed in increments of 256 up to the available table size.
Used Entries	Number of hardware filter table entries used.
Dropped Frames	Number of frames dropped because they matched the hardware filter.

Sample Display – show fddi hwfilters

```
Hardware Filters Modules:
-------------------------

                            Line  Maximum Current  Used    Dropped
Slot Conn Circuit  State    Type  Tbl Siz Tbl Siz Entries   Frames
---- ---- ------- -------- ------ ------- ------- ------- ----------

Found     0 matches out of     4 entries in table.
```

mac [**circuit** *<circuit name>*]

Displays the Media Access Control (MAC) parameters for all circuits or for a specific circuit. This display includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier; ranges from 1 to 4.
Circuit	Name of the circuit associated with this line.
Upstream Neighbor	MAC address of the upstream neighbor. The Neighbor Information protocol within SMT determines this address. The value 00 00 F8 00 00 00 indicates that the address is unknown. The table represents the address in canonical form.
Downstream Neighbor	MAC address of the downstream neighbor. The Neighbor Notification protocol within SMT determines this address. The value 00 00 00 00 00 00 indicates that the address is unknown. The table represents the address in canonical form.
TNeg (ms)	Target token rotation time (TTRT) carried in claim frames that the FDDI station transmits. This value is in milliseconds.

Ring Mgmt State	State of the Ring Management (RMT) within SMT. RMT reports the status of the MAC, including stuck beacon conditions. It initializes the trace function, and detects duplicate address conditions that prevent the ring from operating. RMT passes through a variety of states as follows: • *Isolated* – Initial state of RMT. • *NonOp* – MAC being managed is participating in ring recovery and the ring is not operational. • *RingOp* – MAC being managed is part of an operational FDDI ring. • *Detect* – Ring has not been operational for a certain period of time. In this state, RMT detects duplicate addresses, a condition that prevents ring operation. • *NonOpDup* – TMAC under control is a duplicate of another MAC on the ring. The ring is not operational in this state. • *RingOpDup* – MAC under control is a duplicate of another MAC on the ring. The ring is operational in this state. • *Directed* – RMT has instructed the MAC it is controlling to send beacon frames notifying the ring of a stuck condition. Beacon frames indicate that the interface doesn't see the token and that this condition should be transient. If this state persists, contact your customer service representative. • *Trace* – RMT has initiated the trace function.
Ring Op Count	Number of times the ring has entered the "Ring Operational" state from the "Ring Not Operational" state. This count is updated when there is a change in the state, but does not have to be exact.

Sample Display – show fddi mac

```
FDDI Modules MAC Parameters:
----------------------------

                      Upstream         Downstream     TNeg Ring Mgmt  Ring Op
Slot Conn Circuit     Neighbor          Neighbor      (ms)   State     Count
---- ---- ------- ----------------- ----------------- ---- --------- ----------

    0 entries in table.
```

port

Displays FDDI port attributes. The table includes the following information:

Slot	Slot identifier associated with the port.
Conn	Connector identifier associated with a port.
Local Port	Physical connector type of the local port, as follows: • *A* – Port is a dual attachment station or concentrator that attaches to the primary IN and the secondary OUT when attaching to the dual FDDI ring. • *B* – Port is a dual attachment station or concentrator that attaches to the secondary IN and the primary OUT when attaching to the dual FDDI ring. • *M* – Port is in a concentrator that serves as a Master to a connected station or concentrator. • *S* – Port is in a single attachment station. • *Unknown* – Type of the port is unknown.
Neighbor Port Type	Physical connector type of the remote port: A, B, M, S, Unknown.
Physical State	State of Physical Connection Management (PCM) for each port within SMT. PCM initializes the connection of neighboring ports and manages signaling between ports. PCM provides the necessary signaling to initialize a connection, withhold a marginal connection, and support maintenance features. PCM passes through a variety of states, as follows: • *Off* – Initial state of PCM. • *Break* – Starting a PCM connection. • *Trace* – Localizing a stuck beacon condition, which indicates that the interface doesn't see the token. This state should be a transient condition. If it persists, contact your customer service representative. • *Connect* – Synchronizing the ends of the connection for the signaling sequence. • *Next* – Separating the signaling performed in the SIGNAL state. • *Signal* – Communicating individual bits of information across the connection. • *Join* – Assuring that both ends of the connection enter the ACTIVE state together when signaling has completed. • *Verify* – Leading to an active connection. • *Active* – Incorporating the port into the token path. • *Maint* – Detecting maintenance state.
Link Error Monitor Count	Number of times a link has been rejected.

Elasticity Buffer Errors	Number of elasticity buffer errors for a specific Physical Layer Protocol (PHY). The elasticity buffer tracks clock tolerances between stations.
Link Confidence Count	Number of consecutive times the link confidence test has failed during Connection Management.

Sample Display – show fddi port

```
FDDI Modules Port Parameters:
-----------------------------

                                    Link Error Elasticity    Link
          Local Neighbor   Physical  Monitor     Buffer   Confidence
Slot Conn Port  Port Type   State     Count      Errors     Count
---- ---- ----- --------- --------- ---------- ---------- ----------
   2    1 A     Unknown   Connect            0          0          0
   2    1 B     A         Active             0          0          0

    2 entries in table.
```

receive errors [**circuit** *<circuit name>*]

Displays receive errors for all circuits or for a specific circuit. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier; ranges from 1 to 4.
Circuit	Name of the circuit associated with this line.
CRC Errors	Number of frames received with CRC errors.
Overrun Errors	Number of frames received with internal overrun errors.
Invalid Frames	Number of badly formed frames received from the FDDI ring; frames that do not contain a valid Frame Status field of at least three control indicator symbols (that is, E, A, C, flags).
Frames Too Long	Number of frames received that exceed the MTU size.

Sample Display – show fddi receive

```
FDDI Module Receive Errors:
---------------------------

                     CRC      Overrun    Invalid     Frames
Slot Conn Circuit   Errors     Errors     Frames    Too Long
---- ---- ------- ---------- ---------- ---------- ----------
   2    1 F21              0          0          0          0

    1 entry in table.
```

sample [*<period in seconds>*] [**circuit** *<circuit name>*]

Displays data sampled from FDDI over a period of 10 seconds. You can change the number of seconds over which you want to sample the data, and you can display sampled data for a specific circuit only. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier; ranges from 1 to 4.
Circuit	Name of the circuit associated with this line.
Rx Frames	Number of frames received.
Tx Frames	Number of frames sent.
Rx Lack of Resources	Number of packets received and discarded because of lack of resources; for example, buffers.
Tx Lack of Resources	Number of transmit packets discarded because of lack of resources; for example, buffers.

Sample Display – show fddi sample

```
FDDI Sampled Data over  10 seconds
----------------------------------

                      Rx         Tx     Rx Lack of Tx Lack of
Slot Conn Circuit   Frames     Frames   Resources  Resources
---- ---- ------- ---------- ---------- ---------- ----------
   2    1 F21              2          3          0          0

    1 entry in table.
```

Sample Display – show fddi sample 5 circuit F21

```
FDDI Sampled Data over   5 seconds
----------------------------------

                      Rx         Tx     Rx Lack of Tx Lack of
Slot Conn Circuit   Frames     Frames   Resources  Resources
---- ---- ------- ---------- ---------- ---------- ----------
   2    1 F21              4          5          0          0

Found     1 match out of     1 entry in table.
```

smt [**circuit** *<circuit name>*]

Displays Station Management (SMT) parameters for all FDDI circuits or for a specific circuit. The table contains the following information:

Slot	Slot identifier associated with the FDDI circuit.
Conn	Identifier of the connector associated with the FDDI circuit.
Circuit	Name of the circuit associated with the FDDI circuit.

Connection Policy	Table that represents the requested connection possibilities for this node. Each column identifies whether a connection should be accepted or rejected for a specific pair of port types. The top header row shows the port types that are local to this node. The next header row represents the port types of the neighbor port. The table also displays the requested connection policy (. = accept or R= reject) for this node, for each port pair.
ECM State	State of Entity Coordination Management (ECM) within SMT. ECM controls the optional optical bypass switch and signals other entities within SMT when the medium is available. ECM passes through a variety of states as follows: • *By_Check* – Confirms that both the primary and secondary optical bypass switches have switched. • *Bypassed* – Initial state of ECM after path test. If an optical bypass switch is present, it is in a bypassed state. • *Deinsert* – State allows time for the optical bypass switch to deinsert. • *In* – Normal state for a completed connection. • *Insert* – State that allows for the switching time of the optical bypass switch. The ECM remains in this state until the optical bypass switch has completed switching. • *Leave* – Transition to allow enough time to break any existing connections. • *Pathtest* – Node performs a test of its entities as data paths. ECM enters this state after completing the trace function. • *Trace* – State used to identify a stuck beacon condition, which indicates that the interface doesn't see the token. This state should be a transient condition. If it persists, contact your customer service representative.

Connect State	State of Configuration Management (CFM) within SMT. CFM interconnects physical connections and MAC entities to configure the ports and MACs within a node. The states are as follows: • *Isolated* – Port is not inserted into any path. • *Local A* – The A port is inserted into a local path and the B port is not. • *Local B* – The B port is inserted into a local path and the A port is not. • *Local AB* – Both the A and B ports are inserted into the local path. • *Wrap A* – Secondary path is wrapped to the A port. • *Wrap B* – Primary path is wrapped to the B port. • *C Wrap A* – Primary and secondary paths are joined internal to the node and wrapped. • *C Wrap B* – Primary and secondary paths are joined internal to the node and wrapped to the B port. • *Wrap AB* – Primary path is wrapped to the B port and the secondary path is wrapped to the A port. • *Thru* – Primary path enters the A port and emerges from the B port. The secondary path enters the B port and emerges from the A port.
T Notify (secs)	Interval in seconds between successful iterations of the Neighbor Notification Protocol. This protocol identifies the MAC address of the FDDI upstream and downstream neighbors, detects duplicate MAC addresses on the ring, and generates periodic keep alive traffic that verifies the local MAC transmit and receive paths.

Sample Display – show fddi smt

```
FDDI Modules SMT Parameters:
----------------------------

                  Connection Policy (R = Reject)
                 - - - - - - - - - - - - - - - -
           Local: M M M M S S S S B B B B A A A A
        Neighbor: M S B A M S B A M S B A M S B A                    T
                  | | | | | | | | | | | | | | | |    ECM    Connect Notify
Slot Conn Circuit | | | | | | | | | | | | | | | |   State   State   (secs)
---- ---- ------- - - - - - - - - - - - - - - - - -------- -------- ------
   2    1 F21     R R R R R R R R . R R . . R . R In       C_Wrap_B     22

    1 entry in table.
```

stats [**circuit** *<circuit name>*]

Displays FDDI input/output statistical information for all FDDI modules or for a specific circuit. The table contains the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier; ranges from 1 to 4.
Circuit	Name of the circuit associated with this line.
Receive Bytes	Number of octets received without error.
Receive Frames	Number of frames received without error.
Transmit Bytes	Number of octets transmitted without error.
Transmit Frames	Number of frames transmitted without error.
Total Errors	Total number of errors of all types.

Sample Display – show fddi stats

```
FDDI Module I/O Statistics:
---------------------------

                   Receive    Receive    Transmit   Transmit    Total
Slot Conn Circuit   Bytes      Frames     Bytes      Frames     Errors
---- ---- ------- ---------- ---------- ---------- ---------- ----------
   2    1 F21          76578        995  841559713   13963966          0

    1 entry in table.
```

system errors [**circuit** *<circuit name>*]

Displays statistical information about system errors for all circuits or for a specific circuit. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier; ranges from 1 to 4.
Circuit	Name of the circuit associated with this line.

Parity Errors	Number of parity errors. Parity errors may indicate faulty hardware. If this count exceeds five, call your customer service representative.
Ring Errors	Number of ring errors.
Port Operation Errors	Number of DMA controller port operation errors. Port operation errors may indicate faulty hardware. If this count exceeds five, call your customer service representative.
Internal Operation Errors	Number of internal operation errors.
Host Errors	Number of parity errors occurring when the host driver accesses a register on the DMA controller. Host errors may indicate faulty hardware. If this count exceeds five, call your customer service representative.

Sample Display – show fddi system errors

```
FDDI Module System Errors:
---------------------------
                                          Port     Internal
                   Parity      Ring    Operation  Operation     Host
Slot Conn Circuit  Errors     Errors     Errors     Errors     Errors
---- ---- ------- ---------- ---------- ---------- ---------- ----------
   2    1 F21             0          0          0          0          0
   3    1 F31             0          0          0          0          0

   2 entries in table.
```

transmit errors [**circuit** *<circuit name>*]

Displays statistical information about transmission errors for all circuits or for a specific circuit. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier; ranges from 1 to 4.
Circuit	Name of the circuit associated with this line.

Aborted Frames	Number of transmit frames with internal abort errors on this circuit.
Underrun Errors	Number of transmit frames aborted with underrun errors on this circuit.

Sample Display – show fddi transmit

```
FDDI Module Transmit Errors:
----------------------------

                    Aborted   Underrun
Slot Conn Circuit   Frames     Errors
---- ---- ------- ---------- ----------
   2    1 F21              0          0
   3    1 F31              0          0

    2 entries in table.
```

version

Displays the current version number and modification date of the *fddi.bat* script.

Sample Display – show fddi version

```
fddi.bat Version: 1.13 Date: 1/19/95.
```

show fr

The **show fr** *<option>* commands display configuration, state, and statistical information about Frame Relay services. For details on the Bay Networks implementation of Frame Relay services, see *Configuring Frame Relay Services*.

The **show fr** command supports the following subcommand options:

alerts	pvcs [<line> | <line.llindex> | <line.llindex.DLCI>]
disabled	stats [pvc [<line> | <line.llindex> | <line.llindex.DLCI>]]
enabled	stats circuit [<circuit name>]
lines [<line> | <line.llindex>]	version

alerts

Displays information about interfaces that are enabled but not running. The table includes the following information:

Line.LLIndex	Instance identifier or interface specification for the Frame Relay interface.
Circuit	Name of the main Frame Relay circuit this interface is associated with.

Mgt Type	Type of Data Link Control Management Interface (DLCMI) configured for the interface, as follows: • *Annex A* – Management services as specified by CCITT Annex A. • *Annex D* – Management services as specified in Annex D to ANSI standard TI.617. • *Annex A Sw* – Management services for the DCE side of the connection (Annex A). • *Annex D Sw* – Management services for the DCE side of the connection (Annex D to TI.617). • *LMI* – Management services as specified by revision 1 of the Local Management Interface standard. • *LMI Sw* – Management services for the DCE side of LMI. • *None* – No management interface between the router and the Frame Relay network.
Status	State of the interface as follows: • *Fault* – Interface is not operating. • *Init* – Interface is initializing (has not yet started). • *NotPres* – Interface is not yet present. • *Running* – Interface is operating properly.
Faults	Number of times the interface has been in fault mode.

Sample Display – show fr alerts

```
 Frame Relay DLCMI ALERT Table
 -----------------------------

   Line.LLIndex   Circuit  Mgt Type  Status   Faults
 ---------------- -------- -------- -------- --------
 202102.0         S22      LMI      Fault           1
 202103.0         S23      AnnexD   Fault           1

Total entries: 2
```

disabled

Displays the interfaces that are currently disabled. For column definitions, see the **alerts** command.

Sample Display – show fr disabled

```
 Frame Relay DLCMI Disabled Table
 --------------------------------

   Line.LLIndex   Circuit  Mgt Type  Status   Faults
 ---------------- -------- -------- -------- --------
 202103.0         S23      AnnexA   NotPres         1

Total entries: 1
```

enabled

Displays the interfaces that are currently enabled. For column definitions, see the **alerts** command.

Sample Display – show fr enabled

```
 Frame Relay DLCMI Enabled Table
 -------------------------------

   Line.LLIndex   Circuit  Mgt Type  Status   Faults
 ---------------- -------- -------- -------- --------
 202101.0         S21      None     Running         0
 202102.0         S22      LMI      Fault           1
 202103.0         S23      AnnexA   Fault           1


Total entries: 3
```

lines [*<line>* | *<line.llindex>*]

Displays information about all or some of the Frame Relay lines configured on the router.

<line>	Limits the display to the specified line identifier.
<line.llindex>	Limits the display to the specified instance identifier.

The table includes the following information:

Line.LLIndex	Line or instance identifier for the Frame Relay interface.
Circuit	Name of the main Frame Relay circuit this interface is associated with.
Mgt Type	See **alerts** command.
Status	See **alerts** command. In addition to those listed, Status is Disabled (by a user).
Faults	Number of times the interface has been in fault status.
Discard	Number of outbound frames discarded because of errors.
Drop	Number of inbound frames dropped because of errors.

Sample Display – show fr lines

```
Frame Relay Data Link Control Management Interface Table
---------------------------------------------------------

  Line.LLIndex   Circuit  Mgt Type  Status  Faults Discard   Drop
---------------- -------- -------- -------- ------ -------- ------
202101.0         S21      None     Running       0        0      0
202102.0         S22      LMI      Fault         1        0      0
202103.0         S23      AnnexA   Disabled      1        0      0

Total entries: 3
```

pvcs [*<line>* | *<line.llindex>* | *<line.llindex.DLCI>*]

Displays information about all or selected Frame Relay permanent virtual connections. You can use the following options with the **pvcs** command.

<line>	Limits the display to the specified Frame Relay line.
<line.llindex>	Limits the display to the specified Frame Relay interface.
<line.llindex.DLCI>	Limits the display to the specified PVC. <line.llindex> specifies the Frame Relay interface. <dlci> specifies the individual PVC.

The table includes the following information:

Line.LLIndex.DLCI	Line or instance identifier for the Frame Relay interface plus the PVC identifier (DLCI).
State	State of the virtual circuit as follows: • *Invalid* – Circuit is configured but the switch has not confirmed it. • *Active* – Circuit is usable. • *Inactive* – Circuit is configured but not active.
Type	Way the virtual circuit was created: • *Static* – User manually configured the PVC. • *Dynamic* – PVC was created during operations.
Mode	Operational mode of the PVC, as follows: • *Direct* – Upper-layer protocols view this PVC as a point-to-point connection; as an individual network interface. • *Group* – Upper-layer protocols treat this PVC as one of a group of destinations to the switched network. The upper-layer protocols use a single network address to send all traffic destined for the switched network to the Frame Relay network interface. • *Hybrid* – Allows protocols to view this PVC as part of the group while the bridge views the PVC in direct mode.
Congestion	Status of the congestion control mechanisms: Disabled, Enabled, or Inherit. Inherit indicates that the VC should use the parameters from the DLCMI record.
SubCct	Name of the subcircuit associated with this direct or hybrid mode PVC. A hyphen indicates that there is no subcircuit for this PVC.

Sample Display – show fr pvcs

```
Frame Relay PVC Table
---------------------

   Line.LLIndex.DLCI      State     Type     Mode   Congestion    SubCct
------------------------ -------- -------- -------- ---------- ------------
202101.0.100             Invalid  Static   Group    Disabled   -
202101.0.200             Active   Static   Group    Inherit    -
202101.0.300             Inactive Static   Group    Inherit    -
202101.0.400             Active   Static   Hybrid   Inherit    202101.0.400
202101.0.500             Active   Static   Direct   Inherit    202101.0.500
202101.0.600             Active   Static   Group    Enabled    -
202101.0.700             Inactive Static   Group    Disabled   -

202102.0.1023            Control  Dynamic  Group    Inherit    -

202104.0.0               Control  Dynamic  Group    Inherit    -
Total entries: 9
```

stats [**pvc** [*<line>* | *<line.llindex>* | *<line.llindex.DLCI>*]]

Displays statistics for all PVCs or for a specified PVC. The table includes a count of frames and octets sent and received. Discard and Drops count frames that the router recognized as belonging to this virtual circuit but threw away because of errors.

To show statistics for all PVCs enter the **stats** command with no options or with only the **pvc** option. You can also use the following options:

pvc *<line>*	Limits the display to all PVCs on the specified Frame Relay line.
pvc *<line.llindex>*	Limits the display to all PVCs on the specified Frame Relay interface.
pvc *<line.llindex.DLCI>*	Limits the display to the specified PVC.

Sample Display – show fr stats

```
 Frame Relay PVC Statistics
 --------------------------

                             Sent                Received
 Line.LLIndex.DLCI   Frames     Octets     Frames     Octets   Discard   Drops
 ----------------- ---------- ---------- ---------- ---------- -------- -------
-
 202101.0.100              0          0          0          0        0        0
 202101.0.200              0          0          0          0        0        0
 202101.0.300              0          0          0          0        0        0

 202102.0.1023           127       1651          0          0        0        0

 202103.0.0              127       1651          0          0        0        0

 202104.0.0              127       1778          0          0        0        0


Total entries: 6
```

stats circuit [*<circuit name>*]

Displays statistics associated with all Frame Relay circuits or a specified circuit. Because of multiline, a Frame Relay circuit can have several Frame Relay interfaces associated with it. Circuit statistics count the number of frames dropped or discarded at the circuit level. This includes both the main-level circuit and the circuits associated with hybrid and direct PVCs.

Sample Display – show fr stats circuit

```
Frame Relay Circuit Statistics
------------------------------

    Circuit      Discards  Drops
--------------- -------- --------
S21                    0        0
202101.0.400           0        0
202101.0.500           0        0

Total entries: 3
```

version

Displays the current version number and modification date of the *fr.bat* script.

Sample Display – show fr version

```
Frame Relay Version 1.7 Date: 10/31/94.
```

show ftp

The **show ftp** *<option>* commands display configuration and statistical information about the Bay Networks File Transfer Protocol (FTP) service. For more information on the Bay Networks implementation of FTP, see *Configuring TCP Services.*

The **show ftp** command supports the following subcommand options:

base	version
stats	

base

Displays the base record for FTP services.

Protocol	Specifies that this is an FTP service.
State	Indicates whether the FTP service is enabled or disabled for this router.
Default Volume	File system volume to which transferred files are written and from which they are retrieved. The volume number corresponds to the slot number on which the volume resides.
Idle Timeout	Timeout (in seconds) to close the FTP control connection if the connection remains idle. The default is 900 seconds (15 minutes).
Max # of sess	Maximum number of FTP sessions allowed at one time. The default is 3 sessions.
Max Login Retries	Maximum number of FTP login retries allowed after a login failure. The default is 3 retries.
File Xfer Type	File transfer type: ASCII or Binary.
Control Service Type	Type of Service (TOS) value set for control connection in the IP datagram that specifies to the Transport Layer how the datagram should be handled. The options are Normal and Low Delay, with Low Delay being the default.

Data Service Type	Type of Service (TOS) value set for data transfer in the IP datagram that specifies to the Transport Layer how the datagram should be handled. The options are Normal and High Throughput, with High Throughput being the default.
FTP TCP Window Size	Size in bytes of the windows used for FTP TCP connections. The default is 16,000 bytes.

Sample Display – show ftp base

```
FTP Base Information
--------------------

                     Default     Idle
 Protocol   State    Volume    Time Out
 -------- --------- -------- -----------
 FTP      Enabled          2         900


 Max # of Max Login File Xfer   Control        Data       FTP TCP
 Sessions  Retries    Type    Service Type Service Type Window Size
 -------- --------- --------- ------------ ------------ -----------
        3         3 Binary    Low Delay    Hi Thru Put        16000
```

stats

Displays statistical information about the Bay Networks FTP service.

Logins	Number of successful FTP logins.
Logins Failed	Number of FTP logins that failed.
Files Received	Number of files successfully received.
Average In Kb/s	Average transfer rate in kilobytes per second for receiving data.
In Errors	Number of errors logged during in-bound transfer.
Files Sent	Number of files successfully sent.
Avg Out Kb/s	Average transfer rate in kilobytes per second for sending data.
Out Errors	Number of errors logged during out-bound transfer.

Sample Display – show ftp stats

```
FTP Statistics Information
--------------------------

          Logins   Files    Avg In     In     Files   Avg Out    Out
 Logins   Failed  Received   Kb/s    Errors    Sent     Kb/s    Errors
-------- -------- -------- -------- -------- -------- -------- --------
       2        0       99      147        0        0        0        0
```

version

Displays the current version number and modification date of the *ftp.bat* script.

Sample Display – show ftp version

```
FTP.bat Version: 1.5 Date: 12/12/94.
```

show hardware

The **show hardware** *<option>* commands display information about a router's hardware.

The **show hardware** command supports the following subcommand options:

backplane	proms [<slot number>]
config_file	slots [<slot number>]
image	version
memory [<slot number>]	

backplane

Displays information about the state of the backplane hardware. The table includes the backplane type, revision, and serial number. The revision and serial numbers are in decimal format. The extended display, shown only for a BCN or BLN system, includes the status of the power supply, fan, and temperature.

Sample Display – show hardware backplane

```
Hardware Backplane Information
------------------------------

           Backplane Type: BCN
       Backplane Revision: 1
  Backplane Serial Number: 2181

           Power Supply 1: OK
           Power Supply 2: OK
           Power Supply 3: OK
           Power Supply 4: OK

               Fan Status: OK
       Temperature Status: OK
```

Sample Display – show hardware backplane

```
Hardware Backplane Information
------------------------------

         Backplane Type: BLN
     Backplane Revision: 2
Backplane Serial Number: 341
```

Sample Display – show hardware backplane

```
Hardware Backplane Information
------------------------------

         Backplane Type: ASN
     Backplane Revision: 0
Backplane Serial Number: 0
```

config_file

Displays the configuration file used to boot the router or reset a slot. The table shows the name and volume that was the source of the configuration as well as the slot that delivered the configuration file to the reset slot. All slots should be running the same configuration file originating from the same volume or backup volume.

Sample Display – show hardware config_file

```
Boot Time Configuration File Information
----------------------------------------

 Slot            File Name              Source        Load Date and Time
 ---- ------------------------------- -------- ------------------------------
    2 5:pvc0.cfg                             3 01/30/1995 14:09:42 [GMT+12:00]
    3 5:pvc0.cfg                             5 01/25/1995 08:26:15 [GMT+12:00]
    4 5:pvc0.cfg                             3 01/25/1995 08:26:19 [GMT+12:00]
    5 5:pvc0.cfg                             3 01/25/1995 15:30:46 [GMT+12:00]
```

Note: *If the pathname of the configuration file is too long to fit into the tabular format, the script displays the information in a vertical table.*

image

Displays the router's software image for each slot, including the integration that is the source of the image, the date and time of the image's creation, and the filename that contains the image. If the filename is too long to fit in a horizontal table, the script displays the information in a vertical table, similar to the one shown for the **config_file** command.

Sample Display – show hardware image

```
Active Image Information
------------------------

Slot    File Name            Source                 Date and Time
---- ---------------- -------------------- ------------------------------
   2 5:bn.exe         int/8.10/46          Fri Jan 20 09:18:52 EST 1995
   3 5:bn.exe         int/8.10/46          Fri Jan 20 09:18:52 EST 1995
   4 5:bn.exe         int/8.10/46          Fri Jan 20 09:18:52 EST 1995
   5 5:bn.exe         int/8.10/46          Fri Jan 20 09:18:52 EST 1995
```

memory [*<slot number>*]

Displays memory configuration and capacity information about all slots or a specific slot. The table includes the following information:

Slot	Slot number.
Local Memory	Total memory capacity in megabytes of the processor on the slot.
Global Memory	Current memory configuration in megabytes of the processor on the slot.
Total Memory	Total in megabytes of local and global memory.

Sample Display – show hardware memory

```
Hardware Memory Information (Megabytes)
---------------------------------------

        Local   Global    Total
Slot   Memory   Memory   Memory
----  -------- -------- --------
   1    6.00 M   2.00 M   8.00 M
   2    6.00 M   2.00 M   8.00 M
   3    6.00 M   2.00 M   8.00 M
   4    6.00 M   2.00 M   8.00 M
   5    6.00 M   2.00 M   8.00 M
```

proms [*<slot number>*]

Displays PROM information for all slots or for a specific slot. The table includes the revision and build date of the Bootstrap PROM and the Diagnostics PROM.

Sample Display – show hardware proms

```
Hardware PROM Information
-------------------------

      Boot PROM                          Diag PROM
Slot  Revision      Boot PROM Date       Revision      Diag PROM Date
----  --------   ---------------------   ---------  ---------------------
   1  Absent                             Absent
   2  v8.10      18:47:12  Dec 30 1994   v3.10      11:20:26  Jul 15 1994
   3  v8.10      18:47:12  Dec 30 1994   v3.10      11:20:26  Jul 15 1994
   4  v8.10      18:47:12  Dec 30 1994   v3.10      11:20:26  Jul 15 1994
   5  v8.10      10:40:55  Jan 06 1995   v3.10      11:20:26  Jul 15 1994
```

slots [*<slot number>*]

Displays hardware information about all slots or a specific slot in the system. The table includes information about the processor module and link module in the specified slot, as well as the module type, revision, and serial number. The revision and serial numbers are in decimal format.

For the AN, the table indicates that the AN has an 802.3 repeater (HUB) by indicating that the link module is an ANSEDSH.

For the ASN, the table displays the number and type of the network module instead of the link module and the network module type, revision, and serial number instead of the link module type, revision, and serial number.

Sample Display – show hardware slots

```
 Hardware Information per Slot
 -----------------------------

        Processor    Processor  Processor        Link        Link       Link
Slot     Module      Revision   Serial No.      Module     Revision  Serial No.
-----  -----------   ---------  ----------   ------------  --------  ----------
    1  SRMF                1         278   SRML                17        2121
    2  FRE2              234          53   DST-4/16            11        3543
    3  FRE2               16       13569   QE/NF                6         958
    4  FRE                16        1943   MCT1-2               2         488
    5  FRE2               18       94240   QSYNC                8        8431
```

Sample Display – show hardware slots 2

```
 Hardware Information per Slot
 -----------------------------

        Processor    Processor  Processor        Link        Link       Link
Slot     Module      Revision   Serial No.      Module     Revision  Serial No.
-----  -----------   ---------  ----------   ------------  --------  ----------
    2  FRE2              234          53   DST-4/16            11        3543
```

Sample Display – show hardware slots

```
Hardware Information per Slot
-----------------------------

        Processor    Processor  Processor                  Net Mod    Net Mod
Slot     Module      Revision   Serial No.   # Net Module  Revision  Serial No.
-----  -----------   ---------  ----------   ------------  --------  ----------
    1  ASN                 1          33   1 DENM               1           5
                                            2 SFNM               1           3
                                            3 DENM               1           9
                                            4 DENM               1           8
```

Sample Display – show hardware slots

```
 Hardware Information per Slot
 -----------------------------

        Processor    Processor  Processor                 Net Mod    Net Mod
Slot     Module      Revision   Serial No.   # Net Module  Revision  Serial No.
-----  -----------   ---------  ----------   ------------  --------  ----------
    1  ASN                  4           8   1 Absent           N/A         N/A
                                            2 SFNM               1          13
                                            3 Absent           N/A         N/A
                                            4 SPEX               1        1002
    3  ASN                  4          17   1 Absent           N/A         N/A
                                            2 Absent           N/A         N/A
                                            3 Absent           N/A         N/A
                                            4 SPEX               1           5
    4  ASN                  4          21   1 Absent           N/A         N/A
                                            2 Absent           N/A         N/A
                                            3 Absent           N/A         N/A
                                            4 PPX                1        1001
```

Sample Display – show hardware slot

```
 Hardware Information per Slot
 -----------------------------

        Processor    Processor  Processor        Link        Link       Link
Slot     Module      Revision   Serial No.      Module     Revision  Serial No.
-----  -----------   ---------  ----------   ------------  --------  ----------
    1  Access Node          1        4246   ANSEDSH              1        4246
```

version

Displays the current version and modification date of the *hardware.bat* script.

Sample Display – show hardware version

```
Hardware.bat Version: 1.29 Date: 1/19/95.
```

show hssi

The **show hssi** *<option>* commands display configuration, status, and statistical information about the High-Speed Serial Interface (HSSI) lines. For detailed information about configuring HSSI, refer to *Configuring Routers*.

The **show hssi** command supports the following subcommand options:

alerts	sample [<period in seconds>] [circuit <circuit name>]
base [circuit <circuit name>]	stats [circuit <circuit name>]
disabled	system errors [circuit <circuit name>]
enabled	transmit errors [circuit <circuit name>]
receive errors [circuit <circuit name>]	version

alerts

Displays all HSSI modules that are enabled but not up. Use this display to identify the interfaces that are not working. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier; ranges from 1 to 4.
Circuit	Name of the circuit associated with this line.

State	State of the line driver, as follows: • *BOFLwait* – Driver is waiting for its own Breath-of-Life frames to be successfully transmitted or for a BOFL frame from the Bay Networks router at the other end of the WAN connection. This applies only to the Wellfleet Standard protocol. • *CAwait* – External equipment, such as a modem, DSU, or CSU, is not currently up. • *Disabled* – Module is not operational. • *Init* – Module is initializing. • *LMIwait* – Driver is waiting for any of four WAN protocols to indicate that a link layer connection has been established to another entity. This applies to the Frame Relay, SMDS, ATM, and PPP protocols. • *Not Pres* – Module is enabled but not yet started. This state occurs for several reasons. For example, the Link Module may not be physically present in the chassis. The software may be booting and has not yet initialized the driver software. The slot may be running diagnostics. Or there may be a problem with the configuration.
MAC Address	Physical address of the line. The line driver fills this address in from the 48-bit address stored in the serial number PROM for this connector.
BOFL TMO	Time in seconds between transmissions of Breath of Life messages from this interface. A timeout occurs if five periods elapse without a successful frame transmission. When timeout occurs, the interface is disabled and then enabled again automatically.
MTU	Maximum transfer unit size — the buffer size for the HSSI port (also the largest frame that can be transmitted or received across the HSSI port). The value ranges from 3 to 4608 bytes.
WAN Protocol	WAN protocol enabled on this interface, as follows: • *ATM* – Asynchronous Transfer Mode • *FRAME RELAY* – Frame Relay • *PPP* – Point-to-Point • *SMDS* – Switched Multi-Megabit Data Service • *WF STANDARD* – Wellfleet Standard, a proprietary protocol used between two Bay Networks routers. Based on the CCITT HDLC (High-level Data Link Control) protocol, Wellfleet Standard provides LLC1 (connectionless, datagram) service.
Line Number	The line number for this line. Use this value to correlate driver-level information with information displayed using scripts for PPP, Frame Relay, SMDS, or ATM.

Sample Display – show hssi alerts

```
HSSI Modules on Alert:
----------------------

                                                BOFL          WAN       Line
Slot Conn Circuit  State      MAC Address      TMO  MTU   Protocol    Number
---- ---- ------- -------- ----------------- ---- ---- ----------- --------
   4    1         CAwait   00-00-A2-03-60-C2    1 4495 WF STANDARD        0

Found     1 match out of     1 entry in table.
```

base [**circuit** *<circuit name>*]

Displays the base level information for all HSSI circuits or a specific circuit. For definitions of the columns in the table, see the **alerts** command. In addition to the states listed under the **alerts** command, State can also be Up.

Sample Display – show hssi base

```
HSSI Modules:
-------------

                                                BOFL          WAN       Line
Slot Conn Circuit  State      MAC Address      TMO  MTU   Protocol    Number
---- ---- ------- -------- ----------------- ---- ---- ----------- --------
   3    1 H31     Up       00-00-A2-03-C1-C3    1 4495 WF STANDARD   703101

    1 entry in table.
```

disabled

Displays HSSI circuits that a user has manually disabled. For definitions of the columns in the table, see the **alerts** command. In this case, State is Disabled.

Sample Display – show hssi disabled

```
HSSI Modules Disabled:
----------------------

                                            BOFL          WAN       Line
Slot Conn Circuit  State      MAC Address    TMO  MTU   Protocol    Number
---- ---- ------- -------- ----------------- ---- ---- ----------- --------

Found     0 matches out of     1 entry in table.
```

enabled

Displays HSSI modules that a user has manually enabled. For definitions of the columns in the table, see the **alerts** command. State can also be Up.

Sample Display – show hssi enabled

```
HSSI Modules Enabled:
---------------------

                                            BOFL          WAN       Line
Slot Conn Circuit  State      MAC Address    TMO  MTU   Protocol    Number
---- ---- ------- -------- ----------------- ---- ---- ----------- --------
   3    1 H31     Up       00-00-A2-03-C1-C3    1 4495 WF STANDARD   703101

Found     1 match out of     1 entry in table.
```

receive errors [circuit *<circuit name>*]

Displays receive errors for all circuits or for a specific circuit. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier; ranges from 1 to 4.
Circuit	Name of the circuit associated with this line.
CRC Errors	Number of frames received with CRC errors.

Overrun Errors	Number of frames received that were aborted due to the memory bandwidth of the FIFO buffer overrunning during DMA.
Aborts	Number of frames received with abort errors.
Frames Too Long	Number of frames received that exceeded the MTU size.

Sample Display – show hssi receive errors

```
HSSI Module Receive Errors:
----------------------------

                                                        Frames
Slot Conn Circuit CRC Errors  Overruns    Aborts    Too Long
---- ---- ------- ---------- ---------- ---------- ----------
   3    1 H31              0          0          0          0

    1 entry in table.
```

sample [*<period in seconds>*] [**circuit** *<circuit name>*]

Displays data sampled from HSSI over a period of 10 seconds. You can change the number of seconds over which you want to sample the data, and you can display sampled data for a specific circuit only. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier; ranges from 1 to 4.
Circuit	Name of the circuit associated with this line.
Rx Frames	Number of frames received on this line.
Tx Frames	Number of frames sent on this line.
Rx Lack of Resources	Number of packets received and discarded because of lack of resources; for example, buffers.
Tx Lack of Resources	Number of transmit packets discarded because of lack of resources; for example, buffers.

Sample Display – show hssi sample

```
HSSI Sampled Data over  10 seconds
----------------------------------

                      Rx         Tx     Rx Lack of Tx Lack of
Slot Conn Circuit   Frames     Frames   Resources  Resources
---- ---- ------- ---------- ---------- ---------- ----------
   3    1 H31             11         12          0          0

    1 entry in table.
```

Sample Display – show hssi sample circuit H31

```
HSSI Sampled Data over  5 seconds
---------------------------------

                      Rx         Tx     Rx Lack of Tx Lack of
Slot Conn Circuit   Frames     Frames   Resources  Resources
---- ---- ------- ---------- ---------- ---------- ----------
   3    1 H31              5          6          0          0

Found     1 matches out of     1 entry in table.
```

stats [**circuit** *<circuit name>*]

Displays HSSI input/output statistical information for all HSSI circuits or for a specific circuit. The table contains the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier; ranges from 1 to 4.
Circuit	Name of the circuit associated with this line.
Receive Bytes	Number of octets received without error.
Receive Frames	Number of frames received without error.
Transmit Bytes	Number of octets transmitted without error.

Transmit Frames	Number of frames transmitted without error.
Total Errors	Total number of errors of all types.

Sample Display – show hssi stats

```
HSSI Module I/O Statistics:
---------------------------

                   Receive    Receive    Transmit   Transmit    Total
Slot Conn Circuit   Bytes      Frames     Bytes      Frames     Errors
---- ---- ------- ---------- ---------- ---------- ---------- ----------
   3    1 H31      600808237   10617073    3692023     141294          0

    1 entry in table.
```

system errors [**circuit** *<circuit name>*]

Displays statistical information about system errors for all circuits or for a specific circuit. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier; ranges from 1 to 4.
Circuit	Name of the circuit associated with this line.
Rx Ring Errors	Number of errors that the DMA controller has detected while processing the receive ring.
Tx Ring Errors	Number of errors that the DMA controller has detected while processing the transmit ring.
Internal Op Errors	Number of internal operation errors.
Host Errors	Number of parity errors occurring while the host driver accesses a register on the DMA controller. Host errors may indicate faulty hardware. If this count exceeds five, call your customer service representative.
Port Errors	Number of DMA controller port-operation errors. Port errors may indicate faulty hardware. If this count exceeds five, call your customer service representative.

Sample Display – show hssi system errors

```
HSSI Module System Errors:
--------------------------

                    Rx Ring    Tx Ring   Internal     Host       Port
Slot Conn Circuit   Errors     Errors   Op Errors    Errors     Errors
---- ---- ------- ---------- ---------- ---------- ---------- ----------
   3    1 H31              0          0          0          0          0

    1 entry in table.
```

transmit errors [**circuit** *<circuit name>*]

Displays statistical information about transmission errors for all circuits or for a specific circuit. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier; ranges from 1 to 4.
Circuit	Name of the circuit associated with this line.
Aborts	Number of transmit frames with abort errors on this circuit.
Underruns	Number of transmit frames aborted with underrun errors on this circuit.

Sample Display – show hssi transmit errors

```
HSSI Module Transmit Errors:
----------------------------

Slot Conn Circuit   Aborts   Underruns
---- ---- ------- ---------- ----------
   4    1 H31              0          0

    1 entry in table.
```

version

Displays the current version number and modification date of the *hssi.bat* script.

Sample Display – show hssi version

```
hssi.bat Version: 1.9 Date: 10/31/94.
```

show igmp

The **show igmp** *<option>* commands display configuration, state, and statistical information about the Internet Gateway Management Protocol (IGMP). For detailed information about the Bay Networks implementation of IGMP, refer to *Configuring IP Services*.

The **show igmp** command supports the following subcommand options:

base	stats [<circuit name>]
circuits [<circuit name> | enabled | disabled]	version
stats [<circuit name>]	

base

Displays the base level information for IGMP. The table provides the following information:

Protocol	Name of the protocol, which in this case is IGMP.
State:	State of IGMP on the router: Up, Down, Init (initializing), or Not Present.
Estimated Number of Groups	Estimated number of IGMP groups that will be used through this router.

Sample Display – show igmp base

```
IGMP Base Information
---------------------

 Protocol State
  -------- -----------
   IGMP     Init

   Estimated Number of Groups  = 20
```

circuits [*<circuit name>*| **enabled** | **disabled**]

Displays the DVMRP circuit information for all circuits, a specified circuit, enabled circuits, or disabled circuits. The table contains the following information:

Circuit	Circuit name of this interface.
State	Current state of the IGMP interface: Up, Down, Init (initializing), Invalid, or Not Pres (not present).
Query Rate	Specifies, in seconds, how often a local group membership is queried. If set to 0, no queries are sent out of this interface.
DR Timeout	Designated Router Timeout. Specifies, in seconds, the amount of time since the last host query message.
Membership Timeout	Specifies, in seconds, the amount of time a local group membership is valid without confirmation.

Sample Display – show igmp circuits

```
IGMP Circuits
-------------

 Circuit    State       Query Rate   DR Timeout   MembershipTimeout
 --------   --------    ----------   ----------   -----------------
 E31        Up                 120          140                 260
 E34        Up                 120          140                 260
 E22        Up                 120          140                 260
 E32        Up                 120          140                 260
 E33        Up                 120          140                 260

5 Total entries.
```

groups [*<circuit name>*]

Displays group information for all IGMP circuits or a specified IGMP circuit. The table displays the following information:

Circuit	Circuit name of this interface.
Group Address	Associated group address.
Timer Value	Specifies how much time, in seconds, will pass before this group times out.

Sample Display – show igmp groups

```
IGMP Groups
-----------

 Circuit    Group Address   Timer Value
 --------   -------------   -----------
 E31        238.1.1.1               100
 E34        238.1.1.1               100
 E22        238.1.1.1               100
 E32        238.1.1.1               100
 E33        238.1.1.1               100

5 Total entries.
```

stats [*<circuit name>*]

Displays statistics for all IGMP circuits or a specified IGMP circuit. The table displays the following information:

Circuit	Circuit name of this interface.
Designated Rtr	Current IGMP designated router, or the IGMP router sending the IGMP host queries if there are multiple routers on a multi-access network.
Local IP	IP address currently in use on this circuit. This is the IP address used to generate multicast traffic.
In Pkts	Number of input datagrams received from the IGMP interfaces.
In Query	Number of host membership query messages that have been received on this IGMP interface.
Out Query	Number of host membership query messages sent out of this IGMP interface.
Discards	Number of IGMP messages received on this interface that were discarded due to bad checksums, illegal message types, bad values in fields, etc.

Sample Display – show igmp stats

```
IGMP Circuit Statistics
-----------------------

Circuit  Designated Rtr  Local IP        In Pkts   In Query  Out Query Discards
-------- --------------- --------------- --------- --------- --------- --------
E31      1.1.1.1         1.1.1.1                 0         0       475        0
E34      4.4.4.4         4.4.4.4                 0         0       475        0
E22      200.200.200.1   200.200.200.1           0         0       475        0
E32      200.200.100.1   200.200.100.1           0         0       475        0
E33      200.200.1.1     200.200.1.1             0         0       475        0

5 Total entries.
```

version

Displays the current version number and modification date of the *igmp.bat* script.

Sample Display – show igmp version

```
igmp.bat Version: 1.1 Date: 1/30/95.
```

show ip

The **show ip** *<option>* commands display configuration, state, and statistical information about the Internet Protocol (IP). For detailed information about the Bay Networks implementation of IP, refer to *Configuring IP Services*.

The **show ip** command supports the following subcommand options:

adjacent hosts	stats [circuit <circuit name>]
alerts	stats cache [<circuit name>]
arp	stats datagrams [<circuit name>]
base	stats fragments [<circuit name>]
circuits [<circuit name>]	stats icmp client [<circuit name>]
disabled	stats icmp in [<circuit name>]
enabled	stats icmp misc [<circuit name>]
rfilters [export | import] [<protocol>]	stats icmp out [<circuit name>]
rip	stats icmp server [<circuit name>]
rip alerts	stats security in [<circuit name>]

rip disabled	stats security out [<circuit name>]
rip enabled	traffic filters
routes [-A] [type {local|bgp|egp|ospf|rip}] | [<IP address> | find <search pattern>]	version
static	

adjacent hosts

Displays a table of configured adjacent hosts. The table includes the following information:

Host IP Address	IP address of the host.
Interface IP	Address of the IP interface through which packets reach the host.
Interface Mask	Subnet mask of the IP address specified for the interface.
Mac Address	MAC address of the host.
Encaps	Encapsulation method used: ENET (Ethernet), SNAP, PDN, or DDN.
Valid	Validity of the configuration. If this field displays No, you should check the adjacent host's configuration.

Sample Display – show ip adjacent hosts

```
IP Adjacent Hosts
-----------------

 Host IP Addr    Interface IP   Interface Mask     Mac Address    Encaps Valid
--------------- --------------- --------------- ----------------- ------ -----
5.0.0.2         5.0.0.1         255.0.0.0       00.00.A2.00.12.34 ENET   YES

 1 Entries.
```

alerts

Displays the circuit name and IP address of interfaces whose state does not match their configuration; for example, an interface configured as enabled but whose state is not up.

Sample Display – show ip alerts

```
IP Circuits
-------------

Circuit   State      IP Address
-------- -------- ----------------
S34      Down     151.11.4.1
F51      Down     151.11.30.1

2 Entries found.
```

arp

Displays the IP Address Resolution Protocol (ARP) table. This table shows the mapping between the host's IP address and its MAC address. The table includes the following information about each host listed:

IP Address	IP address of the host.

Physical address	MAC address of the host.
Type	How the IP address was resolved to the MAC address: Dynamic means that ARP resolved it. Static means that it was configured through an adjacent host entry.

Sample Display – show ip arp

```
IP ARP Table
------------

   IP Address      Physical Address     Type
--------------- ------------------- --------
151.11.1.2       00-00-A2-06-B9-AA    Dynamic
151.11.2.2       00-00-A2-06-7A-FA    Dynamic
192.32.37.161    00-00-A2-01-DF-B7    Dynamic
192.32.37.162    08-00-20-1F-25-8B    Dynamic

4 ARP Entries
```

base

Displays the state of IP, whether or not it is up and in forwarding mode or in host mode only. The base record controls IP for the entire system. The table includes the following information:

Protocol	Name of the protocol, in this case IP.
State	State of the protocol: Down, Init (initializing), Not Pres (enabled but not yet started), or Up.
Forwarding Mode	Status of forwarding; Forwarding indicates that the IP host is an IP gateway and is forwarding datagrams received but not addressed to it. Not Forwarding indicates that this IP host is not a gateway.

Zero Subnetting	Setting that determines whether or not zero subnets are allowed — Enabled or Disabled. If Enabled, interfaces configured with a zero subnet are allowed; if Disabled, they are not.
Default TTL	Default value that IP inserts in the Time-To-Live field of the IP header in datagrams that this router originates when the transport layer protocol does not supply the value. The maximum value is 255 and the default is 30.

The **base** command also displays the number of networks and hosts that IP knows about and the number of policy rules defined.

Sample Display – show ip base

```
IP Base Information
-------------------
Protocol    State         Forwarding Mode       Zero Subnetting Default TTL
-------- ----------- ------------------------- --------------- -----------
IP       Up          Forwarding                Disabled                 30

Route pools contain 168 networks/subnets and 11 hosts.
Maximum policy rules per type per protocol: 32
```

circuits [*<circuit name>*]

Displays IP circuit information, including which circuits have IP configured on them, the IP address for each, and the state of IP on the circuit (Up or Down). IP address 0.0.0.0 indicates that an unnumbered interface is configured on the circuit. You can also display this information for a specific circuit only.

Sample Display – show ip circuits

```
IP Circuits
-----------

 Circuit   Circuit #   State      IP Address
 -------- ----------- -------- ----------------
   E31       2         Up       0.0.0.0
   E23       3         Up       128.1.1.1
   E21       1         Up       192.32.29.130

3 Total entries.
```

disabled

Displays the circuit name, circuit number, and IP address of interfaces that a user has manually disabled. IP address 0.0.0.0 indicates that an unnumbered IP interface is configured on the circuit.

Sample Display – show ip disabled

```
IP Circuits
-----------

 Circuit   Circuit #   State      IP Address
 -------- ----------- -------- ----------------
   E31       2         Disabled   0.0.0.0
   E23       3         Disabled   128.1.1.1

2 Entries found.
```

enabled

Displays the circuit name, circuit number, state, and IP address of interfaces that a user has manually enabled. IP address 0.0.0.0 indicates that the circuit is associated with an unnumbered unterface. State is one of the following:

Init	Interface is coming up and initializing.
Invalid	Something about the interface's configuration is not correct. Look at the configuration.
Not Pres	IP software has not been installed on the slot that hosts the physical interface.
Up	Interface is functioning properly.

Sample Display – show ip enabled

```
IP Circuits
-----------

 Circuit   Circuit #   State      IP Address
 -------- ----------- -------- ----------------
   E31       2         Up         0.0.0.0
   E23       3         Up         128.1.1.1
   E21       1         Up         192.32.29.130

3 Entries found.
```

rfilters [**export** | **import**] [*<protocol>*]

Displays all configured route filters, or specific route filters. For example, you can display all export filters or export filters for a specific protocol only. You can use the following options with the **rfilters** command:

export	Displays only export route filters.
import	Displays only import route filters.
<protocol>	Limits the display to the specified protocol, which is one of the following: • *all* – Displays route filters for all protocols. • *RIP* – Displays only RIP route filters. • *OSPF* – Displays only OSPF route filters. • *EGP* – Displays only EGP route filters. • *BGP3* – Displays only BGP-3 route filters.

The table includes the following information:

Address	IP network address of the network to which this filter applies. If 0.0.0.0, the filter applies to all networks.
Mask	Range of addresses upon which this filter acts; depends on the address class of the network address.
From Protocol	Source of the routing information — any, direct, static, RIP, OSPF, EGP, or BGP-3.
Action	Flow of routing information. For export filters, Action is one of the following: • *Propagate* – Advertise the route. • *Ignore* – Suppress advertising of the route. • *Aggregate* – Do not explicitly advertise the route; advertise the default route (0.0.0.0) instead. For import filters, Action specifies whether the route is transferred to the routing tables and is one of the following: • *Accept* – Send the routing information to the routing tables. • *Ignore* – Drop the routing information.
Peer Address	IP address of the peer router.
Peer AS	Autonomous System number of the peer router.

Sample Display – show ip rfilters export BGP3

```
IP BGP3 Export Filters:
-----------------------

                              From
Address           Mask      Protocol   Action     Peer Address   Peer AS
------------ ------------ -------- ---------- ---------------- -------
0.0.0.0       0.0.0.0       ANY      Propagate  192.32.174.66          2
192.32.174.0  255.255.255.0 ANY      Propagate  192.32.175.130         1

2 BGP3 export filters in the table
```

rip

Displays the IP interfaces that have RIP configured. The displays contain the following information:

IP Interface	Internet address of the interface.
State	State of the interface: Down, Init (initializing), Not Pres (enabled but not yet started) or Up.
Supply	Whether the interface is sending out RIP updates: Enabled or Disabled. If Enabled, the interface is supplying updates.
Listen	Whether the interface is processing the RIP updates that it receives: Enabled or Disabled. If Enabled, the interface is processing RIP updates.

Sample Display – show ip rip

```
IP RIP Information
------------------

  IP Interface   State         Supply   Listen
---------------- -----         ------   ------
192.32.174.129   Up            Enabled  Disabled

1 Entries.
```

rip alerts

Displays the IP interfaces that have RIP configured but the state of RIP is down. For more information on column definitions, see the **rip** command.

Sample Display – show ip rip alerts

```
IP RIP Interface Table Alerts
-----------------------------

  IP Interface       State      Supply   Listen
---------------- ------------- -------- --------
192.32.175.34    Down          Enabled  Enabled

1 Entries found
```

rip disabled

Displays the IP interfaces that have RIP configured but disabled. For more information on column definitions, see the **rip** command.

Sample Display – show ip rip disabled

```
IP RIP: Table of Disabled Interfaces
------------------------------------

  IP Interface       State      Supply   Listen
---------------- ------------- -------- --------
192.32.174.129   Disabled      Enabled  Disabled

1 Entries found.
```

rip enabled

Displays the IP interfaces that have RIP enabled on them. For more information on column definitions, see the **rip** command.

Sample Display – show ip rip enabled

```
IP RIP: Table of Enabled Interfaces
-----------------------------------

  IP Interface       State      Supply   Listen
---------------- ------------- -------- --------
192.32.174.129   Up            Enabled  Disabled

1 Entries found.
```

routes [**-A**] [**type** {**local**|**bgp**|**egp**|**ospf**|**rip**}] | [*<IP address>* | **find** *<search pattern>*]

Displays IP routes. You can use the following options to display specific information:

-A	Shows entire routing table, including routes that are not used as well as best routes.
type {local | bgp | egp | ospf | rip}	Limits the display to one specified protocol.
<IP address>	Limits the display to the routes that match the specified IP address.
find *<search pattern>*	Limits the display to the routes that match the specified subnet part of the IP address.

The table includes the following information:

Network	Destination IP address for this route. 0.0.0.0 indicates a default route.
Mask	Subnet mask to be combined with the destination address and then compared with the value in Destination. If the value of Destination is 0.0.0.0 (a default route), then the value of Mask is also 0.0.0.0.
Proto	Routing method through which the router learned this route: Other, Local, Netmgmt, ICMP, EGP, GGP, Hello, RIP, IS-IS, OSPF, or BGP.
Age	Number of seconds since this route was last updated or verified to be correct. The meaning of “too old” depends on the routing protocol specified under Proto.
Slot	Number of the slot on which the network address/mask is configured.
Cost	Number of hops to reach the destination.
NextHopAddr / AS	IP address of the next hop and next Autonomous System of this route. If the next hop is an unnumbered interface, the command displays 0.0.0.*n*, where *n* is the number of the circuit on which the interface has been configured. In the following sample display, the next hop field for destinations 10.0.0.0, 55.0.0.0, and 99.0.0.0 indicates that the next hop is an unnumbered interface configured on circuit 2.

Weight	Weight value assigned to the route (displayed only if you specify all routes [**-A**].
* (asterisk)	Indicates a route that is used by IP (applies only if you specify all routes [**-A**]).

Sample Display – show ip routes

```
IP Routes
---------

Network/Mask        Proto        Age Slot     Cost  NextHop Address /   AS
------------------- ------ --------- ---- --------- ----------------/-----
0.0.0.0/0           RIP            5    2         2 192.32.174.33
6.0.0.0/8           Direct       370    2         0 6.6.6.6
128.128.0.0/16      RIP            5    2         2 192.32.174.33
129.128.0.0/16      RIP            5    2         2 192.32.174.33
130.128.0.0/16      RIP            5    2         2 192.32.174.33
131.119.0.0/16      RIP            5    2         2 192.32.174.33
134.177.0.0/16      RIP            5    2         2 192.32.174.33
141.251.0.0/16      RIP            5    2         2 192.32.174.33
146.240.0.0/16      RIP            5    2         2 192.32.174.33
170.41.0.0/16       RIP            5    2         2 192.32.174.33
172.14.0.0/16       RIP            5    2         2 192.32.174.33
172.15.0.0/16       RIP            5    2         2 192.32.174.33
192.1.1.0/24        RIP            5    2         2 192.32.174.33
192.1.2.0/24        RIP            5    2         2 192.32.174.33
192.32.1.0/24       RIP            5    2         2 192.32.174.33
192.32.2.0/24       RIP            5    2         2 192.32.174.33
192.32.4.0/24       RIP            5    2         2 192.32.174.33
192.32.5.0/24       RIP            5    2         2 192.32.174.33
192.32.6.0/24       RIP            5    2         2 192.32.174.33
192.32.8.0/24       RIP            5    2         2 192.32.174.33


   Total Networks on Slot 2 = 268
```

```
ip routes -A
------------

 Network/Mask        Proto       Age Sl     Cost NextHop Address /   AS  Weight
 ------------------- ------ -------- -- -------- ----------------/----- -------
-
*0.0.0.0/0           RIP          20  2        2 192.32.174.33          7b9e0002
 0.0.0.0/0           Direct      385  0   131071 Unreachable            ffffffff
 0.0.0.0/32          Host        N/A  0        0 un# IP cct 0           00000000
*6.0.0.0/8           Direct      385  2        0 6.6.6.6                00000000
 6.0.0.0/32          Host        N/A  2        0 Broadcast              00000000
 6.6.6.6/32          Host        N/A  2        0 This Router            00000000
 6.255.255.255/32    Host        N/A  2        0 Broadcast              00000000
*128.128.0.0/16      RIP          20  2        2 192.32.174.33          7b9e0002
*129.128.0.0/16      RIP          20  2        2 192.32.174.33          7b9e0002
*130.128.0.0/16      RIP          20  2        2 192.32.174.33          7b9e0002
*131.119.0.0/16      RIP          20  2        2 192.32.174.33          7b9e0002
*134.177.0.0/16      RIP          20  2        2 192.32.174.33          7b9e0002
*141.251.0.0/16      RIP          20  2        2 192.32.174.33          7b9e0002
*146.240.0.0/16      RIP          20  2        2 192.32.174.33          7b9e0002
*170.41.0.0/16       RIP          20  2        2 192.32.174.33          7b9e0002
*172.14.0.0/16       RIP          20  2        2 192.32.174.33          7b9e0002
*172.15.0.0/16       RIP          20  2        2 192.32.174.33          7b9e0002
*192.1.1.0/24        RIP          20  2        2 192.32.174.33          7b9e0002
*192.1.2.0/24        RIP          20  2        2 192.32.174.33          7b9e0002
*192.32.1.0/24       RIP          20  2        2 192.32.174.33          7b9e0002

   Total Networks on Slot 2 = 268
```

static

Displays all statically configured routes on the router. The table includes the following information:

IP Destination	Internet address of this static route.
Network Mask	Subnetwork mask for this static route.
Cost	Number of hops to reach the destination.
Nexthop	IP address of the next hop on the route. If the next hop is an unnumbered interface, the Next Hop field displays the circuit number associated with the unnumbered interface.
Valid	Value that indicates whether or not the configuration is valid.
Enabled	Indicates whether this static route is enabled. The default is Yes.

Sample Display – show ip static

```
IP Static Routes
---------------

 IP Destination    Network Mask     Cost       Nexthop      Valid Enabled
---------------- --------------- -------- ---------------- ----- -------
55.0.0.1         255.0.0.0              1 Unn Cct 2         Yes    Yes
99.1.1.0         255.0.0.0              1 Unn Cct 2         Yes    Yes

2 Entries.
```

stats [**circuit** *<circuit name>*]

Displays packet statistics that the router collects for all circuits or a specified circuit. The table includes the following information:

Circuit	Name of the circuit that the interface runs on.
IP Address	Internet address of the interface.
In Receives	Number of packets received on the interface, including errors.
Out Requests	Number of packets that local clients, including ICMP, supplied to IP for transmitting.
Forwards	Number of packets forwarded through this interface; included in the In Receives count.
In Discards	Number of packets that IP received and discarded because of lack of resources; for example, buffers.
Out Discards	Number of packets given to IP to transmit but discarded because of lack of resources; for example, insufficient buffers.

Sample Display – show ip stats

```
IP Statistics
-------------

                            In       Out              In      Out
Circuit     IP Address    Receives Requests Forwards Discards Discards
-------- ---------------- -------- -------- -------- -------- --------
S31      192.32.174.65     2150309   211845    34771        0        0
E23      192.32.174.97     1305158    76700    30495        0        0
E21      192.32.174.129    3191531   163026  3238130        0        0
E22      192.32.175.129      51219    59655  3070948        0        0
```

stats cache [*<circuit name>*]

Displays statistics about the cached forwarding tables that IP uses for forwarding traffic for all circuits or a specified circuit. The table includes the following information:

Circuit	Name of the circuit that the interface runs on.
IP Address	Internet address of the interface.
Cache Networks	Number of entries in the forwarding table.
Cache Misses	Number of times the forwarding table did not contain information about a destination and IP had to look up the route.
Cache Removes	Number of entries removed from the forwarding table because they timed out.

Sample Display – show ip stats cache

```
IP Cache Statistics
-------------------

                           Cache    Cache    Cache
Circuit     IP Address    Networks  Misses  Removes
-------- ---------------- -------- -------- --------
S31      192.32.174.65         128        4       78
E23      192.32.174.97         238     1768     1797
```

stats datagrams [*<circuit name>*]

Displays error statistics about IP datagrams that IP has processed for all interfaces or for a specific interface. The table includes the following information:

Circuit	Name of the circuit this interface is on.
IP Address	Internet address of the interface.
Header Errors	Number of IP packets received with header errors.
Address Errors	Number of IP packets received with address errors.
Unknown Protocol	Number of IP packets received locally that IP discarded because the router did not implement the protocol.
In Discards	Number of packets that IP received but discarded because of lack of resources; for example, insufficient buffers.
Out Discards	Number of packets given to IP to transmit but discarded because of lack of resources; for example, insufficient buffers.
No Routes	Number of packets with unknown destination addresses that an upper-layer protocol gave to IP to transmit.

Sample Display – show ip stats datagrams

```
IP Datagram Statistics
----------------------

                          Header  Address  Unknown     In      Out       No
Circuit     IP Address    Errors   Errors  Protocol Discards Discards  Routes
-------- ---------------- -------- -------- -------- -------- -------- --------
S31      192.32.174.65          0        0        4        0        0        0
E23      192.32.174.97          0        0    39286        0        0        0
E21      192.32.174.129         0        0        0        0        0        0
E22      192.32.175.129         0        0        0        0        0        0
```

stats fragments [*<circuit name>*]

Displays all information about fragmented IP packets or information for all interfaces or for a specific interface. The table includes the following information:

Circuit	Name of the circuit this interface is on.
IP Address	Internet address of the interface.
Fragmnts Received	Number of IP fragments received that this router had to reassemble.
Sucssful Reassem	Number of datagrams that this router successfully reassembled.
Failed Reassem	Number of datagrams that this router failed to reassemble; not necessarily a count of discarded IP fragments.
Fragmnt Sent	Number of IP datagrams that this router fragmented.
Fragmnt Failed	Number of IP datagrams that this router discarded because it could not fragment them properly; for example, could not set the Don't Fragment bit.
Total Fragmnts	Number of fragments that this router sent in which this router performed the fragmenting.

Sample Display – show ip stats fragments

```
IP Fragments Statistics
-----------------------

                        Fragmnts Sucssful  Failed  Fragmnt  Fragmnt   Total
Circuit     IP Address  Received Reassem  Reassem    Sent    Failed  Fragmnts
-------- --------------- -------- -------- -------- -------- -------- --------
S31      192.32.174.65          0        0        0        0        0        0
E23      192.32.174.97          0        0        0        0        0        0
```

stats icmp client [*<circuit name>*]

Displays echo, timestamp, and address mask statistics about Internet Control Message Protocol (ICMP) packets for all interfaces or for a specified interface. The table includes the following information:

Circuit	Name of the circuit this interface is on.
IP Address	Internet address of the interface.
Echo Requests	Number of ICMP Echo Request messages received.
Echo Replies	Number of ICMP Echo Reply messages received.
Timestmp Requests	Number of ICMP Timestamp Request messages received.
Timestmp Replies	Number of ICMP Timestamp Reply messages received.
AddrMask Requests	Number of ICMP Address Mask Request messages received.
AddrMask Replies	Number of ICMP Address Mask Reply messages received.

Sample Display – show ip stats icmp client

```
IP ICMP Client Statistics
-------------------------

                            Echo     Echo   Timestmp Timestmp AddrMask AddrMask
Circuit     IP Address    Requests Replies  Requests Replies  Requests Replies
-------- ---------------- -------- -------- -------- -------- -------- --------
     S31 192.32.174.65           0        0        0        0        0        0
     E22 192.32.175.129          0        2        0        0        0        0
```

stats icmp in [*<circuit name>*]

Displays statistics about ICMP packets received for all interfaces or for a specified interface. The table includes the following information:

Circuit	Name of the circuit this interface is on.
IP Address	Internet address of the interface.
ICMP Received	Total number of ICMP messages received, including errors.

ICMP In Errors	Number of ICMP messages received that had errors (bad ICMP checksums).
Destintn Unreach.	Number of ICMP Destination Unreachable messages received.
Rcv. Time Exceeded	Number of ICMP Time Exceeded messages received.
Rcv. Parm Problem	Number of ICMP Parameter Problem messages received.

Sample Display – show ip stats icmp in

```
IP ICMP In Statistics
---------------------

                           ICMP   ICMP In  Destintn Rcv.Time Rcv.Parm
Circuit     IP Address    Received  Errors  Unreach. Exceeded Problem
-------- ---------------- -------- -------- -------- -------- --------
S31      192.32.174.65           4        0        4        0        0
E23      192.32.174.97           0        0        0        0        0
E21      192.32.174.129          0        0        0        0        0
E22      192.32.175.129         25        0       11       12        0
```

stats icmp misc [*<circuit name>*]

Displays statistics about ICMP Source Quench and Redirect messages for all interfaces or for a specified interface. The table includes the following information:

Circuit	Name of the circuit this interface is on.
IP Address	Internet address of the interface.
SrcQunch Messages In/Out	Number of ICMP Source Quench messages received and sent.
Redirect Messages In/Out	Number of ICMP Redirect messages received and sent.

Sample Display – show ip stats icmp misc

```
ICMP Miscellaneous Statistics
 ----------------------------

                           SrcQunch Messages     Redirect Messages
Circuit     IP Address        In        Out         In        Out
-------- ---------------- ---------- ---------- ---------- ----------
S31      192.32.174.65             0          0          0          0
```

stats icmp out [*<circuit name>*]

Displays statistics about ICMP packets that the router generates for all interfaces or for a specified interface. The table includes the following information:

Circuit	Name of the circuit this interface is on.
IP Address	Internet address of the interface.
ICMP Sent	Total number of ICMP messages that this router has generated.
ICMP Out Errors	Number of ICMP messages that this router did not send because of internal problems such as lack of buffers.
Destintn Unreach.	Number of ICMP Destination Unreachable messages sent.
Snd. Time Exceeded	Number of ICMP Time Exceeded messages sent.
Snd. Parm Problem	Number of ICMP Parameter Problem messages sent.

Sample Display – show ip stats icmp out

```
ICMP Out Statistics
-------------------

                           ICMP   ICMP Out Destintn Snd.Time Snd.Parm
Circuit     IP Address     Sent    Errors  Unreach. Exceeded Problem
-------- ---------------- -------- -------- -------- -------- --------
S31      192.32.174.65          0        0        0        0        0
E23      192.32.174.97          2        0        1        1        0
E21      192.32.174.129         5        0        5        0        0
```

stats icmp server [*<circuit name>*]

Displays statistics about ICMP messages that the router generates. For column definitions in the display, see the **stats icmp client** command.

Sample Display – show ip stats icmp server

```
IP ICMP Server Statistics
-------------------------

                          Echo     Echo   Timestmp Timestmp AddrMask AddrMask
 Circuit     IP Address  Requests Replies  Requests Replies  Requests Replies
 -------- --------------- -------- -------- -------- -------- -------- --------
 O41      151.10.100.2          0        0        0        0        0        0
 S31      151.11.1.1            0        0        0        0        0        0
 S32      151.11.2.1            0        0        0        0        0        0
 S33      151.11.3.1            0        1        0        0        0        0
 S34      151.11.4.1            0        0        0        0        0        0
 F51      151.11.30.1           0        0        0        0        0        0
 E21      192.32.37.169         0        0        0        0        0        0
```

stats security in [*<circuit name>*]

Displays statistics associated with IP in security on each of the IP interfaces or on a specified interface. The table includes the following information:

Circuit	Name of the circuit this interface is on.
IP Address	Internet address of the interface.
Drop Rx Authorty	Number of received packets dropped because the authority flag was not sufficient.
Drop Rx Formats	Number of received packets dropped because the security option format was invalid.
Drop Rx Levels	Number of received packets dropped because the classification level was out of range.
Drop Rx No IPSOS	Number of received packets dropped because they were without an IP security label.
In Admin Prohibit	Number of ICMP destination unreachable or communication administratively prohibited messages received.

Sample Display – show ip stats security in

```
IP Security In Statistics
-------------------------

                         Drop Rx  Drop Rx  Drop Rx  Drop Rx  In Admin
Circuit     IP Address   Authorty Formats   Levels  No IPSOS Prohibit
-------- ---------------- -------- -------- -------- -------- --------
S31      192.32.174.65          0        0        0        0        0
E23      192.32.174.97          0        0        0        0        0
```

stats security out [*<circuit name>*]

Displays statistics associated with IP out security on each of the IP interfaces or on a specified interface. The table includes the following information:

Circuit	Name of the circuit this interface is on.
IP Address	Internet address of the interface.
Drop Tx Authorty	Number of transmitted packets dropped because the authority flag was not sufficient.
Drop Tx Levels	Number of transmitted packets dropped because the classification level was out of range.
Drop Tx No IPSOS	Number of transmitted packets dropped because they were without an IP security label.
No IpSos ROOMS	Number of packets not transmitted because the IP header lacked the space to insert an IP security option.
OutAdmin Prohibit	Number of ICMP destination unreachable or communication administratively prohibited messages sent.

Sample Display – show ip stats security out

```
IP Security Out Statistics
--------------------------

                         Drop Tx  Drop Tx  Drop Tx  No IpSos OutAdmin
Circuit     IP Address   Authorty Levels   No IPSOS  ROOMS   Prohibit
-------- ---------------- -------- -------- -------- -------- --------
S31      192.32.174.65          0        0        0        0        0
E23      192.32.174.97          0        0        0        0        0
```

traffic filters

Displays the configured IP traffic filters. The table includes the following information:

Circuit	Name of the circuit this interface is on.
IP Address	Internet address of the interface.
Mode	State of traffic filter use — Enabled or Disabled.
Status	Status of the traffic filter, as follows: • *Active* – Traffic filter rule is in effect. • *Inactive* – Traffic filter rule is not in effect. • *Error* – Application has detected an error in the rule definition.
Rx Matches	Number of packets received that match this rule.
Rule Number	Rule identifier.
Fragment Number	Fragment identifier, for large rules.

Sample Display – show ip traffic filters

```
IP Traffic Filters
------------------

                                              Rx      Rule   Fragment
Circuit     IP Address      Mode    Status  Matches   Number   Number
-------- ---------------- -------- -------- -------- -------- --------
None     0.0.0.0          Enabled Inactive        0        0        0
E21      0.0.0.0          Enabled Inactive        0        0        0
```

version

Displays the version number and date for the *ip.bat* script.

Sample Display – show ip version

```
IP.bat Version: 1.35 Date: 10/31/94.
```

show ipx

The **show ipx** *<option>* commands display information about Novell's Internet Packet Exchange (IPX) services on a Bay Networks router. For detailed information about the Bay Networks implementation of IPX, refer to *Configuring IPX Services*.

The **show ipx** command supports the following subcommand options:

adjacent hosts	sap alerts
alerts	sap disabled
base	sap enabled
base stats	sap
circuits [<circuit name>]	server net level filters
disabled	service addresses
enabled	services [<name search pattern> | type <hex search pattern> | Net <name search pattern>] [<search pattern>] | type <search pattern> | net <search pattern>]
forward	static netbios routes
hosts	static routes

ping <service name>	static services
rip	static services additional
rip alerts	stats
routes [type {direct | nlsp | rip | static} | <IP address> | find <search pattern> | net <search pattern> | host <search pattern>]	stats datagrams
rip enabled	traffic filters
route filters	version
routes [type {direct | nlsp | rip | static} | <IP address> | find <search pattern> | net <search pattern> | host <search pattern>] | net <search pattern> | host <search pattern>]	
sap	

adjacent hosts

Displays the configurable parameters for all statically configured adjacent hosts. The IPX Adjacent Host Table includes the following information:

Mode	Mode is Enabled or Disabled.
Circuit Index	Unique number for each IPX interface on the router.
Host ID Address	Host address of the static host.
IPX Interface	Network address of the next-hop interface.
Host WAN Address	Host address of the next-hop interface.

Sample Display – show ipx adjacent hosts

```
IPX Adjacent Host Table Information
-----------------------------------


         Circuit     IPX          Host ID          Host
  Mode    Index    Interface      Address       WAN Address
-------- ------- ------------ ---------------- --------------
Enabled  1       None         0x0000FFAAFFAA   0x0400
```

alerts

Displays potential problem areas for the IPX protocol. The table shows any IPX interfaces that are enabled but whose state is not up. The table includes the following information:

Circuit	Name of the circuit this interface runs on.
State	State of the interface, which in this case is Down, Init (initializing), or Not Pres (not present).
Ckt Idx	Circuit index — unique number for each IPX interface on the router.
Net Addr	Network address of the interface.
Host Address	Host identifier of the interface.
Encaps Method	Encapsulation method that the interface uses: Ethernet, Novell, LSAP, or SNAP.

Sample Display – show ipx alerts

```
IPX Circuit Configuration Information (Alerts)
-----------------------------------------

 Circuit   State   Ckt Idx Net Addr     Host Address   Encaps Method
 -------- -------- ------- ---------- ---------------- -------------
 F51      Down     1       None       None             Ethernet
 E22      Down     2       None       None             Ethernet
 203101.0 Down     3       None       None             Ethernet
 S32-iwup Down     4       None       None             Ethernet
 S33-iwpp Down     5       None       None             Ethernet
 E24      Down     8       None       None             Ethernet

8 Circuits in table.
```

base

Displays the base record information for the IPX protocol. The base record controls IPX for the entire system. The table includes the following information:

Protocol	Name of the protocol service. In this case, it is IPX.
State	State is Down, Init (initializing), Not Pres (not yet started), or Up.
Router Name	Name of the router used for IPX WAN connections.
Primary NN	Network number used for IPX WAN connections.
Route Method	Method of routing that the protocol uses — metric/hops based or tick based.
Mult Host Mode	Status of support for multiple hosts — Enabled or Disabled. When this parameter is enabled, the router's host ID is unique for each interface and it has a different ID for each packet; it derives its host ID from the underlying communications device. When this parameter is disabled, one host ID identifies the router; the host ID remains constant for all interfaces.
Maximum Path	Maximum number of equal cost paths allowed for a given destination network.

Log Filter Setting	Setting that determines what kind of messages appear in the log file. The default setting filters out debug, information, and trace messages.
PreConfigured Net Table Size	Amount of space set aside for the forwarding and network tables.

There is also a base record statistical table displayed that includes total routes, services, and hosts for the protocol.

Sample Display – show ipx base

```
IPX Base Record Configuration Information
-----------------------------------------

 Protocol  State    Router Name
---------- ------   -----------
IPX        Up       1

   Primary NN                  Router Name
--------------- ----------------------------------------
None            None


Route Method Mult Host Mode  Maximum Path
------------ -------------- ------------
Tick Based   Enabled                   1


      Log Filter Setting        PreConfigured Net Table Size
------------------------------ ------------------------------
Filter Debug, Info, and Trace                              0
```

base stats

Displays base record statistics for the IPX protocol. The statistics provide information on the total number of routes, services, and hosts.

Sample Display – show ipx base stats

```
IPX Base Record Statistical Information
---------------------------------------

  Protocol   State    Total Routes   Total Services     Total Hosts
 ---------- -------- -------------- -----------------  -------------
 IPX        Up                   1                0              3
```

circuits [*<circuit name>*]

Displays information associated with all IPX interfaces or a specific interface. The table includes the following information:

Circuit	Name of the circuit the interface runs on.
State	State of the circuit: *Down*, *Init* (initializing), *Not Pres* (not yet started), or *Up*.
Ckt Idx	Circuit index — unique number for each IPX interface on the router.
Net Address	Network part of the IPX address of the interface.
Host Address	Host part of the IPX address of the interface.
Encaps Method	Encapsulation method the router uses: Ethernet, Novell/802.3, LSAP, or SNAP.

Sample Display – show ipx circuits

```
IPX Circuit Configuration Information (ALL)
-------------------------------------------

circuit   State   Ckt Idx Net Addr     Host Address   Encaps Method
 -------- -------- ------- ---------- ---------------- -------------
 F51      Down     1       None       None             Ethernet
 E22      Down     2       None       None             Ethernet
 203101.0 Down     3       None       None             Ethernet
 S32-iwup Down     4       None       None             Ethernet
 S33-iwpp Down     5       None       None             Ethernet
 O42      Up       6       0x2E025290 0x0000A20320C2   LSAP
 S34-smds Up       7       0x2E025360 0xC15084368061   SNAP
 E24      Down     8       None       None             Ethernet

8 Circuits in table.
```

disabled

Displays all disabled IPX circuits. A circuit is disabled if the Disable/Enable parameter is set to Disable and the state is Down. The table contains the following information:

Circuit	Name of the circuit the interface runs on.
State	State of the interface; in this case, Disabled.
Ckt Idx	Circuit index — unique number for each IPX interface on the router.
Net Address	IPX network address of the interface.
Host Address	Host part of the interface's address.
Encaps Method	Encapsulation method: Ethernet, Novell/802.3, LSAP, SNAP.

Sample Display – show ipx disabled

```
IPX Circuit Configuration Information (Disabled)
------------------------------------------------

 Circuit   State   Ckt Idx Net Addr     Host Address   Encaps Method
 -------- -------- ------- ---------- ---------------- -------------
 F51      Disabled 1       None       None             Ethernet

8 Circuits in table.
```

enabled

Displays all enabled IPX circuits. A circuit is enabled if the Disable/Enable parameter is set to Enable and the state is Up. For column definitions, see the **disabled** command.

Sample Display – show ipx enabled

```
IPX Circuit Configuration Information (Enabled)
-----------------------------------------------

  Circuit   State   Ckt Idx Net Addr     Host Address   Encaps Method
 -------- -------- ------- ---------- ---------------- -------------
 E22      Down     2       None       None             Ethernet
 203101.0 Down     3       None       None             Ethernet
 S32-iwup Down     4       None       None             Ethernet
 S33-iwpp Down     5       None       None             Ethernet
 O42      Up       6       0x2E025290 0x0000A20320C2   LSAP
 S34-smds Up       7       0x2E025360 0xC15084368061   SNAP
 E24      Down     8       None       None             Ethernet

8 Circuits in table.
```

forward

Displays the entries in the IPX forwarding table, which includes the following information.

Network	Address of the network to which this entry is forwarding packets.
Ckt Idx	Circuit index associated with the network; a unique number that identifies each IPX interface on a router.
Types	Type of forwarding table entry — *Local*, *Remote* or *Other.*
Method	Source through which IPX discovered the route — *Local*, *NLSP*, *RIP*, *SAP*, *Static*, or *Other.*
Eql Cost Paths	Number of equal-cost paths to this network.

Sample Display – show ipx forward

```
IPX Forwarding Table Information
--------------------------------

Network    Ckt Idx  Type   Method Eql Cost Paths
---------- -------- ------ ------ --------------
0x0000DD00 1        Local  Local  1
0x0000FF00 1        Local  Local  1
0x0000DD00 3        Local  Local  1

3 Forwarding entries total.
```

hosts

Displays the entries in the IPX host table, which includes the following information.

Host Addr	Address of the host.
Ckt Idx	Next hop circuit index for the host — unique number for each IPX interface on a router.
Network	Address of the network associated with the host.

Method	Source through which IPX discovered the host — *Local, NLSP, RIP, SAP, Static,* or *Other.*
Wan Address	Host's WAN address, if the host is associated with a WAN interface.

Sample Display – show ipx hosts

```
IPX Host Table Information
--------------------------

Host Addr      Ckt Idx  Network    Method Wan Address
-------------- -------- ---------- ------ ------------------
0x0000A2084694 1        0x0000FF00 Local  0x0000000000000000
0xFFFFFFFFFFFF 1        0x0000FF00 Local  0x0000000000000000
0x000000000001 3        0x0000DD00 RIP    0x0000000000000000
0x0000A20186E8 3        0x0000DD00 Local  0x0000000000000000
0x4000AABBAA11 3        0x0000DD00 RIP    0x0000000000000000
0xFFFFFFFFFFFF 3        0x0000DD00 Local  0x0000000000000000

6 Hosts total.
```

ping *<service name>*

The **ping** command sends a packet to the specified server (service name) and waits for a response. When you execute the **ping** command, the router searches for the server in the server database. When it locates the server, it retrieves the network and host ID address and then sends an IPX diagnostic packet to the specified server.

Sample Display – show ipx ping ADMIN_SERVER

```
IPX Ping command, by name
-------------------------

Searching for ADMIN_SERVER in server database.

Server ADMIN_SERVER found, sending ping...

pinging ADMIN_SERVER at 0x0000AAA1.0x000000000001

IPX ping: 0x0000AAA1.0x000000000001 is alive
```

Note: *To conform with the Novell specification, a Bay Networks router running IPX responds to pings from NetWare servers but does not initiate pings to those servers.*

rip

Displays the state of IPX Routing Information Protocol (RIP) interfaces and includes the following information:

Circuit Index	Unique number for each IPX interface on the router.
RIP Interface	Network address of the RIP interface.
State	Condition of the interface, which can be *Down*, *Init* (initializing), *NotPres* (not present), or *Up*.
Mode	Operating mode for this circuit, as follows: • *Listen/Supply* – Interface both listens for and supplies RIP updates. • *Listen* – Interface listens to RIP Periodic and Triggered updates from neighboring networks and conveys received routing information to its internal routing table. • *Supply* – Interface transmits all RIP Periodic and Triggered updates to routers in neighboring networks.
In Packets	Number of RIP packets received on this interface.
Out Packets	Number of RIP packets sent out this interface.
Bad Packets	Number of bad RIP packets received on this interface.

Sample Display – show ipx rip

```
IPX RIP Interface Record Configuration Information (All)
--------------------------------------------------------

 Circuit   RIP                             In      Out     Bad
 Index  Interface  State      Mode    Packets Packets Packets
------- ---------- -------- --------- ------- ------- -------
1       None       Absent   Lstn/Sply 0       0       0
2       None       Absent   Lstn/Sply 0       0       0
3       None       Absent   Lstn/Sply 0       0       0
4       None       Absent   Lstn/Sply 0       0       0
5       None       Absent   Lstn/Sply 0       0       0
6       0x2E025290 Up       Lstn/Sply 0       1600    0
7       0x2E025360 Up       Lstn/Sply 1534    384     0
8       None       Absent   Lstn/Sply 0       0       0

8 RIP Interfaces configured.
```

rip alerts

Displays IPX RIP interfaces whose Disable/Enable parameter conflicts with their state. For column definitions, see the **rip** command.

Sample Display – show ipx rip alerts

```
IPX RIP Interface Record Configuration Information (Alerts)
-----------------------------------------------------------

 Circuit   RIP                             In      Out     Bad
 Index  Interface  State      Mode    Packets Packets Packets
------- ---------- -------- --------- ------- ------- -------
1       None       Absent   Lstn/Sply 0       0       0
2       None       Absent   Lstn/Sply 0       0       0
3       None       Absent   Lstn/Sply 0       0       0
4       None       Absent   Lstn/Sply 0       0       0
5       None       Absent   Lstn/Sply 0       0       0
8       None       Absent   Lstn/Sply 0       0       0

8 RIP Interfaces configured.
```

rip disabled

Displays IPX RIP interfaces that are disabled. For column definitions, see the **rip** command.

Sample Display – show ip rip disabled

```
IPX RIP Interface Record Configuration Information (Disabled)
-------------------------------------------------------------

 Circuit   RIP                           In      Out     Bad
 Index  Interface  State      Mode    Packets Packets Packets
------- ---------- -------- --------- ------- ------- -------
1       None       Disabled Lstn/Sply 0       0       0

8 RIP Interfaces configured.
```

rip enabled

Displays IPX RIP interfaces that are enabled. For column definitions, see the **rip** command.

Sample Display – show ipx rip enabled

```
IPX RIP Interface Record Configuration Information (Enabled)
------------------------------------------------------------


Circuit   RIP                           In      Out     Bad
 Index  Interface  State      Mode    Packets Packets Packets
------- ---------- -------- --------- ------- ------- -------
2       None       Absent   Lstn/Sply 0       0       0
3       None       Absent   Lstn/Sply 0       0       0
4       None       Absent   Lstn/Sply 0       0       0
5       None       Absent   Lstn/Sply 0       0       0
6       0x2E025290 Up       Lstn/Sply 0       1612    0
7       0x2E025360 Up       Lstn/Sply 1542    386     0
8       None       Absent   Lstn/Sply 0       0       0

8 RIP Interfaces configured.
```

route filters

Displays the IPX Route Filter Information table, which contains the following information:

Prio	Network priority of this filter compared to other filters of the same type. The highest priority is 1.
Target Net	Address of the target network to monitor.
Network Mask	Network mask.
State	State of the filter — *Enabled* or *Disabled*.
Circuit Index	Unique number for each IPX interface on the router.
IPX Interface	Identifier of the circuit, unique to the IPX instance.
Proto	The protocol upon which to apply this filter when sending RIP updates. This can be *Any, Local, RIP, NLSP,* or *Static*.
Action	Action for the filter to take: advertise/accept (*Adv/Acpt*) or suppress (*Sprs*). Mode means whether the action applies to inbound or outbound filters. The modes are *-In,-Out*, or *-In/Out*. The action and mode are combined under the Action/Mode field in the display; for example, *Sprs/-In* would mean to suppress inbound filters. The default action and mode is *Adv/Acpt-Out*.

Sample Display – show ipx route filters

```
IPX Route Filter Information
----------------------------

                Network             Circuit      IPX               Action/
Prio Target Net  Mask       state    Index      Interface Proto     Mode
---- ---------- ---------- -------- -------    ---------- ------ ---------------
1    0x00000001 0x00000001 Enabled  3          0x0000DD00 Any    Adv/Acpt-Out

1 Route Filters configured.
```

routes [**type** {**direct** | **nlsp** | **rip** | **static**} | *<IP address>* | **find** *<search pattern>* | **net** *<search pattern>* | **host** *<search pattern>*]

Displays information from the IPX routing table. The table receives routes through IPX RIP, from configured IPX interfaces or statically configured routes. You can use the following options with the **routes** command:

type	Limits the display to the routing method that was the source of this route. The routing method is *direct*, *NLSP*, *RIP*, or *static*.
<IP address>	Limits the display to the network with the specified Internet address (in hexadecimal format).
find *<search pattern>*	Limits the display to the networks that match the given destination network address pattern (hexadecimal).
net *<search pattern>*	Limits the display to the networks that match the given next-hop network address pattern (hexadecimal).
host *<search pattern>*	Limits the display to the next-hop hosts that match the given network address pattern (hexadecimal).

Note: *A search pattern is case sensitive, so make sure that you enter the exact uppercase or lowercase characters for the addresses you want to retrieve.*

The table includes the following information:

Dest Net	Identification of the route's destination network.
Ckt Idx	Circuit index — unique number for each IPX interface on the router.
NextHop Net	Network address of the next-hop host for this network.
NextHop Host	Host identifier of the next-hop host for this network.
Method	Routing mechanism through which the router learned this route, as follows: • *Direct* – From the local router. • *Static* – Through a network management application. • *RIP* or *NLSP* – Through the Routing Information Protocol or the NetWare Link Services Protocol.

Age	Number of seconds since the router updated this route or determined it to be valid. The significance of this value depends on the routing protocol in use.
Ticks	Cost of the static route in numbers of ticks.
Hops	Cost of this route in numbers of hops.

Sample Display – show ipx routes

```
IPX Routing Table Information
-----------------------------

Dest Net   Ckt Idx NxtHop Net  NextHop Host  Method   Age    Ticks   Hops
---------- ------- ---------- -------------- ------ -------- ------  ----
0x00000002 7       0x2E025360 0xC15084368062 RIP          10     23    13
0x00000003 7       0x2E025360 0xC15084368062 RIP          10     25    14
0x00000022 7       0x2E025360 0xC15084368062 RIP          10     17     6
0x00000042 7       0x2E025360 0xC15084368062 RIP          10     20     9
0x00000043 7       0x2E025360 0xC15084368062 RIP          10     19     8
0x00000044 7       0x2E025360 0xC15084368062 RIP          10     20     9
0x00000100 7       0x2E025360 0xC15084368062 RIP          10     21    10
0x00000123 7       0x2E025360 0xC15084368062 RIP          10     20     9
0x00000192 7       0x2E025360 0xC15084368062 RIP          20     22     9
0x00000730 7       0x2E025360 0xC15084368062 RIP          20     20     9
0x00000986 7       0x2E025360 0xC15084368062 RIP          20      4     3
0x00002FCA 7       0x2E025360 0xC15084368062 RIP          20     18     7
0x00005555 7       0x2E025360 0xC15084368062 RIP          20     18     7
0x0000AAA1 7       0x2E025360 0xC15084368062 RIP          20     20     9
0x0000F2AB 7       0x2E025360 0xC15084368062 RIP          20     19     8
0x0000F2B8 7       0x2E025360 0xC15084368062 RIP          20     20     9

     16 Routes in table.
```

Sample Display – show ipx routes type local

```
IPX Routing Table Information
-----------------------------

Dest Net   Ckt Idx NxtHop Net  NextHop Host  Method   Age    Ticks   Hops
---------- ------- ---------- -------------- ------ -------- ------  ----
0x2E025290 6       0x2E025290 0x000045C00443 Local         0      1     0
0x2E025360 7       0x2E025360 0xC15084368061 Local         0      1     0

       2 Entries found.
```

Sample Display – show ipx routes 0x2E025360

```
IPX Routing Table Information
-----------------------------

Dest Net   Ckt Idx NxtHop Net  NextHop Host  Method   Age    Ticks   Hops
---------- ------- ---------- -------------- ------ -------- ------  ----
0x2E025360 7       0x2E025360 0xC15084368061 Local         0      1     0

       1 Entries found.
```

Sample Display – show ipx routes find *5555

```
IPX Routing Table Information
-----------------------------

Dest Net   Ckt Idx NxtHop Net  NextHop Host  Method   Age    Ticks   Hops
---------- ------- ---------- -------------- ------ -------- ------  ----
0x00005555 7       0x2E025360 0xC15084368062 RIP          60     18     7

       1 Entries found.
```

Sample Display – show ipx route net 0x2E0252*

```
IPX Routing Table Information
-----------------------------

Dest Net   Ckt Idx NxtHop Net  NextHop Host  Method   Age    Ticks   Hops
---------- ------- ---------- -------------- ------ -------- ------  ----
0x2E025290 6       0x2E025290 0x000045C00443 Local         0      1     0

       1 Entries found.
```

Sample Display – show ipx route host 0x000045C00443

```
IPX Routing Table Information
-----------------------------

Dest Net   Ckt Idx NxtHop Net  NextHop Host  Method   Age    Ticks   Hops
---------- ------- ---------- -------------- ------ -------- ------  ----
0x2E025290 6       0x2E025290 0x000045C00443 Local         0      1     0

       1 Entries found.
```

sap

Displays the state of IPX Service Advertising Protocol (SAP) interfaces and includes the following information:

Circuit Index	Unique number for each IPX interface on the router.
SAP Interface	Network address of the SAP interface.
State	Condition of the interface, which can be Down, Init (initializing), NotPres (not present), or Up.
Mode	Operating mode for this circuit, as follows: • *Listen/Supply* – Interface both listens for and supplies SAP updates. • *Listen* – Interface listens to SAP Periodic and Triggered updates from neighboring networks and conveys received routing information to its internal routing table. • *Supply* – Interface transmits all SAP Periodic and Triggered updates to routers in neighboring networks.

In Packets	Number of SAP packets received on this interface.
Out Packets	Number of SAP packets sent out this interface.
Bad Packets	Number of bad SAP packets received on this interface.

Sample Display – show ipx sap

```
IPX SAP Interface Record Configuration Information (All)
--------------------------------------------------------

Circuit   SAP                            In      Out     Bad
 Index  Interface  State      Mode     Packets Packets Packets
------- ---------- -------- --------- ------- ------- -------
1       None       Absent   Lstn/Sply 0       0       0
2       None       Absent   Lstn/Sply 0       0       0
3       None       Absent   Lstn/Sply 0       0       0
4       None       Absent   Lstn/Sply 0       0       0
5       None       Absent   Lstn/Sply 0       0       0
6       0x2E025290 Up       Lstn/Sply 0       13587   0
7       0x2E025360 Up       Lstn/Sply 13313   1       0
8       None       Absent   Lstn/Sply 0       0       0

8 SAP Interfaces configured.
```

sap alerts

Displays IPX SAP interfaces whose Disable/Enable parameter conflicts with their state. For column definitions, see the **sap** command.

Sample Display – show ipx sap alerts

```
IPX SAP Interface Record Configuration Information (Alerts)
-----------------------------------------------------------

Circuit   SAP                            In      Out     Bad
 Index  Interface  State      Mode    Packets Packets Packets
------- ---------- -------- --------- ------- ------- -------
1       None       Disabled Lstn/Sply 0       0       0
2       None       Absent   Lstn/Sply 0       0       0
3       None       Absent   Lstn/Sply 0       0       0
4       None       Absent   Lstn/Sply 0       0       0
5       None       Absent   Lstn/Sply 0       0       0
8       None       Absent   Lstn/Sply 0       0       0

8 SAP Interfaces configured.
```

sap disabled

Displays IPX SAP interfaces that are disabled. For column definitions, see the **sap** command.

Sample Display – show ip sap disabled

```
IPX SAP Interface Record Configuration Information (Disabled)
-------------------------------------------------------------

 Circuit   SAP                            In      Out     Bad
 Index  Interface  State      Mode    Packets Packets Packets
------- ---------- -------- --------- ------- ------- -------
1       None       Disabled Lstn/Sply 0       0       0

8 SAP Interfaces configured.
```

sap enabled

Displays IPX SAP interfaces that are enabled. For column definitions, see the **sap** command.

Sample Display – show ipx sap enabled

```
IPX SAP Interface Record Configuration Information (Enabled)
------------------------------------------------------------

Circuit   SAP                            In      Out     Bad
 Index  Interface  State      Mode    Packets Packets Packets
------- ---------- -------- --------- ------- ------- -------
2       None       Absent   Lstn/Sply 0       0       0
3       None       Absent   Lstn/Sply 0       0       0
4       None       Absent   Lstn/Sply 0       0       0
5       None       Absent   Lstn/Sply 0       0       0
6       0x2E025290 Up       Lstn/Sply 0       13621   0
7       0x2E025360 Up       Lstn/Sply 13383   1       0
8       None       Absent   Lstn/Sply 0       0       0

8 SAP Interfaces configured.
```

server name level filters

Displays all name-level service filters on the router. Name-level filters filter individual services based on the name of the server and the type of service. The display includes the following information:

Prio	Priority of this filter compared to other filters of the same type. The highest priority is 1.
Server	Name of the server.
State	State of the filter — *Enabled* or *Disabled*.
Circuit Index	Unique number for each IPX interface on the router.
IPX Interface	Network address of the server.

Type	Type of service to monitor; for example, printer, file server, and so on.
Action	Action for the filter to take: advertise/accept (*Adv/Acpt*) or suppress (*Sprs*). Mode means whether the action applies to inbound or outbound filters. The modes are *-In*,*-Out*, or *-In/Out*. The action and mode are combined under the Action/Mode field in the display; for example, *Sprs/-In* means to suppress inbound filters. The default action and mode is *Adv/Acpt-Out*.

Sample Display – show ipx server name level filters

```
IPX Server Name Level Filter Information
----------------------------------------


                                    Circuit   IPX                Action/
 Prio         Server         State    Index   Interface   Type      Mode
------ -------------------- -------- ------- ---------- -------- -------------
1      PRINT_SERV           Enabled  3       0x0000DD00 0x0004   Adv/Acpt-Out

1 Server Name Level Filters configured
```

server net level filters

Displays all network-level service filters on the router. Network-level filters filter individual services based on the internal network of the server and the type of service specified. The display includes the following information:

Target Net	Address of the target network to monitor.

For more information on column definitions, see the **server name level filters** command.

Sample Display – show ipx server net level filters

```
IPX Server Net Level Filter Information
---------------------------------------

                                Circuit   IPX                   Action/
Priority  Target Net   State    Index   Interface     Type      Mode
-------- ------------ -------- ------- ------------ -------- --------------
1           0x00000001   Enabled  3       0x0000DD00   0x0001   Adv/Acpt-Out

1 Server Net Level Filters configured.
```

service addresses

Displays the internal network address and host address of each service.

Sample Display – show ipx service addresses

```
IPX Service Address Information
-------------------------------

                Server                    Internal Net     Host Address
---------------------------------------- --------------- ----------------
FENDER                                   0xF006014       0x000000000001
HIWATT                                   0xFA72401       0x000000000001

2 Services in table.
```

services [*<name search pattern>* | **type** *<hex search pattern>* | **Net** *<name search pattern>*]

Displays the service type, age, and hop count within the router's SAP table.

<name search pattern>	Limits the display to servers with names that match the character-based search pattern, which is case sensitive.
type *<hex search pattern>*	Limits the display to server types that match the hexadecimal search pattern, which is case sensitive.
net *<name search pattern>*	Limits the display to networks that match the given next-hop network address pattern (in character format), which is case sensitive.

The table includes the following information:

Server	Name of the server.
Type	Type of server allowed to pass SAP broadcasts to the locally attached network segment; a 4-digit number in hexadecimal format.
Network	The network address of the server.
Age	Number of seconds since the router updated this service or determined it to be valid.
Hops	Number of hops this service is from the router.

Sample Display – show ipx services

```
IPX Service Table Information
-----------------------------
                Server                            Type   Network    Age  Hops
---------------------------------------------- ------ ---------- ----- -----
HOMER                                          0x0004 0x00202020 50    9
CALERN                                         0x0004 0xEC101070 50    9
CD_ROM                                         0x0004 0x2E86F3D1 50    10
WFNYC1                                         0x0004 0x17171717 50    9
PAYROLL                                        0x0004 0x00000100 50    10
TORONTO                                        0x0004 0xFC111139 50    9
HRISTEST                                       0x0004 0x2F5F920C 50    9
HR_SERVER                                      0x0004 0x0000AAA1 50    9
RSMT_NW_1                                      0x0004 0x43582782 50    9
SYNOPTICS                                      0x0004 0x00000003 50    14

     10 Services in table.
```

Sample Display – show ipx service HO*

```
IPX Service Table Information
-----------------------------

                Server                            Type   Network    Age  Hops
---------------------------------------------- ------ ---------- ----- -----
HOMER                                          0x0004 0x00202020 50    9
HOUSTON_NW_SVR                                 0x0004 0x0000F2B8 50    9
HOUSTON_NW_SVR                                 0x0107 0x0000F2B8 50    10
HOUSTON_NW_SVR                                 0x023F 0x0000F2B8 60    10

       4 Entries found.
```

Sample Display – show ipx service type *4

```
IPX Service Table Information
-----------------------------

                Server                          Type   Network    Age  Hops
---------------------------------------------- ------ ---------- ----- -----
HOMER                                          0x0004 0x00202020 50    9
CALERN                                         0x0004 0xEC101070 20    9
CD_ROM                                         0x0004 0x2E86F3D1 50    10
WFNYC1                                         0x0004 0x17171717 50    9
PAYROLL                                        0x0004 0x00000100 50    10
TORONTO                                        0x0004 0xFC111139 50    9
HRISTEST                                       0x0004 0x2F5F920C 30    9
HR_SERVER                                      0x0004 0x0000AAA1 50    9
RSMT_NW_1                                      0x0004 0x43582782 30    9
SYNOPTICS                                      0x0004 0x00000003 50    14
HR_SERVER2                                     0x0004 0x000AAA12 50    10
BOCA_NW_SVR                                    0x0004 0x00087364 50    9
HR_VALBONNE                                    0x0004 0x00000123 50    9
NW312_LOTUS                                    0x0004 0x00000986 50    3
ADMIN_SERVER                                   0x0004 0x0000F2AB 50    8
MARLOW_SALES                                   0x0004 0x44628F02 30    10
MCA_ST_LOUIS                                   0x0004 0x00000730 50    9
REGISTRATION                                   0x0004 0x0BADF00D 50    8
ATLANTA_NW_SVR                                 0x0004 0x2E5965F3 50    9
HOUSTON_NW_SVR                                 0x0004 0x0000F2B8 50    9

      20 Entries found.
```

Sample Display – show ipx service net *00010?

```
IPX Service Table Information
-----------------------------

                Server                              Type   Network    Age  Hops
---------------------------------------------- ------ ---------- ----- -----
PAYROLL                                        0x0004 0x00000100 30    10
PAYROLL                                        0x0047 0x00000100 40    11
PAYROLL                                        0x0107 0x00000100 40    11
0800092C489983C2NPI2C4899                      0x030C 0xFC000108 50    9
08000945B1310380SYSTEM_ENGINEERS               0x030C 0xFC000105 50    9
Synoptics 810M Agent                           0x0433 0xFC000108 60    9
QMS_1725_PRINT_SYSTEM_0800861004E0             0x045A 0xFC000105 60    9
APPLE_LW046fe3                                 0x0618 0xFC000106 60    9

       8 Entries found.
```

static netbios routes

Displays all configured NetBIOS Static Routes. Statically configured IPX records do not dynamically change within the configuration because information has been received through routing protocols. The table includes the following information:

Name	Name of the target server.
Target Net	IPX address of this static route.
Mode	State of the network: Enabled or Disabled.

Sample Display – show ipx static netbios routes

```
IPX Netbios Static Route Table Information
------------------------------------------

                Name                    Target Net    Mode
---------------------------------- --------------- --------
DANIEL                             0x0000FC00      Enabled
1 Netbios Static Routes configured
```

static routes

Displays all configured Static Routes. The table includes the following information:

Static Net	Address of the statically configured network.
Mode	State of the network: Enabled or Disabled.
Nexthop Ckt Idx	Circuit index of IPX interface, a unique number for each IPX interface on the router.
Nexthop Net	IPX address of the next-hop network.
Nexthop Host	Host address of the next-hop network.
Ticks	Cost of the static route in numbers of ticks.
Hops	Cost of this route in numbers of hops.

Sample Display – show ipx static routes

```
IPX Static Route Table Information
----------------------------------

                     Nexthop
 Static Net    Mode   Ckt Idx Nexthop Net    Nexthop Host   Ticks  Hops
------------ -------- ------- ------------ ---------------- ------ -----
0x00000001   Enabled  1       None         0x000000000001        0     0

1 Static Routes configured.
```

static services

Displays all configured Static Services: Name, Internal Network, Host address, and Hops only. The table includes the following information:

Server	Name of the target server.
Internal Net	Internal network address for this service.
Host Address	Host address for this service.
Hops	Cost of this route in numbers of hops.

Sample Display – show ipx static services

```
IPX Static Service Table Information
-----------------------------------

                                                Internal
                Server                          Network    Host Address   Hops
---------------------------------------------- ---------- -------------- -----
oneputt                                         0x23AAFF00 0x000000002345     1

1 Static Services configured.
```

static services additional

Displays an alternative format that includes next hop, type, socket, and server name information. The table includes the following information:

Server	Server name.
Nexthop Ckt Idx	Circuit index of IPX interface, a unique number for each IPX interface on the router.
Nexthop Net	IPX address of the next-hop network.
Type	Type of service. Multiple routes to a single destination can appear in the table, but access to such multiple entries is dependent on the table-access mechanisms defined by the network management protocol in use.
Sock	Socket for this service.

Sample Display – show ipx static services additional

```
IPX Static Service Table additional Information
-----------------------------------------------

                                     Nexthop
              Server                 Ckt Idx Nexthop Net    Type     Sock
------------------------------------ ------- ------------ -------- --------
oneputt                              1       None         0x0002   0x0023

1 Static Services configured.
```

stats

Displays general forwarding statistics for IPX interfaces. The table includes the following information:

Circuit	Name of the circuit the interface runs on.
Circuit Index	Unique number for each IPX interface on the router.
IPX Network	Network address of the interface.
In Receive	Number of input datagrams received from interfaces including those received in error.
In Deliver	Number of input datagrams successfully delivered to IPX user-protocols.
Out Request	Number of IPX datagrams that local IPX user-protocols supplied in transmission requests; doesn't include datagrams counted in "Forwards."
Forward	Number of input datagrams for which this router was not the final IPX destination. When this is the case, the router tries to find a route for forwarding the datagram to the appropriate final destination. If the router isn't an IPX gateway, this counter includes only the packets that were source-routed through the router successfully.
In Discard	Number of input IPX datagrams discarded because of an environmental problem, such as insufficient buffer space; doesn't include those discarded while awaiting reassembly.
Out Discard	Number of output IPX datagrams discarded because of an environmental problem, such as insufficient buffer space; includes datagrams counted under "Forwards" if they match this criterion.

Sample Display – show ipx stats

```
IPX Statistical Information
---------------------------

          Circuit   IPX         In      In      Out              In     Out
 Circuit   Index   Network    Receive Deliver Request Forward Discard Discard
 -------- ------- ---------- ------- ------- ------- ------- ------- -------
 F51      1       None       0       0       0       0       0       0
 E22      2       None       0       0       0       0       0       0
 203101.0 3       None       0       0       0       0       0       0
 S32-iwup 4       None       0       0       0       0       0       0
 S33-iwpp 5       None       0       0       0       0       0       0
 O42      6       0x2E025290 0       0       16714   16714   0       0
 S34-smds 7       0x2E025360 16376   16376   427     427     0       0
 E24      8       None       0       0       0       0       0       0

8 Entries in table.
```

stats datagrams

Displays error statistics for IPX circuits. The display includes the following information:

Circuit	Name of the circuit the interface runs on.
Circuit Index	Unique number for each IPX interface on the router.
IPX Network	Network address of the interface.
Header Errors	Number of IPX packets discarded because of errors in their headers, including any IPX packet less than 30 bytes.
In Discards	Number of input IPX datagrams discarded because of an environmental problem, such as insufficient buffer space; doesn't include those discarded while awaiting reassembly.
Out Discards	Number of output IPX datagrams discarded because of an environmental problem, such as insufficient buffer space; includes datagrams counted under "Forwards" if they match this criterion.
No Routes	Number of times the router could not find a route to the destination.

Sample Display – show ipx stats datagrams

```
IPX Statistical Datagram Information
------------------------------------

          Circuit     IPX        Header     In      Out       No
 Circuit   Index    Network     Errors  Discards Discards  Routes
 -------  ------- ------------ -------- -------- -------- --------
 F51      1       None         0        0        0        0
 E22      2       None         0        0        0        0
 203101.0 3       None         0        0        0        0
 S32-iwup 4       None         0        0        0        0
 S33-iwpp 5       None         0        0        0        0
 O42      6       0x2E025290   0        0        0        0
 S34-smds 7       0x2E025360   0        0        0        0
 E24      8       None         0        0        0        0

8 Entries in table.
```

traffic filters

Displays IPX traffic filter information for all circuits or for a specific circuit. The table includes the following information:

Circuit	Name of the circuit the filter applies to.
Circuit Index	Unique number for each IPX interface on the router.
IPX Network	Network address of the interface.
Mode	Status of the interface: Enabled or Disabled.
Status	Current status of the traffic filter, as follows: • *Inactive* – Filter is not in use. • *Active* – Filter is currently in use. • *Error* – Application has detected an error in the rule.
Rx Matches	Number of received packets that have matched this rule.
Rule Number	Identifier for the rule.
Fragment Number	Number of the rule fragment (or section), used for large rules.

Sample Display – show ipx traffic filter

```
IPX Traffic Filter Information
------------------------------

          Circuit    IPX                 Rx      Rule   Fragment
 Circuit   Index    Address   Status  Matches   Number   Number
 -------- ------- ---------- -------- -------- -------- --------
 F51      1       None       Inactive 0        0        0

1 Traffic Filters configured.
```

version

Displays the current version and modification date of the *ipx.bat* script.

Sample Display – show ipx version

```
IPX.bat Version: 1.20 Date: 8/15/95.
```

show iredund

The **show iredund** *<option>* commands display information about the Interface Redundancy protocol and services. For detailed information on the Bay Networks implementation of Interface Redundancy services, refer to *Configuring Router Redundancy.*

The **show iredund** command supports the following subcommand options:

circuit [<circuit >]	enabled
disabled	

circuit [*<circuit >*]

Displays circuit and state information for all interface redundancy ports or for a specific port. The table includes the following information:

Circuit	Name of the circuit.
Slot	Slot number the port is on.
Port	Port number.
State	State of the protocol: Enabled, Disabled, Down, Init (initializing), Not Pres (enabled but not yet started), or Up.
Role	Role of the interface: primary or backup.
Active	State of the Circuit: Active, Standby, Unavailable

Sample Display – $show iredund circuit

```
Interface Redundancy Circuit Table
 ------------------------------

Circuit    Slot     Port      State        Role      Active
 -------- -------- -------- ------------ ---------- ----------
 E43      4        3        Enabled      primary    standby
 E43      4        4        Enabled      backup     active

2 Entries found.
```

disabled

Displays all disabled circuits that contain an interface redundancy port. A circuit is disabled if the disable/enable parameter is set to disable and the state is down. For definitions of the columns in the table, see the **circuit** command.

Sample Display – $show iredund disable

```
Interface Redundancy Circuit Table
 ------------------------------

Circuit    Slot     Port      State        Role      Active
-------- -------- -------- ------------ ---------- ----------

0 Entries found.
```

enabled

Displays all enabled circuits that contain an interface redundancy port. A circuit is enabled if the disable/enable parameter is set to enable and the state is up. For definitions of the columns in the table, see the **circuit** command.

Sample Display – $show iredund enable

```
Interface Redundancy Circuit Table
 ------------------------------

Circuit    Slot     Port      State        Role      Active
 -------- -------- -------- ------------ ---------- ----------
 E43      4        3        Enabled      primary    standby
 E43      4        4        Enabled      backup     active

2 Entries found.
```

show isdn

The **show isdn** *<option>* commands display information about the Integrated Services Digital Network (ISDN) service. For information about ISDN, refer to *Configuring Dial Services*.

Note: *Refer to the "show isdn bri" section for more information on the* **isdn bri** *command*.

The **show isdn** command supports the following subcommand options:

alerts	messages received
bri	messages sent
calls general	pools
calls time	switch
inphone	version
local	

alerts

Displays all enabled circuits that are not active. Use this display to identify the ports that are not working.

Sample Display – show isdn alerts

```
ISDN Alerts
-----------


Slot 1 does not have Line Manager loaded
Slot 2 does not have ISDN loaded


Total of 2 slot(s) on alert
```

bri

Note: *See "show isdn bri."*

calls general

Displays the active call information for all ISDN lines. The table displays the following information:

Slot	Slot that has the ISDN interface.
DSL ID	Digital Subscriber Loop ID.
Call ID	Entry in the ISDN Call Information Table.
B Chan	B channel that this call resides on.
Called Party Number	Phone number of the called party.
Called Sub-Addr	Subaddress of the called party.
Calling Party Number	Phone number of the calling party.
Calling Sub-Addr	Subaddress of the calling party.

Sample Display – show isdn calls general

```
ISDN Active Call Information
----------------------------

     DSL            B        Called        Called        Calling       Calling
Slot ID   Call ID  Chan   Party Number    Sub-Addr    Party Number    Sub-Addr
---- --- -------- ------ --------------- ----------- --------------- ----------
1    0      32769 1      384020          Not used    None            None

Total of    1 call is active.
```

calls time

Displays the duration of an active call. The table displays the following information:

Slot	Slot that has the ISDN interface.
DSL ID	Digital Subscriber Loop ID.
Call ID	Entry in the ISDN Call Information Table.
Duration (Minutes)	The duration of the call.
Connect Time (Hour:Min:Sec)	Time of day that the router establishes the call.

Sample Display – show isdn calls time

```
     DSL   DurationConnect Time
Slot ID    Call ID(Minutes)(Hour:Min:Sec)
---- --- -------- ---------------- ----------------
1    0      32769                0         16:46:33

Total of    1 call is active.
```

inphone

Displays the configuration set up for incoming phone numbers. The table displays the following information:

Index	Index number for this line instance.
Incoming Phone Number	Telephone number of the remote router.
Sub-Addr	Subaddress for a main telephone number.
Phone # Type	Indicates whether the phone number type is Dial or ISDN.
Type of Phone	ISDN numbering type: Unknown, International, National, Specific, Subscriber, or Abbreviated.
Plan Type	ISDN numbering plan: Unknown, Telephony, X.121, Telex, Standard, or Private.

Sample Display – show isdn inphone

```
ISDN Incoming Phone Number Configuration
----------------------------------------

             Incoming                  Phone #    Type of       Plan
 Index     Phone Number      Sub-Addr    Type      Phone        Type
 ----- -------------------- ---------- ------- ------------- ---------
     1           5084367001       None DIAL    N/A           N/A
     2           5084367002       None DIAL    N/A           N/A
     3           5084368005       None DIAL    N/A           N/A
     4           5084368006       None DIAL    N/A           N/A
     5           5084366005       None DIAL    N/A           N/A
     6           5084366006       None DIAL    N/A           N/A

Total of    6 Incoming Phone Entries found.
```

local

Lists the local phone number entry for each line in the line pool. The display includes the following information:

Line Number	Lists the line number.
Directory Number	Lists the local phone number.
Subaddress	Lists the subaddress number for the main phone number if one exists.
SPID	Lists the service profile identifier (SPID) assigned by your ISDN provider.
SPID Status	Indicates if the SPID was accepted or rejected by the called router.

Sample Display – show isdn local

```
[2:1]$ show isdn local


ISDN Local Numbers
------------------

   Line      Directory                                    SPID
  Number      Number        Subaddress        SPID       Status
---------- ------------- ------------- ------------- ----------
   1301302     5084361011       Not used           1011   Accepted
   1301302     5084361012       Not used           1012   Accepted

Total of    2 ISDN Local Number(s) found
```

messages received

Displays the number of messages the router received on each ISDN line. The table displays the following information:

Slot	Slot that has the ISDN interface.
DSL ID	Digital Subscriber Loop ID.
Setup Ind.	Setup indication received from the network.
Connect Ind.	Connect indication received from the network.
Disconn. Ind.	Disconnect indication received from the network.
Clear Ind.	Release indication received from the network.
Activ. Ind.	Activation indication received from the ISDN driver.
Deactiv. Ind.	Deactivation indication received from the ISDN driver.

Sample Display – show isdn messages received

```
ISDN Messages Received
----------------------
                Setup  Connect  Disconn.  Clear  Activ.  Deactiv.
  Slot  DSL ID   Ind.    Ind.     Ind.     Ind.   Ind.     Ind.
  ----  ------  -----  -------  --------  -----  ------  --------
     1       0      1        1         8      0       1         0

Total of    1 Message Entries found.
```

messages sent

Displays the messages the router sent on each ISDN line. The table displays the following information:

Slot	Slot which has the ISDN interface.
DSL ID	Digital Subscriber Loop ID.
Setup Req.	Setup request sent to the network.
Connect Req.	Connect request sent to the network.

Disconn. Req.	Disconnect request sent to the network.
Clear Req.	Clear request sent to the network.
Activ. Req.	Activate request sent to the driver.
Dactiv. Req.	Deactivate request sent to the driver.

Sample Display – show isdn messages sent

```
ISDN Messages Sent
------------------
                Setup  Connect  Disconn.  Clear  Activ.  Deactiv.
  Slot  DSL ID   Req.    Req.     Req.     Req.   Req.     Req.
  ----  ------  -----  -------  --------  -----  ------  --------
     1       0      9        1         1      8       0         0

Total of    1 Message Entries found.
```

pools

Displays the line pool configuration. The table displays the following information:

Pool Type	Identifies the type of line pool: demand, backup, or bandwidth-on-demand.
Line Number	Identifies the lines in the pool.
Pool ID	ID number of the pool.
Channel Count	The number of B channels in the pool.
Priority	Indicates the order of preference for each line pool.
Channels In Use	Specifies how many B channels the router is currently using.

Sample Display – show isdn pools

```
Pool       Line       Pool Channel   Channels
Type       Number     ID    CountPriorityIn Use
---------- ---------- ---- ------- -------- --------
Demand    1301102     1          2        1        0
Backup    1301102     1          2        1        0

Total of    1 ISDN    Demand pool(s) found
Total of    1 ISDN    Backup pool(s) found
Total of    0 ISDN Bandwidth pool(s) found
```

switch

Displays the ISDN switch type the router communicates with and the state of the incoming filter. The table displays the following information:

Slot	Slot which has the ISDN interface.
Switch Type	Switch type, as follows: BRI Options • BRI NET3 – Austria, Belgium, Denmark, France, Germany, Italy, Netherlands, Norway, Spain, Sweden, United Kingdom • BRI SWISSNET3 – Switzerland • BRI 5ESS – United States • BRI NI1 and BRI DMS100 – United States, Canada • BRI KDD and BRI NTT – Japan • BRI TS013 – Australia PRI Options • PRI Net 5 – Austria, Belgium, Denmark, Finland, France, Germany, Greece, Iceland, Ireland, Italy, Luxembourg, Netherlands, Norway, Portugal, Spain, Sweden, Switzerland, United Kingdom • PRI 4ESS – United States • PRI 5ESS – United States • PRI DMS100 – United States, Canada • PRI KDD and PRI NTT – Japan • PRI TS014 – Australia
Incoming Filter	Security feature that can be set to On or Off. On enables call screening.

Sample Display – show isdn switch

```
ISDN Switch Configuration
-------------------------
                          Incoming
   Slot   Switch Type      Filter
   ---- --------------- ----------
      1 BRI5ESS         Off

Total of    1 Switch Entries found.
```

version

Displays the current version and modification date of the *isdn.bat* script.

Sample Display – show isdn version

```
ISDN.BAT Version: 1.6 Date: 6/8/95.
```

show isdn bri

The **show isdn bri** *<option>* commands display information about the ISDN Basic Rate Interface (ISDN BRI) service. For information about ISDN BRI, refer to *Configuring Dial Services*.

Note: *The* **isdn bri** *set of commands is a subset of the* **isdn** *command. Refer to "show isdn" preceding this section for more information on the* **isdn** *command.*

The **show isdn bri** command supports the following subcommand options:

alerts	sample [<period in seconds>] [circuit <circuit name>]
base	stats
disabled	system errors
enabled	transmit errors
receive errors	version

alerts

Displays all enabled circuits that are not active. Use this display to identify the ports that are not working. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector's instance identifier; ranges from 1 to 4.
State	State of the line driver: Disabled, Down, Init (initializing), Not Present (enabled but not yet started), or Up.
DSL ID	ID of this Digital Subscriber Loop interface.
Line Number	Line number for this line instance.
MTU	Acceptable Link Access Protocol D-channel (LAPD) Maximum Transfer Units.
TE State	Terminal Endpoint state of the S/T interface: Inactive (1), Sensing (2), Deactivated (3), Await Signal (4), Identify Input (5), Synchronized (6), Activated (7), Lost Framing (8).
B Channel Loopback	Indicates whether B Channel Loopback is enabled. Used for conformance testing.
Timer 3	Maximum amount of time (in seconds) the router has to activate the S/T interface.
Timer 4	Amount of time in milliseconds the router waits for the line to recover from a deactivated state.

Sample Display – show isdnbri alerts

```
ISDN BRI Modules on Alert:
--------------------------


                   DSL  Line                          BChannel  Tmr Tmr
Slot Conn State    ID   Number  MTU     TE State     Loopback  3   4
---- ---- -------- ---- -------- ---- --------------- -------- --- ---
   1   12 Init        0 1301102  400    Deactivated    Disabled  10 750
   1   32 Init        1 1301302  400    Activated      Disabled  10 750
```

base

Displays base record information for all ISDN BRI circuits or for a specified circuit. For definitions of the columns in the table, refer to the **alerts** command.

Sample Display – show isdnbri base

```
ISDN BRI Modules:
-----------------


                   DSL  Line                          BChannel Tmr Tmr
Slot Conn State    ID   Number    MTU     TE State     Loopback  3   4
---- ---- -------- ---- -------- ---- --------------- -------- --- ---
   1   12 Init        0  1301102  400 Deactivated     Disabled  10 750
   1   32 Init        1  1301302  400 Activated       Disabled  10 750
```

disabled

Displays the circuits that a user has manually disabled. In this case, State is Disabled. For definitions of the columns in the table, refer to the **alerts** command.

Sample Display – show isdnbri disabled

```
ISDN BRI Modules Disabled:
--------------------------

                     DSL  Line                     BChannel     Tmr Tmr
Slot Conn State      ID   Number  MTU     TE State Loopback  3   4
---- ---- ---------  ---- -------- ---- ------------ -------- --- ---
   1   12  Disabled     0  1301102  400   Deactivated    Disabled  10 750
```

enabled

Displays circuits that a user has enabled. In this case, State is Down, Init, Not Present, or Up. For definitions of the columns in the table, refer to the **alerts** command.

Sample Display – show isdnbri enabled

```
 ISDN BRI Modules Enabled:
 -------------------------

                     DSL   Line                          BChannel Tmr Tmr
Slot Conn  State     ID   Number   MTU     TE State      Loopback  3   4
---- ---- -------- ---- -------- ---- --------------- -------- --- ---
   1   12 Init        0  1301102  400 Deactivated     Disabled  10 750
   1   32 Init        1  1301302  400 Activated       Disabled  10 750
```

receive errors

Displays receive error information for all circuits or for a specified circuit.

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector's instance identifier; ranges from 1 to 4.
Over Flows	Number of data overflows (anomalies) received by the circuit.
Bad CRC	Number of bad cyclic redundancy checks received.
Aborts	Number of abort messages received.
Frames Too Long	Number of frames received that were too long for processing. (They exceeded the standard ISDN frame length.)

Sample Display – show isdnbri receive errors

```
ISDN BRI Module Receive Errors:
-------------------------------

           Over                              Frames
Slot Conn  Flows       Bad CRC     Aborts   Too Long
---- ---- ---------- ---------- ---------- ----------
   1   12         0          0          0          0
   1   32         0          0          0          0
```

sample [*<period in seconds>*] [**circuit** *<circuit name>*]

Displays the ISDN BRI statistics generated during a prescribed period (default 10 seconds). This command can be used for all circuits (default) or for a selected circuit.

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector's instance identifier; ranges from 1 to 4.
Tx Frames	Number of frames the router transmits.
Rx Frames	Number of frames the router receives.
Rx Lack of Resources	Number of times there is a lack of resources for received frames. Due to a heavy traffic load, the D channel device driver could not find a buffer in which to receive a D channel frame.
Tx Lack of Resources	Number of times there is a lack of resources for transmitted frames. The driver received more than seven frames at once for transmission.

Sample Display – show isdnbri sample

```
ISDN BRI Sampled Data over  10 seconds
---------------------------------------

           Rx         Tx     Rx Lack of  Tx Lack of
Slot Conn  Frames    Frames  Resources   Resources
---- ---- ------- ---------- ---------- ----------
   1   12                 0          0          0
   1   32                 0          0          0
```

stats

Displays I/O statistics for all ISDN BRI circuits or for a specific circuit.

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector's instance identifier; ranges from 1 to 4.
Receive Bytes	Number of bytes the router receives over the circuit.
Receive Frames	Number of frames the router receives over the circuit.

Transmit Bytes	Number of bytes the router transmits over the circuit.
Transmit Frames	Number of frames the router transmits.
Total Errors	Number of total errors for the circuit.

Sample Display – show isdnbri stats

```
ISDN BRI Module I/O Statistics:
-------------------------------

            Receive    Receive    Transmit   Transmit    Total
Slot Conn    Bytes      Frames     Bytes      Frames     Errors
---- ---- ---------- ---------- ---------- ---------- ----------
   1   12         0          0          0          0          0
   1   32         556         40          180         34          0
```

system errors

Displays statistical information about general interface errors for all circuits or for a specific circuit.

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector's instance identifier; ranges from 1 to 4.
Timer 3 Timeouts	Number of T3 timeouts that occurred for the circuit.
Timer 4 Timeouts	Number of Timer 4 timeouts that occurred for the circuit.

Sample Display – show isdnbri system errors

```
ISDN BRI Module System Errors:
------------------------------

          Timer 3    Timer 4
Slot Conn Timeouts   Timeouts
---- ---- ---------- ----------
   1   12         11         11
   1   32          0          0
```

transmit errors

Displays statistical information about transmission errors for all circuits or for a specific circuit.

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector's instance identifier; ranges from 1 to 4.
Underflow Frames	Number of underflow frames (anomalies) for the circuit.
D Channel Collisions	Number of collisions on the D channel.

Sample Display – show isdnbri transmit errors

```
ISDN BRI Module Transmit Errors:
--------------------------------

          Underflow  D Channel
Slot Conn  Frames    Collisions
---- ---- ---------- ----------
   1   12          0          0
   1   32          0          0
```

version

Displays the current version number and date of the *isdnbri.bat* script.

Sample Display – show isdnbri version

```
isdnbri.bat Version: 1.4 Date: 1/20/95.
```

show lane

The **show lane** *<options>* command displays information about ATM LAN Emulation. For details about the Bay Networks implementation of ATM, refer to *Configuring ATM Services*.

The **show lane** command supports the following subcommand options:

clients [<circuit name>]	mac [<circuit name>]
config [<circuit name>]]	servers [<circuit name>]
learp [<circuit name>]	stats [<circuit name>]

clients [*<circuit name>*]

Displays ATM LAN Emulation Client running information for all circuits, or for a specific circuit.

The table displays the following information:

Cct#	Circuit number of the LEC.
Circuit Name	Circuit name assigned by Site Manager.
LecID	LEC ID that the LE Server (LES) assigns during the Join state.
State	State for the LEC: INITIAL, LECSCONNECT, CONFIGURE, JOIN, INITIAL_REG, BUSCONNECT, OPERATIONAL.
Fail Code	Status code from the last failed Configure or Join response.
Cfg Src	Indicates whether this LEC used the LAN Emulation Configuration Server (LECS), and if so, what method is used to establish the Configuration Direct VCC: VIAILMI, KNOWNADR, CFGPVC, or NO LECS.
LAN type	Data frame format this client is now using: Unspecified, IEEE 802.3, or IEEE 802.5.
Max Data Frm Size	Maximum data frame size this client is now using: Unspecified, 1516, 4544, 9234, or 18190.

ELAN Name	The name of the emulated LAN (ELAN) that this client last joined.
Proxy	Indicates whether the LEC acts as a proxy when it joins an ATM emulated LAN: 1 (True) or 2 (False).
Primary addr	ATM address of the LEC.
Cfg Server addr	ATM address of the LAN Emulation Configuration Server.
LE Server addr	ATM address of the LES.

Sample Display – show lane clients

```
ATM LAN Emulation Client Running Config Info
--------------------------------------------

 Cct#      Circuit Name     LecID    State    Fail Code Cfg Src
 ----- -------------------- ----- ----------- --------- --------
 4     ATMSR_1405101.4      29    OPERATIONAL NONE      KNOWNADR

       LAN type   Max Data Frm Size ELAN Name  Proxy
      ----------- ----------------- ---------- -----
      IEEE8023    1516              01         1

 Primary    addr 39.00.00.00.00.00.00.00.00.00.00.00.00.00.C0.A8.8D.A0.00
 Cfg Server addr 47.00.79.00.00.00.00.00.00.00.00.00.00.A0.3E.00.00.01.00
 LE Server  addr 39.00.00.00.00.00.00.00.00.00.00.00.00.08.00.20.1A.42.C4.01

-------------------------------------------------------------------------


Total entries: 1
```

config [*<circuit name>*]

Displays the ATM LAN Emulation Client record for each circuit, or for a specific circuit.

The table displays the following information:

Cct#	Circuit number of the LEC.
Circuit Name	Circuit name assigned by Site Manager.

LAN Name	Emulated LAN name this client will use the next time it returns to the Initial state.
LAN Type	Data frame format that this client will use the next time it returns to the Initial state: Unspecified, IEEE 802.3, or IEEE 802.5.
State	State for the LEC: INITIAL, LECSCONNECT, CONFIGURE, JOIN, INITIAL_REG, BUSCONNECT, OPERATIONAL.
LES ATM addr	Configured ATM address of the LAN Emulation Server
LECS ATM addr	Configured ATM address of the LAN Emulation Configuration Server

Sample Display – show lane config

```
ATM LAN Emulation Client Table
------------------------------

 Cct#  Circuit Name         LAN Name   LAN Type    State
 ----- -------------------- ---------- ----------- -----------
 5     ATMSR_1405101.5      -          UNSPECIFIED LECSCONNECT

 LES  ATM addr 12.34.56.78.90.12.34.56.78.90.12.34.56.78.90.12.34.56.78.9A

 LECS ATM addr 12.34.56.78.90.12.34.56.78.90.12.34.56.78.90.12.34.56.78.9A

 ------------------------------------------------------------

Total entries: 1
```

learp [*<circuit name>*]

Displays ATM LAN Emulation Client MAC-to-ATM address resolution protocol (ARP) Cache information for all circuits, or for a specific circuit.

The table displays the following information:

Cct#	Circuit number of the LEC.
Circuit Name	Circuit name that Site Manager assigned.
IsRemote	Indicates whether the MAC address belongs to a remote client.

Entry Type	Indicates how this table entry was created: LEARNED, LEARNED CTRL, LEARNED DATA, STATIC VOL, STATIC NONVOL, OTHER. In the router's case, the LEC will always learn this entry via the Control VCC; the entry type will never be STATIC.
Status	Row status: ENABLE or DISABLE. In the router's case, the status will always be ENABLE.
VPI	Virtual Path Interface (VPI) that will be used for this MAC address.
VCI	Virtual Channel Interface (VCI) that will be used for this MAC address.
MAC Address	Remote MAC address.
ATM Address	ATM address representing the MAC address.

Sample Display – show lane learp

```
ATM mulation Client MAC-to-ATM ARP Cache
-----------------------------------------

 Cct#      Circuit Name     IsRemote   EntryType    Status  VPI  VCI
 ----- -------------------- -------- ------------ -------- --- -----
 3     ATMSR_1405101.3      TRUE     LEARNED_CTRL  ENABLE   0   38

    MAC Address    ATM Address
 ----------------- ------------------------------------------------------------
 FF.FF.FF.FF.FF.FF 39.00.00.00.00.00.00.00.00.00.00.00.00.08.00.20.1A.42.C4.88

 ------------------------------------------------------------------------------

 Cct#      Circuit Name     IsRemote   EntryType    Status  VPI  VCI
 ----- -------------------- -------- ------------ -------- --- -----
 4     ATMSR_1405101.4      TRUE     LEARNED_CTRL  ENABLE   0   45

    MAC Address    ATM Address
 ----------------- ------------------------------------------------------------
 00.00.A2.0E.9F.C0 39.00.00.00.00.00.00.00.00.00.00.00.00.00.17.00.00.70.00

 ------------------------------------------------------------------------------

 Cct#      Circuit Name     IsRemote   EntryType    Status  VPI  VCI
 ----- -------------------- -------- ------------ -------- --- -----
 4     ATMSR_1405101.4      TRUE     LEARNED_CTRL  ENABLE   0   39

    MAC Address    ATM Address
 ----------------- ------------------------------------------------------------
 FF.FF.FF.FF.FF.FF 39.00.00.00.00.00.00.00.00.00.00.00.00.08.00.20.1A.42.C4.87

 ------------------------------------------------------------------------------


Total entries: 3
```

mac [*<circuit name>*]

Displays ATM LAN Emulation Client MAC address information for all circuits, or for a specific circuit.

The table displays the following information:

Cct#	Circuit number of the LEC.
Circuit Name	Circuit name that Site Manager assigned.
MAC address	The local MAC address on this ATM interface that the LEC uses.
ATM address registered for MAC address	The ATM address configured for this service record and that this LEC uses.

Sample Display – show lane mac

```
ATM LAN Emulation Client MAC address table
------------------------------------------

 Cct#      Circuit Name
 ----- --------------------
 9     ATMSR_1405101.9

    MAC address    ATM address registered for MAC address
 ----------------- ------------------------------------------------------------
00.00.A2.0E.9F.CA 39.00.00.00.00.00.00.00.00.00.00.00.00.00.08.00.00.71.00

 ------------------------------------------------------------------------------


Total entries: 1
```

servers [*<circuit name>*]

Displays ATM LAN Emulation Client Server VCC information for all circuits, or for a specific circuit.

The table displays the following information:

Cct#	Circuit number of the LEC.
Circuit Name	Circuit name that Site Manager assigned.
Config Direct Line#	Interface associated with the Configuration Direct VCC. If the value is 0, no Configuration Direct VCC exists.
Config Direct VPI	The Virtual Path Identifier (VPI) that identifies the Configuration Direct VCC (if it exists) at the point where it connects to this LEC.
Config Direct VCI	The Virtual Channel Identifier (VCI) that identifies the Configuration Direct VCC (if it exists) at the point where it connects to this LEC.
Control Direct Line#	Interface associated with the Control Direct VCC. If the value is 0, no Control Direct VCC exists.
Control Direct VPI	The VPI that identifies the Control Direct VCC (if it exists) at the point where it connects to this LEC.
Control Direct VCI	The VCI that identifies the Control Direct VCC (if it exists) at the point where it connects to this LEC.
Control Distributed Line#	Interface associated with the Control Distributed VCC. If the value is 0, no Control Distributed VCC exists.
Control Distributed VPI	The VPI that identifies the Control Distributed VCC (if it exists) at the point where it connects to this LEC.
Control Distributed VCI	The VCI that identifies the Control Distributed VCC (if it exists) at the point where it connects to this LEC.
Multicast Send Line#	Interface associated with the Multicast Send VCC. If the value is 0, no Multicast Send VCC exists.
Multicast Send VPI	The VPI that identifies the Multicast Send VCC (if it exists) at the point where it connects to this LEC.
Multicast Send VCI	The VCI that identifies the Multicast Send VCC (if it exists) at the point where it connects to this LEC.
Multicast Forward Line#	Interface associated with the Multicast Forward VCC. If the value is 0, no Multicast Forward VCC exists.
Multicast Forward VPI	The VPI that identifies the Multicast Forward VCC (if it exists) at the point where it connects to this LEC.
Multicast Forward VCI	The VCI that identifies the Multicast Forward VCC (if it exists) at the point where it connects to this LEC.

Sample Display – show lane servers

```
ATM LAN Emulation Client Server VCC Table
-----------------------------------------

                           Config Direct       Control Direct
 Cct#      Circuit Name      Line#   VPI  VCI   Line#   VPI  VCI
 ----- -------------------- -------- --- ----- -------- --- -----
 4     ATMSR_1405101.4      1103101  0   32    1103101  0   33

      Control Distributed     Multicast Send     Multicast Forward
       Line#   VPI  VCI       Line#   VPI  VCI   Line#   VPI  VCI
      -------- --- -----     -------- --- ----- -------- --- -----
      1103101  0   34        1103101  0   35    1103101  0   36
-------------------------------------------------------------------------


Total entries: 1
```

stats [*<circuit name>*]

Displays ATM LAN Emulation Client Statistics information for all circuits, or for a specific circuit.

The table displays the following information:

Cct#	Circuit number of the LEC.
Circuit Name	Circuit name assigned by Site Manager.
Req Out	Number of MAC-to-ATM address resolution protocol (ARP) requests this LEC made over the logical User-to-Network Interface (LUNI) associated with this emulated packet interface.
Req In	Number of MAC-to-ATM ARP requests this LEC received over the LUNI associated with this emulated packet interface.
ReplyOut	Number of MAC-to-ATM ARP replies this LEC sent over the LUNI associated with this emulated packet interface.
ReplyIn	Number of MAC-to-ATM ARP replies this LEC received over the LUNI associated with this emulated packet interface.
FrameOut	Total number of control packets this LEC sent over the LUNI associated with this emulated packet interface.

FrameIn	Total number of control packets this LEC received over the LUNI associated with this emulated packet interface.
SVCFails	Number of SVCs this LEC tried to open but could not.

Sample Display – show lane stats

```
ATM LAN Emulation Client Statistics
-----------------------------------

 Cct#  Circuit Name         Req Out  Req In   ReplyOut ReplyIn
 ----- -------------------- -------- -------- -------- --------
 4     ATMSR_1405101.4      126      0        0        126

       FrameOut FrameIn  SVCFails
       -------- -------- --------
       128      128      0

 ------------------------------------------------------------

Total entries: 1
```

show lapb

The **show lapb** *<option>* commands display information about the Link Access Procedure-Balanced (LAPB) layer. For information about LAPB, refer to *Configuring Routers*.

The **show lapb** command supports the following subcommand options:

alerts	lines [<line> | <line.llindex>]
disabled	stats [<line> | <line.llindex>]
enabled	version

alerts

Displays information about LAPB lines that are configured but not currently operating. The table includes the following information:

Line.LLIndex	Line identifier and the lower layer index identifier.
FRMR RX/TX	Number of Frame Rejects received and transmitted.
Resets	Number of Link Connection Resets.
Rejects RX/TX	Number of reject frames received and transmitted.
RNR RX/TX	Number of Receiver Not Ready frames received and transmitted.
Setups Refused	Number of unsuccessful link connections.
Abnormal Disconnects	Number of abnormal link disconnections.
Retransmit Occurrence	Number of retransmissions that have occurred.

Sample Display – show lapb alerts

```
LAPB ALERT Table
---------------

                   FRMR          Rejects  RNR   Setups   Abnormal   Retransmit
  Line.LLIndex     RX/TX  Resets  RX/TX  RX/TX  Refused Disconnects Occurrence
---------------- -------- ------ ------- ------ ------- ----------- ----------
201101.0                4     13       0      0       0           0          0

Total entries: 1
```

disabled

Displays LAPB lines that are configured but disabled. The table includes the following information:

Line.LLIndex	Line identifier and the lower layer index identifier.
Circuit	Circuit number for this LAPB subsystem, associated with the driver or application running underneath it.
Station Type	Station type for this interface: DTE, DCE, or DXE (unassigned role). DXE indicates the instance is enabled but negotiation has not yet occurred.
Network Type	Network type: GOSIP or NET2.

Sample Display – show lapb disabled

```
LAPB Disabled Table
 -------------------

   Line.LLIndex   Circuit  Station Type Network Type
 ---------------- -------- ------------ ------------

Total entries: 0
```

enabled

Displays LAPB lines that are configured and enabled. For definitions of column headings, see the **disabled** command.

Sample Display – show lapb enabled

```
LAPB Enabled Table
------------------

  Line.LLIndex   Circuit  Station Type Network Type
---------------- -------- ------------ ------------
201101.0         S11      DCE          NET2

Total entries: 1
```

lines [*<line>* | *<line.llindex>*]

Displays information about LAPB lines for all configured lines or for a specified line.

<line>|*<line.llindex>*	Limits the display to the specified line or line and line index.

The table includes the following information:

Line.LLIndex	Line identifier and the lower-layer index identifier.
Circuit	Circuit number for this LAPB subsystem, associated with the driver or application running underneath it.
Station Type	Station type for this interface: DTE, DCE, or DXE (unassigned role). DXE indicates that the instance is enabled but that negotiation has not yet occurred.
Window Size	Default transmit and receive window size for this line. This parameter identifies the maximum number of unacknowledged sequence frames allowed for this DXE at one time. Window size ranges from 1 through 127; the default is 7.

N1	Maximum N1 frame size in bytes for a frame that the DXE transmits, excluding flags and 0 bits inserted for transparency. N1 frame size ranges from 3 to 4500 bytes; the default is 1600 bytes.
N2	N2 retry count, which is the maximum number of retries after the T1 timer expires before determining that the line is down. N2 ranges from 1 to 64; the default is 10.
T1	T1 timer, which specifies the maximum number of seconds to wait for an acknowledgment of a frame. T1 timer ranges from 1 through 9999 seconds; the default is 3 seconds.
T3	T3 timer, which specifies the number of seconds to wait before considering the link disconnected. A value of 1 means to consider the link disconnected when the frame has been exchanged. T3 timer ranges from 1 through 9999 seconds; the default is 60 seconds.

Sample Display – show lapb line 201101

```
LAPB Line Information Table
---------------------------

Line.LLIndex Circuit  Station Type Window Size  N1  N2  T1   T3
------------ -------- ------------ ----------- ---- -- ---- ----
201101.0     S11      DCE          7           135  10 3    60

Total entries: 1
```

stats [*<line>* | *<line.llindex>*]

Displays statistics for all LAPB lines or for a specified line.

<line> | *<line.llindex>*	Limits the display to the specified line or line and line index.

The table includes the following information:

Line.LLIndex	Lne identifier and the lower-layer index identifier.
Frames Sent	Number of frames transmitted without error.
Octets Sent	Number of octets transmitted without error.
Frames Received	Number of frames received without error.
Octets Received	Number of octets received without error.
ReXmits	Number of frames that have been retransmitted.
State	State of the instance running LAPB: Enabled or Disabled.

Sample Display – show lapb stats 201101

```
LAPB Line Statistics
--------------------

                      Sent               Received
Line.LLIndex   Frames     Octets     Frames     Octets   ReXmits   State
------------ ---------- ---------- ---------- ---------- -------- --------
201101.0          64552    3161980      64500     193557        0 Enabled

Total entries: 1
```

version

Displays the version number and modification date of the *lapb.bat* script.

Sample Display – show lapb version

```
LAPB Version 1.1 Date: 6/3/94.
```

show lnm

The **show lnm** *<option>* commands display information about services that LNM Servers provide. For detailed information about LNM Servers, refer to *Configuring LNM Services*.

The **show lnm** command supports the following subcommand options:

alerts	disabled
base	enabled
cannotlink [circuit [<circuit name>]]	links [<circuit name>]
circuit [<circuit name>]	passwords [<circuit name>]
configuration [circuit [<circuit name>]]	version

alerts

Displays all enabled LNM Servers circuits whose state is not up. The table does not include disabled circuits or enabled circuits that are up. It shows only circuits that are not up for some reason. The table includes the following information:

Circuit	Name of the circuit the server is on.
LNM	Status of LNM Servers as an entity. This is always blank for alerts.
LNM LRM	State of the LAN Reporting Mechanism (LRM). If the state is Up, the entry is blank. Otherwise, the state is Down, Init (initializing) or Not Pres (not present).
LNM LBS	State of the LAN Bridge Server (LBS). If the state is Up, the entry is blank. Otherwise, the state is Down, Init (initializing) or Not Pres (not present).

LNM REM	State of Ring Error Monitor (REM). If the state is Up, the entry is blank. Otherwise, the state is Down, Init (initializing) or Not Pres (not present).
LNM RPS	Sate of Ring Parameter Server (RPS). If the state is Up, the entry is blank. Otherwise, the state is Down, Init (initializing) or Not Pres (not present).
LNM CRS	State of Configuration Report Server (CRS). If the state is Up, the entry is blank. Otherwise, the state is Down, Init (initializing) or Not Pres (not present).

Sample Display – show lnm alerts

```
LNM Servers Circuit Alerts
--------------------------

Circuit     LNM     LNM LRM   LNM LBS   LNM REM   LNM RPS   LNM CRS
--------  --------  --------  --------  --------  --------  --------
O41                 Not Pres  Not Pres  Not Pres  Not Pres  Not Pres

1 Entries found.
```

base

Displays the LNM Servers base record state. The base record controls LNM Servers as a whole for the entire system. State is one of the following:

Disabled	User has manually disabled LNM Servers as an entity.
Down	LNM Servers is not functioning.
Init	LNM Servers is initializing on the system.
Not Present	LNM Servers has been configured but not started.
Up	LNM Servers is currently operating on the system.

Sample Display – show lnm base

```
LNM Servers Base Information
----------------------------

Protocol     State
-----------  --------
LNM Servers  Up
```

cannotlink [**circuit** [*<circuit name>*]]

Displays problem information for the LNM Servers base record, all LNM Servers circuits, or a specific circuit. You can use the information to diagnose why IBM LAN Network Manager cannot link with the Bay Networks LNM Servers. You can use the following options with the **cannotlink** command. The base record table includes the following information:

Protocol	Routing protocol for the base record; this is LNM, LLC, and SR.
State	State of the protocol, which is one of the following: • *Disabled* – User has manually disabled the protocol. • *Down* – Protocol is not functioning on the system. • *Init* – Protocol is initializing on the system. • *Not Present* – Protocol has been configured but not started. • *Up* – Protocol is functioning on the system.
Internal LAN ID	For the IBM LAN Network Manager to be able to link to LNM Servers, the Internal LAN ID must be equal to the Source Route Internal LAN ID.
Bridge ID	For the IBM LAN Network Manager to be able to link to LNM Servers, the Bridge ID must be equal to the Source Route Bridge ID.

The circuit table includes the following information:

Circuit	Name of the circuit the protocol runs on.
Protocol	Routing protocol on that specific circuit. Examine the state of these protocols. They must all be enabled and up for IBM LAN Network Manager to be able to link. The state of the LNM Servers circuit is enabled or disabled only.

State	State of the protocol, which is one of the following: • *Disabled* – User has manually disabled the protocol on that circuit. • *Down* – Protocol or server is not functioning. When LNM is disabled on the circuit, the individual LNM Servers (LRM, LBS, REM, RPS, REM, or CRS) go into a Down state. • *Enabled* – LNM Servers as an entity has been enabled on the circuit. • *Init* – Protocol or server is initializing on the circuit. • *Not Present* – Circuit is down; the server has not yet started. • *Up* – Protocol or server is functioning on the circuit.
External Ring ID	Source Route External Ring ID. If the ID differs from the Segment number that IBM LAN Network Manager has for the Bay Networks bridge, you may need to delete and redefine the Bay Networks bridge in IBM LAN Network Manager.
Internal MAC Address	LNM Internal MAC address, which should be the same as the one configured in IBM LAN Network Manager. If the field contains dashes, the address is in canonical format and you must convert it to TR format before entering it or comparing it with the addresses entered in IBM LAN Network Manager.
External MAC Address	TR External Mac address, which should be the same as the one configured in IBM LAN Network Manager. If the field contains dashes, the address is in canonical format and you must convert it to TR format before entering it or comparing it with the addresses entered in IBM LAN Network Manager.

Sample Display – show lnm cannotlink

```
LNM Servers Cannot Link
-----------------------

                    Internal  Bridge
Protocol  State      LAN ID     ID
--------  --------  --------  ------
LNM Base  Up              B0       5
LLC Base  Up
SR Base   Up              B0       5
```

Sample Display – show lnm cannotlink circuit

```
LNM Servers Cannot Link Circuit
-------------------------------

                                External      Internal           External
Circuit   Protocol  State     Ring ID      MAC Address        MAC Address
--------  --------  --------  --------  -----------------  -----------------
O31       LNM Cct   Enabled             00-00-45-00-00-09
          LLC Cct   Up
          SR Cct    Up             10
          TR Cct    Up                                    00-00-a2-00-c9-a4

          LNM LRM   Up
          LNM LBS   Up
          LNM REM   Disable
          LNM RPS   Up
          LNM CRS   Disabled
```

circuit [*<circuit name>*]

Displays the LNM Servers states on all circuits or on only a specified circuit. The LNM column shows whether LNM Servers is Enabled or Disabled on the circuit. The servers (LNM, LRM, LNM, LBS, and so on) can have the following states:

Down	State of individual servers goes to Down when LNM Servers becomes disabled on the circuit.
Init	Server is initializing.
Not Pres	Circuit is down; the server has not yet started.
Up	Server is functioning on the circuit.

Sample Display – show lnm circuit

```
LNM Servers Circuit Information
------------------------------

Circuit     LNM     LNM LRM   LNM LBS   LNM REM   LNM RPS   LNM CRS
--------  --------  --------  --------  --------  --------  --------
O31       Enabled   Up        Up        Disabled  Up        Disabled
O32       Enabled   Up        Up        Up        Up        Up
O41       Enabled   Not Pres  Not Pres  Not Pres  Not Pres  Not Pres
O42       Enabled   Up        Up        Up        Up        Up

4 Entries found.
```

configuration [**circuit** [*<circuit name>*]]

Displays configuration information about LNM Servers as a whole. You can show information about the base record. Or you can display information about LNM circuits. You can also limit the display to one circuit. The base record displays the following information:

Protocol	Name of the protocol.
State	State of the protocol, as follows: • *Disabled* – User has manually disabled the protocol. • *Up* – LNM Servers is functioning on the system. • *Down* – LNM Servers is not functioning on the system. • *Init* – LNM Servers is initializing on the system. • *Not Present* – LNM Servers has been configured but not started.
IBM LNM Set Privilege	Setting is Enabled or Disabled. The Enabled setting lets the IBM LAN Network Manager change LNM Servers configuration parameters with Set LAN Network Manager frames.
Internal LAN ID	Identifier that Source Routing uses to route frames to other circuits on the Bay Networks router. This value must match the value defined in the SR base record.
Bridge Number	Bridge number defined in the SR base record. IBM LAN Network Manager uses this number with the Internal LAN ID, External LAN ID, Internal MAC Address, and External MAC Address to identify the Bay Networks bridge on the circuit.

The circuit record configuration display includes the following information:

Circuit	Name of the circuit the protocol runs on.
MAC Cct	MAC circuit on which LNM Servers as an entity is defined.
LLC Cct	LLC circuit with which LNM Servers as an entity is associated.
Internal MAC Address	MAC address defined to the Internal LAN. This is a virtual association used only to define LNM Servers on this circuit within IBM LAN Network Manager.
Weight Threshold	Maximum error count that LNM REM Server uses to send alerts to IBM LAN Network Manager.

Sample Display – show lnm configuration

```
LNM Servers Base Configuration
------------------------------

                       IBM LNM Set  Internal  Bridge
 Protocol     State     Privilege    LAN ID   Number
-----------  --------  -----------  --------  ------
LNM Servers  Up        Enabled            B0       5
```

Sample Display – show lnm configuration circuit

```
LNM Servers Circuit Configuration
---------------------------------

          MAC  LLC      Internal        Weight
Circuit   Cct  Cct     MAC Address     Threshold
--------  ---  ---  -----------------  ---------
O31         2    3  00-00-45-00-00-09        128
O32         4    5  00-00-45-00-00-02        128
O41         6    7  00-00-45-00-00-05        128
O42         8    9  00-00-45-00-00-06        128
```

disabled

Displays the LNM Servers circuits and servers that a user has manually disabled. The table includes the name of each server, and the circuit the server is on. If the server is disabled, Disabled appears under the name of the server. If the server is enabled, the value in the table is blank.

Sample Display – show lnm disabled

```
LNM Servers Circuits Disabled
-----------------------------

Circuit     LNM     LNM LRM   LNM LBS   LNM REM   LNM RPS   LNM CRS
--------  --------  --------  --------  --------  --------  --------
O31                                     Disabled            Disabled

1 Entries found.
```

enabled

Displays the current state of all LNM Servers circuits that are currently enabled. The state of LNM will display as Enabled. The state of specific servers (for example, LNM LRM) is one of the following:

Init	Protocol or server is initializing on the circuit.
Not Pres	Circuit is down; the server has not yet started.
Up	Protocol or server is functioning on the circuit.

If the server is disabled, the value under its name is blank.

Sample Display – show lnm enabled

```
LNM Servers Circuits Enabled
----------------------------

Circuit     LNM     LNM LRM   LNM LBS   LNM REM   LNM RPS   LNM CRS
--------  --------  --------  --------  --------  --------  --------
O31       Enabled   Up        Up                  Up
O32       Enabled   Up        Up        Up        Up        Up
O41       Enabled   Not Pres  Not Pres  Not Pres  Not Pres  Not Pres
O42       Enabled   Up        Up        Up        Up        Up

4 Entries found.
```

links [*<circuit name>*]

Displays the LNM links currently existing between LNM Servers as an entity and IBM LAN Network Manager and their addresses. When no link exists for a specific address, the display shows Not Linked instead of the address. You can display all circuits or only a specific circuit.

Sample Display – show lnm links

```
LNM Servers Circuit Links
-------------------------

           Controlling       Observing 1       Observing 2       Observing 3
Circuit  Manager Address   Manager Address   Manager Address   Manager Address
------- ----------------- ----------------- ----------------- -----------------
O31        08-00-5a-97-7a-1dNot LinkedNot LinkedNot Linked
O32        08-00-5a-97-7a-1dNot LinkedNot LinkedNot Linked
O41        Not LinkedNot LinkedNot LinkedNot Linked
```

passwords [*<circuit name>*]

Displays the passwords currently configured for all LNM Servers circuits or for a specific circuit. If a password doesn't exist, the default password is 00000000.

Sample Display – show lnm passwords

```
LNM Servers Circuit Passwords
-----------------------------

          Cntrllng  Observng  Observng  Observng
          Manager   Managr 1  Managr 2  Managr 3
Circuit   Password  Password  Password  Password
--------  --------  --------  --------  --------
O31       00000000  00000000  00000000  00000000
O32       00000000  00000000  00000000  00000000
O41       00000000  00000000  00000000  00000000
O42       00000000  00000000  00000000  00000000
```

version

Displays the current version and date of the *lnm.bat* script.

Sample Display – show lnm version

```
LNM.bat Version: 1.9 Date: 10/31/94.
```

show nbip

The **show nbip** *<option>* commands display configuration and statistical information about NetBIOS over IP services. For detailed information about NetBIOS, refer to *Configuring IP Services*.

The **show nbip** command supports the following subcommand options:

base	names
interfaces	version

base

Displays the base record for NetBIOS over IP. The table includes the following information:

Protocol	Name of the protocol, which in this case is NBIP.
State	State of the protocol on the router: Up, Down (manually disabled), Init (initializing), or Not Present (not yet initialized).

Sample Display – show nbip base

```
NBIP Base Information
---------------------

Protocol   State
-------- ----------
NBIP     Up
```

interfaces

Displays information about each interface:

IP Address	IP address of this interface.
State	State of the protocol on the interface: Up, Down, Init, or Not Present.
Input Bcasts	Indicates whether the input of NetBIOS broadcasts is enabled.
Output Bcasts	Indicates whether the output of NetBIOS broadcasts is enabled.
Name Caching	Indicates whether NetBIOS name caching is enabled.
Input Packets	Number of frames that have been received by this interface.
Input Errors	Number of invalid frames that have been received by this interface.
Output Packets	Number of frames that have been transmitted by this interface.

Sample Display – show nbip interfaces

```
NBIP Interfaces
---------------

                       Input  Output Name     Input      Input      Output
  IP Address     State  Bcasts Bcasts Caching  Packets    Errors     Packets
--------------- -------- ------ ------ ------- ---------- ---------- ----------
130.1.1.1       Up       Yes    Yes    Yes             10          0         65
131.1.1.1       Up       Yes    Yes    Yes             68          0          7
192.32.14.92    Down     Yes    No     No               0          0          0

3 Entries.
```

names

Displays name cache information:

NetBIOS Name	NetBIOS name of the station.
IP Address	IP address of the NetBIOS station.
Learned?	Indicates whether this NetBIOS entry is learned. If not, it is a static entry.
Cache Hits	Number of times the NetBIOS name cache has been used.
Scope ID	NetBIOS Scope ID of this station.

Sample Display – show nbip names

```
NBIP Name Cache
---------------

NetBIOS Name          IP Address    Learned ? Cache Hits Scope ID
------------------- --------------- --------- ---------- ---------------------
MIATA               128.1.1.3       Yes               0 <09>wellfleet<03>com
WINDSURF            130.1.1.3       Yes               8 <09>wellfleet<03>com

2 Entries.
```

version

Displays the current version and the modification date of the *nbip.bat* script.

Sample Display – show nbip version

```
NBIP.bat Version: 1.1 Date: 12/5/94.
```

show nml

The **show nml** *<option>* commands display configuration and statistical information about Native Mode LAN (NML) services. For detailed information about NML, refer to *Configuring Bridging Services*.

The **show nml** command supports the following subcommand options:

circuits [<circuit name>]	seclists [<circuit name>]
disabled	stats
enabled	version

circuits [*<circuit name>*]

Displays information about all NML circuits or a specified NML circuit configured on the router. The table includes the following information:

Circuit	Name of the circuit configured for NML.
Port	Circuit number of the port that supports a LAN belonging to the closed user group. Each LAN in a closed user group is connected to a bridge through an NML port.
CUG Value	Closed user group ID (CUGID) assigned to the circuit.
Security Type	Type of security configured — Add, an access circuit; Check, a trunk circuit; or Drop, a transient internal state.
SAID Value	Circuit's security access ID.
Security Action	How to handle a packet if it matches a CUGID in the circuit's security list: Drop or Forward. If the action is Drop, the list is an exclusive list and the port drops all frames labelled with the CUGID. If the action is Forward, the port forwards frames labelled with the CUGID to the attached LAN.

Sample Display – show nml circuits

```
NML Circuit Table
-----------------

                      CUG      Security     SAID      Security
Circuit    Port      Value       Type       Value      Action
-------- -------- ------------ -------- ------------ ----------
F31             1            0 Check                0 Forward
E21             2           22 Add                  0 Drop

2 Entries.
```

disabled

Displays only NML circuits that are disabled. The display contains the same information the **circuits** command produces.

enabled

Displays only NML circuits that are enabled. The display contains the same information the **circuits** command produces.

seclists [*<circuit name>*]

Displays information about each NML circuit's security list or a specified NML circuit's security list. The table includes the following information:

Circuit	Name of the circuit configured for NML.
Port	Circuit number of the port on which NML resides.
Status	State of the security list: Enabled or Disabled.
Action	Action taken on a packet if it matches one of the ranges of CUGIDs: Drop or Forward.

From	Low end of a range of CUGIDs in the security list. A circuit can have more than one set of ranges.
To	High end of a range of CUGIDs in the security list. A circuit can have more than one set of ranges.

Sample Display – show nml seclists

```
NML Security Lists
------------------

Circuit    Port    Status   Action      From          To
-------- -------- -------- -------- ------------ ------------
F31             1 Enabled  Drop              224          238
E21             2 Enabled  Forward            22           22
                           Forward           224          238

2 Entries.
```

Note that circuit E21 in the sample display has two ranges.

stats

Displays the number of packets dropped because of security violations for each circuit on the router. The table shows the following information:

Circuit	Name of the circuit configured for NML.
Port	Circuit number of the port on which NML resides.
Discards	Number of packets dropped because of security violations.

Sample Display – show nml stats

```
Bridge Statistics
 -----------------

Circuit    Port   Discards
-------- -------- --------
F31             1        0
E21             2        0
```

version

Displays the current version and date of creation of the *nml.bat* script.

Sample Display – show nml version

```
NML.bat Version: 1.3 Date: 12/8/94.
```

show osi

The **show osi** *<option>* commands display configuration, state, and statistical information about Open Systems Interconnection (OSI) services. For more information about the Bay Networks implementation of the OSI protocol, refer to *Configuring OSI Services*.

The **show osi** command supports the following subcommand options:

adjacency	level1 routes [find <destination sys ID>]
alerts	level2 routes [find <destination sys ID>]
base	stats
circuits [<circuit name>]	stats clnp
disabled	stats errors
enabled	version

adjacency

Displays information about the adjacencies that exist on each OSI circuit. The table includes the following information:

Circuit	Name of the circuit the adjacency is on.
Adjacent ID	Index of the adjacency in the adjacency table.
State	State of the adjacency: DOWN (initialization failed), INIT (initializing), or UP.
Neighbor Addr (NSAP)	Network Service Access Point (NSAP) address of the adjacency.

Sample Display – show osi adjacency

```
OSI Dynamic Adjacency Information
---------------------------------

 Circuit  Adjacent ID  State    Neighbor Addr (NSAP)
 -------- ----------- -------- ----------------------
 E31            24578 INIT     0x490040CCCCCCCCCCCC00
 E32            90115 INIT     0x490044CCCCCCCCCCCC00
```

alerts

Displays all OSI circuits that are enabled but whose state is not UP. Forwarding is either Enabled or Disabled.

Sample Display – show osi alerts

```
OSI Circuit Information
-----------------------

 Circuit      State     Forwarding
 -------  ------------ ------------
 E21      DOWN       ENABLED
```

base

Displays general information about, including the state of, the OSI protocol running on the router. The base record controls OSI for the entire system. The table includes the following information:

Protocol	Name of the protocol, which in this case is OSI.
State	State of the protocol on the router: Disabled (manually disabled), Down, Init (initializing), Not Present (not yet initialized), or Up.
Area Address	Address of the local area in the routing domain where this router resides.
Node Address	Address of this node (router) in the local area.

Sample Display – show osi base

```
OSI Base Record Information
---------------------------

 Protocol   State   Area Address    Node Address
 --------- -------- ------------ ------------------
 OSI       Up       0x490040     0xAAAAAAAAAAAA
```

circuits [*<circuit name>*]

Displays the state of all OSI circuits or a specific circuit. The table includes the following information:

Circuit	Name of the circuit that OSI runs on.
State	State of OSI on the circuit: Disabled (manually disabled), Down, Init (initializing), Not Present (not present on the circuit), or Up.
Forwarding	Status of forwarding over the circuit: Enabled or Disabled.

Sample Display – show osi circuits

```
OSI Circuit Information
-----------------------

 Circuit      State     Forwarding
 -------  ------------ ------------
 E31      Up           Enabled
 E32      Up           Disabled
```

Sample Display – show osi circuits e31

```
OSI Circuit Information
-----------------------

 Circuit      State     Forwarding
 -------  ------------ ------------
 E31      Up           Enabled
```

disabled

Displays OSI circuits that a user has manually disabled on the router. In this case, State is Disabled. Forwarding is either Enabled or Disabled.

Sample Display – show osi disabled

```
OSI Circuit Information
-----------------------

 Circuit      State     Forwarding
 -------  ------------ ------------
 E31      Disabled     Enabled
```

enabled

Displays circuits that have OSI enabled on this router. For information on the columns in the table, see the **circuits** command.

Sample Display – show osi enabled

```
OSI Circuit Information
-----------------------

 Circuit      State     Forwarding
 -------  ------------ ------------
 E31      Up           Enabled
 E32      Up           Enabled
```

level1 routes [**find** *<destination sys ID>*]

Displays information from the level 1 routing table for all entries or for a specific destination address. The table includes the following information:

Destination SysID	NSAP address of the destination system.
Route Type	Route type, which is one of the following: • *Level 1* – Level 1 routing (within the local area) only. • *Level 2* – Level 2 routing (between routing domains) only. • *Level 1&2* – Level 1 and Level 2 (routing within the local area and to systems located in a different area).
Next Hop	NSAP address of the intermediate system that is the next hop on the path to the destination end system.
Cost	Number of hops it takes to reach the destination.

Sample Display – show osi level1 routes

```
OSI Level I Routing Information
-------------------------------

   Destination SysId    Route Type       Next Hop           Cost
 ---------------------- ---------- ---------------------- --------
 0x490040CCCCCCCCCCCC00 Level 1&2  0x490040AAAAAAAAAAAA00 10
```

level2 routes [**find** *<destination sys ID>*]

Displays information from the Level 2 routing table for all entries or for a specific destination address. The table includes the following information:

Destination SysID	NSAP address of the destination system.
Next Hop	NSAP address of the intermediate system that is the next hop on the path to the destination end system.
Cost	Number of hops it takes to reach the destination.

Sample Display – show osi level2 routes

```
OSI Level II Routing Information
--------------------------------

   Destination SysId          Next Hop              Cost
 --------------------- ---------------------- ----------------
 0x490044              0x490040CCCCCCCCCCCC00               20
 0x490044              0x490044CCCCCCCCCCCC00               20

2 Total entries.
```

Sample Display – show osi level2 routes find 490044

```
OSI Level II Routing Information
--------------------------------

   Destination SysId          Next Hop              Cost
 --------------------- ---------------------- ----------------
 0x490044              0x490040CCCCCCCCCCCC00               20
 0x490044              0x490044CCCCCCCCCCCC00               20

2 Entries found.
```

stats

Displays statistics of each OSI circuit. The table includes the number of Protocol Data Units received, sent, and dropped on each circuit.

Sample Display – show osi stats

```
OSI Circuit Statistics
----------------------

            Received       Send      Dropped
 Circuit    Packets      Packets     Packets
 -------- ------------ ------------ ----------
 E31               464          891        181
 E32               211          402         69
```

stats clnp

Displays statistics for the ConnectionLess Network Protocol (CLNP) packets on each OSI circuit. The table includes the number of CLNP packets received and forwarded, the number of Echo Replies received (Rx) and sent (Tx) and the number of Echo Requests received (Rx) and sent (Tx).

Sample Display – show osi stats clnp

```
OSI Circuit CLNP Statistics
---------------------------

           CLNP         CLNP        Rx Echo  Rx Echo  Tx Echo  Tx Echo
 Circuit   Received     Forwarded   Rep      Req      Rep      Req
 -------- ------------ ------------ -------- -------- -------- --------
 E31                0            0        0        0        0        0
 E32                0            0        0        0        0        0
 O41                0            0        0        0        0        0
```

stats errors

Displays error statistics for each OSI circuit. The table includes the following information:

Init Failures	Number of times this circuit failed to initialize.
Rejected Adjs	Number of adjacencies rejected on this circuit.
Bad LSPs	Number of bad link state packets (LSPs) received on this circuit.
Bad Snps	Number of bad Sequence Number PDUs received on this circuit.
Bad Eshs	Number of bad End System hellos received on this circuit.
Bad L1Iihs	Number of bad Level 1 IS - IS hellos received on this circuit.
Bad L2Iihs	Number of bad Level 2 IS - IS hellos received on this circuit.

Sample Display – show osi stats errors

```
OSI Error Statistics
--------------------

            Init    Rejected   Bad      Bad      Bad      Bad      Bad
 Circuit  Failures    Adjs     LSPs     Snps     Eshs    L1Iihs   L2Iihs
 -------- --------  -------- -------- -------- -------- -------- --------
 E31             3         0       0        0        0        0        0
 E32             1         0       0        0        0        0        0
```

version

Displays the current version number and modification date of the *osi.bat* script.

Sample Display – show osi version

```
OSI.bat Version: 1.6 Date: 4/8/94
```

show ospf

The **show ospf** *<option>* commands display state, configuration, and statistical information about the Open Shortest Path First (OSPF) protocol. For details on the Bay Networks implementation of OSPF, refer to *Configuring IP Services*.

The **show ospf** command supports the following subcommand options:

area	lsdb [<area-number>]
ase [<LSID>]	neighbors
base	version
interface	

area

Displays a list of configured OSPF areas on the router. For each area, the table shows the following information:

Area Id	Area identifier.
State	State of the area: Up or Down.
Stub Area	Whether or not the area is a stub area: Yes or No.
Authentication	Authentication type for the area: None or Simple Password.

Sample Display – show ospf area

```
OSPF Area Information
---------------------

                      Stub
 Area Id         State Area Authentication
 -------         ----- ---- --------------
 0.0.0.0         Up    No   None
```

ase [*<LSID>*]

Displays information about Autonomous System External advertisements. You can display information about all Link State IDs in your system or for a specified Link State ID. The table includes the following information:

Link State Id	Network number that this Autonomous System (AS) External advertisement represents.
Originating Router	Router that generated the advertisement.
Age	Age in seconds of the advertisement.
Metric	Metric of the advertisement; the cost of the external route.
Forwarding Address	Address used to get to this network. If the address is 0, the traffic is forwarded to the originating router.
Type	ASE's type: 1 or 2.
Tag	Field that contains information that the network administrator has placed in the advertisement.

Sample Display – show ospf ase

```
OSPF AS External Routes
-----------------------

     Link         Originating                        Forwarding
   State ID         Router       Age    Metric       Address     Type    Tag
--------------- --------------- ----- ---------- --------------- ---- --------
0.0.0.0         192.32.174.65     621       4104 0.0.0.0           2  e0000000
0.0.0.0         192.32.174.66     697       4104 0.0.0.0           2  e0000000
7.0.0.0         192.32.174.65     622       4104 0.0.0.0           2  e0000000
15.0.0.0        192.32.174.65     617       4104 0.0.0.0           2  e0000000
21.0.0.0        192.32.174.65     618       4104 0.0.0.0           2  e0000000
52.0.0.0        192.32.174.65     618       4104 0.0.0.0           2  e0000000
53.0.0.0        192.32.174.65     619       4104 0.0.0.0           2  e0000000
```

base

Displays global information for the OSPF router. The base record controls OSPF for the entire system. The table includes the following information:

Router Id	Router identifier, which is unique among all OSPF routers.
Area Border Router	Whether or not the router is an area border router: Yes or No.
AS Boundary Router	Whether or not the router is an Autonomous System boundary router: Yes or No.

Sample Display – show ospf base

```
OSPF Base Information
---------------------

Router           Area Border     AS Boundary
  Id               Router          Router
------           -----------     -----------
192.32.174.65    No              Yes
```

interface

Displays a table of OSPF interfaces. The table includes the following information:

IP Address	Internet address of the OSPF interface.
Area Id	Identifier of the area where the interface belongs.
Type	Type of interface link, as follows: • *PtoP* – Point-to-Point interface. • *BCAST* – Broadcast network. • *NBMA* – Non-Broadcast Multi-Access network. • *DFLT* – Not configured appropriately. Point-to-multipoint is needed.
State	State of the interface, as follows: • *Down* – Interface is not operational. • *Waiting* – Interface is waiting. • *P to P* – Interface is in Point-to-Point state; occurs when the type is Point to Point. • *DR* – Router is the Designated Router on this network. • *BackupDR* – Router is the Backup Designated Router on this network. • *DR Other* – Router is neither the DR nor the BDR on this network.
Metric	Cost of using this interface.
Priority	Router's priority on this interface, used in multi-access networks (Broadcast or NBMA) for electing the designated router. If the value is 0, this router is not eligible to become the designated router on this network.
Designated DR/Backup DR	Two IP addresses for each interface. The first address is the IP address of the Designated Router on the network. The second address is the IP address of the Backup Designated Router on this network. Point-to-Point links do not contain a Designated Router or Backup Designated Router.

Sample Display – show ospf interface

```
OSPF Interfaces
---------------

                                                                 Designated DR/
 IP Address      Area Id    Type  State    Metric Prioity      Backup DR
 ----------      -------    ----  -----    ------ -------  ---------------
 192.32.174.65   0.0.0.0    PtoP  P to P       10       1  0.0.0.0
                                                           0.0.0.0

 192.32.174.97   0.0.0.0    BCAST BackupDR      1       1  192.32.174.98
                                                           192.32.174.97
```

lsdb [*<area-number>*]

Displays the router's Link State Database for all areas or for a specific area. The table includes the following information:

OSPF Area	Identifier of the area the advertisement is associated with.
LS Type	Type of advertisement that the area advances. AS External advertisements apply to all areas. However, if the router is attached to more than one area, the table displays the AS External advertisement only once — under the backbone area (area id 0.0.0.0). The types are as follows: • *STUB* – Stub Link Advertisement • *ROUTER* – Router Links Advertisement • *NETWORK* – Network Links Advertisement • *SUMMARY* – Summary Links Advertisement • *AS_SUM* – Autonomous System Border Summary Links Advertisement • *AS_EXT* – Autonomous System External Advertisement
Link State Id	Link state identifier of the advertisement.
Adv Router	IP address of the advertising router.
E	External type, for an Autonomous System External advertisement only. There are two types — Type 1 and Type 2.
Metric	Metric value, for an Autonomous System External advertisement only.

ASE Fwd Addr	Forwarding address, for an Autonomous System External advertisement only.
Age	Age in seconds of the advertisement.
Seq Nbr	Sequence number of the advertisement. The sequence number is a 32-bit signed integer used to identify old and duplicate link state advertisements. The larger the sequence number, the more recent the advertisement.

Sample Display – show ospf lsdb

```
OSPF LSDB
---------

OSPF Area:  0.0.0.0

LS Type  Link State ID    Adv Router  E Metric   ASE Fwd Addr   Age  Seq Nbr
------- -------------- ------------ - ------- --------------- ---- --------
ROUTER  192.32.28.18    192.32.28.18                            609 80000002
AS_EXT  14.0.0.0        192.32.28.19  2       3 192.32.28.36    1289 80000014
AS_EXT  15.0.0.0        192.32.28.19  2       2 192.32.28.36    1289 80000012
AS_EXT  16.0.0.0        192.32.28.19  2       2 192.32.28.36    1290 80000012
AS_EXT  131.1.0.0       192.32.28.19  2       5 192.32.28.1     1290 80000012
AS_EXT  141.1.0.0       192.32.28.19  2       5 192.32.28.1     1290 80000012
AS_EXT  192.30.133.0    192.32.28.19  2       4 192.32.28.1     1291 80000012
AS_EXT  192.31.133.0    192.32.28.19  2       4 192.32.28.1     1291 80000012
```

neighbors

Displays a table of all OSPF's neighbors. The table includes the following information:

Interface	IP address of the interface.
Router Id	IP address of the router.
Neighbor IP Addr	IP address of the neighbor.

State	State of the neighbor, which is the following: • *Down* – Neighbor is not operational. This state can occur only if the neighbor is configured for Non-Broadcast Multi-Access networks. • *Attempt* – Router is trying to establish communication with the neighbor; can occur only if the neighbor is configured for Non-Broadcast Multi-Access networks. • *Init* – Router has seen the neighbor's hello packet but the packet does not include this router in its list. • *Two Way* – Router and neighbor see each other's hello packets. • *Exch Start* – Router and the neighbor are negotiating a master/slave relationship for the Database Exchange process. • *Exchange* – Router and the neighbor are exchanging their Link State Databases. • *Loading* – Router and the neighbor are synchronizing their Link State Databases. • *Full* – Router and the neighbor have fully synchronized databases.
Type	Type of neighbor: • *Dynamic* – The router and neighbor learn about each other on Broadcast and Point-to-Point networks. • *Cfg*. – Static configuration of neighbors, which occurs on Non-Broadcast Multi-Access networks.

Sample Display – show ospf neighbors

```
OSPF Neighbors
--------------

                                Neighbor
 Interface       Router Id      IP Addr         State      Type
 ---------       ---------      --------        -----      ----
 192.32.174.65   192.32.174.66  192.32.174.66   Full       Dynamic
 192.32.174.97   192.32.174.66  192.32.174.98   Full       Dynamic
```

version

Displays the current version number and modification date of the *ospf.bat* script.

Sample Display – show ospf version

```
OSPF.bat Version: 1.17 Date: 12/15/94
```

show packet

The **show packet** *<option>* commands display configuration and status information about Packet Capture instances on routers. The Packet Capture utility is a network analyzer that captures packets into a capture buffer for examination. You can filter packets to determine what packets to save and when to start and stop capturing. For detailed information about the Packet Capture utility, refer to *Using Technician Interface Software*.

The **show packet** command supports the following subcommand options:

alerts	linenumbers
capture <line number> [-s<start>] [-c<count>]	loaded
configuration <line number>	status [<line number>]
disabled	version
enabled	

alerts

Displays Packet Capture instances that are enabled but not Up. State is either Down (the physical interface has not connected to Packet Capture) or Absent (Packet Capture is not loaded on the slot connected to this line number).

Sample Display – show packet alerts

```
Packet Capture Line Information (Alerts)
----------------------------------------
Line Number   State
----------- ---------
102103      Down
103101      Absent
```

capture *<line number>* [**-s***<start>*] [**-c***<count>*]

Displays packets captured on a specific line. In the table, the header line is followed by one or more lines of hexadecimal data.

<line number>	Displays the physical interface the capture is connected to. This is a unique 10-digit decimal number. Leading zeros are eliminated. The number identifies the physical media type, slot, module, and connector.
-s*<start>*	Displays the first packet to display from the capture buffer.
-c*<count>*	Displays the number of packets to display from the capture buffer.

The header line has the following six parts:

- Number of the packet within the capture buffer.
- Date the packet was captured.
- Time the packet was captured.
- Media type the packet was captured on.
- Original size of the packet in bytes.
- Direction the packet was captured from: transmitting (Tx) or receiving (Rx).

Sample Display – show packet capture 102101

```
Pkt#      1 06/24/94 06:59:03.018  CSMACD    52  Tx
00000000: 01 80 c2 00 00 00 00 00 a3 00 00 0c 00 26 42 42
00000010: 03 00 00 00 00 00 80 00 00 00 a3 00 00 0c 00 00
00000020: 00 00 80 00 00 00 a3 00 00 0c 80 01 00 00 14 00
00000030: 02 00 0f 00 20 20 20 6c 65 74 20 20 72 65 6d 20
```

configuration *<line number>*

Displays the configuration of a specific Packet Capture line instance.

<line number>	Physical interface to which the capture is connected. See the **capture** command.

The configuration table displays the following fields, which are explained in more detail in *Using Technician Interface Software*.

Delete	State of existence of the MIB instance: Created or Deleted.
Disable	State of the Packet Capture instance: Enabled or Disabled.
State	State of the Packet Capture subsystem, as follows: • *Up* – Registered and enabled. • *Down* – Registered but disabled. • *Init* – Loaded but no interface registered for the instance. • *Not Present* – Not loaded on the slot connected to the instance.
Fname	Filename to use to retrieve the capture buffer.
Control	Operation in effect: Start or Stop.
Capture	State of the operation: Started or Stopped.
LineNumber	Line number of the physical interface connected to the instance.
BufSize	Size of the capture buffer in 1024-byte increments.
PktSize	Number of bytes saved from a packet in 32-byte increments.
Direction	Direction of capture: Receive, Transmit, or both.
Count	Number of packets captured.

RxTrigger	Trigger type for receive when the capture buffer is full or a match on a trigger filter occurs: Buffer full, Match filter1, Match filter2, Not Used.
TxTrigger	Trigger type for transmit when the capture buffer is full or a match on a trigger filter occurs: Buffer full, Match filter1, Match filter2, or Not Used.
RxFltr1Type	Filter type, as follows: • *Capture* – Limits the types of packets saved. • *Trigger* – Stops a capture when a match occurs. • Not Used
RxFltr1Offset	Offset in bytes from the reference point into the packet; the first byte to be checked for a match.
RxFltr1Ref	Reference point in the packet for the offset, as follows: • *MAC* – First byte of the packet. • *Data Link* – Value that varies with the medium. • *Multicast* – Filter that verifies that the rightmost bit of a byte is 1.
RxFltr1Size	Number of bytes in the match field.
RxFltr1Match	Hexadecimal or character string used to match with the packet.
TxFltr1Type	Filter type, as follows: • *Capture* – Limits the types of packets saved. • *Trigger* – Stops a capture when a match occurs. • Not Used
TxFltr1Offset	Offset in bytes from the reference point into the packet; the first byte to be checked for a match.
TxFltr1Ref	Reference point in the packet for the offset, as follows: • *MAC* – First byte of the packet. • *Data Link* – Value that varies with the medium. • *Multicast* – Special filter that verifies that the rightmost bit of a byte is 1.
TxFltr1Size	Number of bytes in the match field.
TxFltr1Match	Hexadecimal or character string used to match with the packet.
RxFltr2Type	Filter type, as follows: • *Capture* – Limits the types of packets saved. • *Trigger* – Stops a capture when a match occurs. • Not Used
RxFltr2Offset	Offset in bytes from the reference point into the packet; the first byte to be checked for a match.

RxFltr2Ref	Reference point in the packet for the offset, as follows: • *MAC* – First byte of the packet. • *Data Link* – Value that varies with the medium. • *Multicast* – Special filter that verifies that the rightmost bit of a byte is 1.
RxFltr2Match	Hexadecimal or character string used to match with the packet.
RxFltr2Group	Capture filter type grouping, as follows: • *Or* – ORs the results of RxFltr1 and RxFltr2. • *And* – ANDs the results of RxFltr1 and RxFltr2.
TxFltr2Type	Filter type, as follows: • *Capture* – Limits the types of packets saved. • *Trigger* – Stops a capture when a match occurs. • Not Used
TxFltr2Offset	Offset in bytes from the reference point into the packet; the first byte to be checked for a match.
TxFltr2Ref	Reference point in the packet for the offset, as follows: • *MAC* – First byte of the packet. • *Data Link* – Value the varies with the medium. • *Multicast* – Special filter that verifies that the rightmost bit of a byte is 1.
TxFltr2Size	Number of bytes in the match field.
TxFltr2Match	Hexadecimal or character string used to match with the packet.
TxFltr2Group	Capture filter type grouping, as follows: • *Or* – ORs the results of TxFltr1 and TxFltr2. • *And* – ANDs the results of TxFltr1 and TxFltr2.

Sample Display – show packet configuration 102101

```
Packet Capture Configuration for Line 102101
-----------------------------------------------
Delete        Created
Disable       Enabled
State         Up
Fname         PCAP0200
Control       Start
Capture       Started
LineNumber    102101
BufSize       1 1Kbyte Increment(s)
PktSize       2 32 Byte Increment(s)
Direction     Receive & Transmit
Count         11
RxTrigger     Not Used
TxTrigger     Not Used
RxFltr1Type   Not Used
RxFltr1Offset 0
RxFltr1Ref    Mac
RxFltr1Size   0
RxFltr1Match  0x(nil)
TxFltr1Type   Not Used
TxFltr1Offset 0
TxFltr1Ref    Mac
TxFltr1Size   0
TxFltr1Match  0x(nil)
RxFltr2Type   Not Used
RxFltr2Offset 0
RxFltr2Ref    Mac
RxFltr2Size   0
RxFltr2Match  0x(nil)
RxFltr2Group  Or
TxFltr2Type   Not Used
TxFltr2Offset 0
TxFltr2Ref    Mac
TxFltr2Size   0
TxFltr2Match  0x(nil)
TxFltr2Group  Or
```

disabled

Displays packet capture lines that a user has manually disabled. State is one of the following:

Up	Physical interface has connected to the packet capture.
Down	Physical interface has not connected to the packet capture.
Absent	Packet capture program is not on the slot connected with this line.

Sample Display – show packet disabled

```
Packet Capture Line Information (Disabled)
------------------------------------------
Line Number   State
----------- ---------
102104      Down
```

enabled

Displays packet capture lines that are enabled. For state definitions, see the **disabled** command.

Sample Display – show packet enabled

```
Packet Capture Line Information (Enabled)
-----------------------------------------
Line Number   State
----------- ---------
102101      Up
102102      Up
102103      Down
103101      Absent
```

linenumbers

Displays the line numbers configured for packet capture. The table shows the following information:

Line Number	Number of the line connected with the packet capture.
Logical Line	Logical line number that the multichannel board uses.
Media Type	Type of the physical interface (for example, Ethernet).
Slot	Slot location of the line.
Module	Module number of the line's location.
Connector	Physical connector of the line's location.

Sample Display – show packet linenumbers

```
Packet Capture Configured Line Number(s)
----------------------------------------

Line Number Logical Line Media Type  Slot Module Connector
----------- ------------ ---------- ---- ------ ---------
102101      0            Ethernet   2    1      1
102102      0            Ethernet   2    1      2
105101      0            Ethernet   5    1      1
```

loaded

Displays the list of slots that have Packet Capture loaded.

Sample Display – show packet loaded

```
Packet Capture is loaded on slot(s)
     2 5
```

status [*<line number>*]

Displays the status of the lines configured for packet capture. You can display all lines or limit the display to a specific line. The table displays the following information:

Line Number	Number of the line connected with the packet capture.
State	Line state; for definitions, refer to the **disable** command.
Capture	State of the capture: Started or Stopped.
Count	Number of packets in the capture buffer.

Sample Display – show packet status

```
Packet Capture Line Status
--------------------------
Line Number    State    Capture Count
---------- ---------- ------- -----
102101      Up         Started    11
102102      Up         Stopped     0
102103      Down       Stopped     0
102104      Down       Stopped     0
103101      Absent     Stopped     0
```

version

Displays the version number and the modification date of the *packet.bat* file.

Sample Display – show packet version

```
PACKET.bat Version: 1.9 Date: 1/26/95.
```

show ping

The **show ping** *<option>* commands display information about the Bay Networks Ping MIB service, which provides a means for tracking the network availability and response time of IP networks. For information about how to configure the Bay Networks Ping MIB service through Site Manager, see *Managing Routers and BNX Platforms*.

The **show ping** command supports the following subcommand options:

config	sourceroutes
history	version
sourceroutes	

config

Displays configuration information about the Ping MIB service:

IP Address	IP addresses that the router is configured to ping.
Size	Number of bytes of data that the router is configured to send each time it pings an IP address.
Retry	Number of successive times that the router is configured to repeat a ping of an IP address.
Timeout	Length of time (in seconds) after which the router is configured to time out an unsuccessful ping of an IP address.
Status	Status of the ping attempt (for example, initializing, done, busy, or one of a number of error messages).

Sample Display – show ping config

```
    IP Address          Size       Retry     Timeout      Status
------------------- ---------- ---------- ---------- --------------------
192.32.243.83               16         10          5 DONE
192.32.243.82               16         20          5 DONE
192.32.6.95                 16          5          5 DONE
192.32.92.2                 16         10          5 DONE
192.32.243.81               16          1          5 INIT
```

history

Displays the following information about each attempt to ping an IP address:

Received	Number of times the router received an acknowledgment from the IP address.
Dropped	Number of times the router did not receive an acknowledgment from the IP address.
Round Trip Time	Length of time (in milliseconds) it took the router to ping the IP address and receive an acknowledgment during the last retry.
Minimum Round Trip Time	Taken from all the retries, this is the minimum length of time (in milliseconds) it takes the router to ping the IP address and receive an acknowledgment.
Maximum Round Trip Time	Taken from all the retries, this is the maximum length of time (in milliseconds) it takes the router to ping the IP address and receive an acknowledgment.
Average Round Trip Time	Taken from all the retries, this is the average length of time (in milliseconds) it takes the router to ping the IP address and receive an acknowledgment.

Sample Display – show ping history

IP Address	Received	Dropped	Round Trip Time	Min Round Trip Time	Max Round Trip Time	Avg Round Trip Time
192.32.243.83	10	0	7	1	19	6
	10	0	15	1	15	4
	10	0	15	1	15	6
	10	0	7	1	7	3
	10	0	7	1	7	4
	10	0	1	1	7	3
	10	0	3	1	7	3
	10	0	1	1	42	9
	10	0	3	1	11	3
	10	0	1	1	7	4
	10	0	3	1	7	3
192.32.243.82	20	0	7	1	23	7
	20	0	7	1	7	4
	20	0	1	1	11	4
	20	0	7	1	15	5
	20	0	1	1	11	3
	20	0	3	1	11	4
192.32.6.95	5	0	1	1	3	1
	5	0	3	1	11	4
	5	0	3	1	7	4
	5	0	7	1	7	4
	5	0	1	1	7	4
192.32.92.2	10	0	19	1	19	9
	10	0	7	1	23	11
	10	0	11	1	11	6
	10	0	27	1	62	15
192.32.243.81	1	0	1	1	1	1

traceroutes

Displays the hops between the source address and the specified destination address.

Sample Display – show ping traceroutes

```
   IP Address    Trace Address
--------------- ---------------

 192.32.243.83  192.32.6.1
                192.168.2.65
                192.168.7.2
                192.32.243.83

 192.32.243.82  192.32.6.1
                192.168.2.65
                192.168.7.2
                192.32.243.82

 192.32.6.95    192.32.6.95

 192.32.92.2    192.32.6.1
                192.168.2.65
                192.32.83.1
                192.32.85.2
                192.32.92.2
```

sourceroutes

Displays the source route addresses that dictate the path to be taken by the echo packet.

Sample Display – show ping sourceroutes

```
   IP Address   Source Address
--------------- ---------------

 192.32.243.81  192.32.6.1
                192.32.243.81
```

version

Displays the current version number and date of the *ping.bat* script.

Sample Display – show ping version

```
PING.bat Version: 1.1 Date: 9/02/94.
```

show ppp

The **show ppp** *<option>* commands display Point-to-Point Protocol (PPP) line and state information, and configured and negotiated Network Control Protocols (NCPs). For detailed information on PPP, refer to *Configuring PPP Services*.

The **show ppp** command supports the following subcommand options:

alerts	line {configuration | parameters}
appletalk {configured | negotiated}	lqr {configuration | stats}
bad packets	multilink {information | circuits}
bridge {configured | negotiated}	osi
chap {local | remote}	pap {local | remote}
circuits [<circuit_name>]	state [<circuit name>]
decnet	version
disabled	vines
enabled	wcp
ip	xns
ipx {{configured | negotiated} | name {local | remote}}	

alerts

Displays all protocols that are enabled but whose state is not opened. The display includes the following information:

Circuit	Name of the circuit the protocol runs on.
Protocol	Protocols used on the line.
State	State of the protocol, as follows: • *Ackrcvd* – Acknowledgment received — the router received an acknowledgment to its request for configuring the connection. It has yet to acknowledge the receipt of the request from the other side of the connection. • *Acksent* – Acknowledgment sent — the router has sent a request for configuring the connection. It has also acknowledged a similar request from the other side of the connection, but has yet to receive an acknowledgment of its request from the other side. • *Closed* – Link is available but has not yet received an "Open" request. • *Closing* – Router has sent a request to close the connection and is expecting an acknowledgment. When it receives the acknowledgment, the connection will enter the Closed state. • *Initial* – Initial state; the lower layer is unavailable. • *Opened* – Router has sent a configuration request and the other side has acknowledged its request. Also, the router has received a configuration request from the other side and has acknowledged this request. This layer is now up. • *Reqsent* – Request sent. The router has sent a request to configure the connection. • *Starting* – Lower level is still unavailable but the router has initiated an "Open" request. • *Stopped* – Link is available and an "Open" event has occurred. Upon receiving a request to configure the connection, the router sends either an appropriate response or acknowledges the termination request. • *Stopping* – Router has sent a termination request to close the open connection. When the router receives an acknowledgment, the state changes to Stopped.

Sample Display – show ppp alerts

```
PPP: ALERTS
-----------

 Circuit   Protocol   State
 -------- ---------- --------
 S32      OSI        Starting
          DECnet     Starting
          IPX        Starting
          BRIDGE     Starting
          VINES      Starting
```

appletalk {configured | negotiated}

configured Displays all configurable parameters for NCP negotiations.

The display includes the following information:

Circuit	Name of the circuit the protocol runs on.
State	State of the Network Control Protocol (NCP): Disabled, or if Enabled, any of the states listed under the **alerts** command.
Network No.	Configured network number. The peer must use the same number.
Local Node No.	Configured node number for the local router.
Remote Node No.	Configured node number for the peer to use.
Routing Protocol	Routing protocol desired for the link (RTMP).

Sample Display – show ppp appletalk config

```
PPP: APPLETALK NCP Configured Information
-----------------------------------------

                                 Local    Remote  Routing
 Circuit   State   Network No.  Node No. Node No. Protocol
 -------- -------- ------------ -------- -------- --------
 S31      Disabled            0        0        0 RTMP
 S32      Disabled            0        0        0 RTMP
```

negotiated Displays all configurable parameters after negotiation.

The display includes the following information:

Circuit	Name of the circuit the protocol runs on.
State	State of the Network Control Protocol (NCP), either Disabled, or if Enabled, any of the states listed under the **alerts** command.
Network No.	Negotiated network number to be used.
Local Node No.	Negotiated node number that the local router will use.
Remote Node No.	Negotiated node number the peer will use.
Routing Protocol	Routing protocol selected for the link.

Sample Display – show ppp appletalk negotiated

```
PPP: APPLETALK NCP Negotiated Information
-----------------------------------------

                                 Local    Remote  Routing
 Circuit   State   Network No.  Node No. Node No. Protocol
 -------- -------- ------------ -------- -------- --------
 S31      Disabled            0        0        0 RTMP
 S32      Disabled            0        0        0 RTMP

 2 Entries found.
```

bad packets

Displays the number of bad packets received over each circuit and the first 16 bytes of the last bad packet. If the number of bad packets is above zero, then the PPP circuit is receiving misformed packets or packets meant for other protocols. The hexadecimal display of the last bad packet will show the kind of packet being received. The display includes the following information:

Circuit	Name of the circuit receiving the bad packets.
Number of Bad Packets	Number of bad packets received at this point.
Last Bad Packet	First 16 bytes of the last bad packet.

Sample Display – show ppp bad

```
PPP Circuit: Bad Packet Information
-----------------------------------

          # of Bad
 Circuit  Packets    Last Bad Packet
 -------- -------- --------------------
 S31             0 None
 S32             0 None
2 Entries found.
```

bridge {configured | negotiated}

configured Displays the state of the Bridge NCP and the kind of bridged frames that are enabled.

The display includes the following information:

Circuit	Name of the circuit the protocol runs on.
State	State of the Bridge NCP — either Disabled, or if Enabled, any of the states listed under the **alerts** command.

Bridge Enet	Whether this interface accepts and forwards bridged traffic that is Ethernet encapsulated: Enabled or Disabled.
Bridge Fddi	Whether this interface accepts and forwards bridged traffic that is FDDI encapsulated: Enabled or Disabled.
Bridge Token Ring	Whether this interface accepts and forwards traffic that is Token Ring encapsulated: Enabled or Disabled.

Sample Display – show ppp bridge config

```
PPP: BRIDGE NCP Configured Information
--------------------------------------

                    Bridge   Bridge    Bridge
 Circuit   State     Enet     Fddi   Token Ring
 -------- -------- -------- -------- ----------
 S31      Disabled Enabled  Enabled  Enabled
 S32      Starting Enabled  Enabled  Enabled

 2 Entries found.
```

negotiated — Displays the result of bridge MAC type negotiation on configured parameters. The display includes the same columns as **bridge config**.

Sample Display – show ppp bridge negot

```
PPP: BRIDGE NCP Negotiated Information
--------------------------------------

                    Bridge   Bridge    Bridge
 Circuit   State     Enet     Fddi   Token Ring
 -------- -------- -------- -------- ----------
 S31      Disabled Enabled  Enabled  Enabled
 S32      Starting Enabled  Enabled  Enabled

 2 Entries found.
```

chap {local | remote}

The displays for the local and remote include the following information:

Circuit	Circuit name.
Line LLIndex	Logical Line Index. Identifies the line number associated with the circuit.
LCP State	Indicates the state of the link control protocol, which helps establish the link.
Local/Remote CHAP Name	Displays the CHAP name for the circuit.
Local Remote CHAP Secret	Displays the CHAP secret for the circuit.

local Displays the configured Challenge Handshake Authentication Protocol (CHAP) name and secret of the local router.

Sample Display – show ppp chap local

```
PPP Line: Local CHAP Configuration
----------------------------------

           Line.       LCP             Local                    Local
 Circuit   LLIndex    State          CHAP NAME               CHAP Secret
 -------- ---------- -------- ----------------------- -----------------------
 Special  202102.0   Initial  None                    None
 S31      203101.0   Opened   None                    None
 S32      203102.0   Opened   None                    None
 Demand 5 10904101.0 Initial  None                    None
 Demand 6 10905101.0 Initial  None                    None
 Special  20904101.0 Initial  None                    None

 6 Entries found.
```

remote Displays the configured Challenge Handshake Authentication Protocol (CHAP) name and secret of the remote router.

Sample Display – show ppp chap remote

```
PPP Line: Remote CHAP Configuration
-----------------------------------

           Line.       LCP             Remote                   Remote
 Circuit   LLIndex    State          CHAP NAME           Expected CHAP Secret
 -------- ---------- -------- ---------------------- ----------------------
 Special  202102.0   Initial  None                   None
 S31      203101.0   Opened   None                   None
 S32      203102.0   Opened   None                   None
 Demand 5 10904101.0 Initial  None                   None
 Demand 6 10905101.0 Initial  None                   None
 Special  20904101.0 Initial  None                   None

6 Entries found
```

circuits [*<circuit_name>*]

Displays the state of the circuit. The displays includes the following information:

Circuit	Shows the circuit name.
Line #	Indicates the line number.
Driver State	Displays the state of the synchronous driver.
Protocol	Displays the protocols for the circuit.
State	Displays the state of the protocol.

Sample Display – show ppp circuits

```
[2:1]$ show ppp circuits

PPP Circuit Information
-----------------------

 PPP over Sync Driver
 --------------------
                    Driver
 Circuit   Line #   State     Protocol      State
 -------- -------- -------- ------------ ------------
 S51      205101   Up       LCP          Opened
                            IP           Opened
                            IPX          Disabled
                            OSI          Disabled
                            XNS          Disabled
                            VINES        Disabled
                            BRIDGE       Disabled
                            DECnet       Disabled
                            WCP          Disabled
                            APPLETALK    Disabled

 S52      205102   Up       LCP          Reqsent
                           IP           Initial
                            IPX          Disabled
                            OSI          Disabled
                            XNS          Disabled
                            VINES        Disabled
                            BRIDGE       Disabled
                            DECnet       Disabled
                            WCP          Disabled
                            APPLETALK    Disabled

 2 Entries found.

 PPP over Hssi Driver
 --------------------

                    Driver
 Circuit   Line #   State     Protocol      State
 -------- -------- -------- ------------ ------------

 No Entries found.

2 Total Entries found.
```

decnet

Displays the state of DECnet NCP on all circuits on which PPP is configured. State is either Disabled, or if Enabled, any of the states listed under the **alerts** command.

Sample Display – show ppp decnet

```
PPP: DECNET NCP Information
---------------------------

 Circuit   State
 -------- --------
 S31      Disabled
 S32      Starting
2 Entries found.
```

disabled

Displays the state of all NCPs disabled on each circuit. State is either Disabled, or if Enabled, any of the states listed under the **alerts** command.

Sample Display – show ppp disabled

```
PPP: Entities Disabled
----------------------

 Circuit   Protocol   State
 -------- ---------- --------
 S31      OSI        Closed
          DECnet     Closed
          APPLETALK  Closed
          BRIDGE     Closed

 S32      IP         Initial
          XNS        Initial
          APPLETALK  Initial
```

enabled

Displays the state of all NCPs enabled on each circuit. States are listed under the **alerts** command.

Sample Display – show ppp enabled

```
PPP: Entities Enabled
---------------------

 Circuit   Protocol   State
 -------- ---------- --------
 S31      LCP        Opened
          IP         Opened
          XNS        Opened
          IPX        Opened
          VINES      Opened

 S32      LCP        Stopped
          OSI        Starting
          DECnet     Starting
          IPX        Starting
          BRIDGE     Starting
          VINES      Starting
```

ip

Displays state, configured, and negotiated parameters for Internet NCP. The display includes the following information:

Local Cfg. IP Address	Configured IP address of the interface.
Local Neg. IP Address	Local IP address after negotiation.
Remote Cfg. IP Address	IP address desired for the peer router.
Remote Neg. IP Address	Remote IP address after negotiation.

Sample Display – show ppp ip

```
PPP: IP NCP Information
-----------------------

                     Local        Local        Remote       Remote
 Circuit   State   Cfg. IP Addr Neg. IP Addr Cfg. IP Addr Neg. IP Addr
 -------- -------- ------------ ------------ ------------ ------------
 S31      Opened   1.1.1.2      1.1.1.2      1.1.1.1      1.1.1.1
 S32      Disabled 0.0.0.0      0.0.0.0      0.0.0.0      0.0.0.0

 2 Entries found.
```

ipx {{configured | negotiated} | name {local | remote}}

configured — Displays all configurable parameters for NCP negotiations with a peer router.

The display includes the following information:

Circuit	Name of the circuit the protocol runs on.
State	State of the circuit, which is either Disabled, or if Enabled, any of the states listed under the **alerts** command.
Network No.	Configured network number for the originating router and the peer router.
Remote Node Number	Node number the peer router should use if it sends a 0 to the originating router during negotiations.
Routing Protocol	The routing protocol desired for the link.

Sample Display – show ppp ipx config

```
PPP: IPX NCP Configured Information
-----------------------------------

                                      Remote      Routing
 Circuit   State   Network No.    Node Number    Protocol
 -------- -------- ------------ ---------------- --------
 S31      Opened   0x0000000F   0x0000000F       RIP/SAP
 S32      Starting 0x0000000A   0x0000000A       RIP/SAP

2 Entries found.
```

negotiated — Displays all configurable parameters after IPX NCP negotiation. The display includes the following information:

Circuit	Name of the circuit the protocol runs on.
State	State of the circuit, which is either Disabled, or if Enabled, any of the states listed under the **alerts** command.
Network No.	Number agreed upon during negotiation for the originating router to use with the peer router. Both routers will use this number.
Config Complete	Result of the IPX NCP negotiations (True or False).
Routing Protocol	Routing protocol negotiated for use on the link. None indicates that the peer routers have not completed negotiations or that the negotiations have not yet converged.

Sample Display – show ppp ipx negot

```
PPP: IPX NCP Negotiated Information
-----------------------------------

                                 Config  Routing
 Circuit   State   Network No.  Complete Protocol
 -------- -------- ------------ -------- --------
 S31      Opened   0x0000F000   True     RIP/SAP
 S32      Starting None         False    None

 2 Entries found.
```

name local Displays the local router name, its circuit name and its state. State is either Disabled, or if Enabled, any of the states listed under the **alerts** command.

Sample Display – show ppp ipx name local

```
PPP: IPX NCP Local Router Name
------------------------------

 Circuit   State                   Local Router Name
 -------- -------- --------------------------------------------------
 S31      Opened   Locrouter1
 S32      Starting Locrouter2

 2 Entries found.
```

name remote Displays the remote router name resulting from negotiation, its circuit name and its state. None indicates that no router name has been configured on the peer or that negotiations have not taken place. State is either Disabled or if enabled, any of the states listed under the **alerts** command.

Sample Display – show ppp ipx name remote

```
PPP: IPX NCP Remote Router Name
-------------------------------

 Circuit   State                   Remote Router Name
 -------- -------- --------------------------------------------------
 S31      Opened   Remrouter1
 S32      Starting None

 2 Entries found.
```

line {configuration | parameters}

configuration Displays the configuration of the PPP line and the state of the Line Control Protocol (LCP).

The display includes the following information:

Circuit	Name of the circuit the protocol runs on.
Line.LLIndex	Line number associated with the circuit; always 0 for now.
LCP State	State of the Line Control Protocol — either Disabled, or if Enabled, any of the states listed under the **alerts** command.
Restart Time	Number of seconds the Restart Timer waits before retransmitting data. The maximum value is 1000.
Echo Request Frequency	Number of seconds between transmissions of Echo Request Packets.
Echo Reply Loss	Number of unacknowledged Echo-Reply packets counted before declaring the point-to-point link down.
Maximum Conf-Req	Maximum number of unacknowledged configuration requests to send without receiving a valid response from the peer router on the other end of the link.
Maximum Term-Req	Maximum number of terminate requests to send without receiving a valid response and before assuming the peer router on the other end of the link is unavailable.
Max Conf Fail	Maximum number of Configure Nak packets to send before sending a Configure Ack and before assuming that the configuration does not converge.

Sample Display – show ppp line config

```
PPP Line Configuration
----------------------

          Line.    LCP    Restart  Echo-Req Echo-Rep Maximum  Maximum  Max Conf
Circuit  LLIndex  State    Timer     Freq     Loss   Conf-Req Term-Req   Fail
-------- -------- -------- -------- -------- -------- -------- -------- --------
S31      203101.0 Opened          3        0        3     1000        2       10
S32      203102.0 Stopped         3        0        3     1000        2       10
Special  203102.0 Starting        3        0        3     1000        2       10
Special  203103.0 Starting        3        0        3     1000        2       10

4 Entries found.
```

Note: *A circuit name of Special means that PPP created the circuit for negotiating addresses on a demand, backup, or bandwidth line. Currently no dial circuit is active on the two lines marked Special. They could be demand, backup, or bandwidth circuits. For more information, see the* **show sws** *command.*

parameters — Displays the parameters associated with the specific PPP connection.

The display includes the following information:

Circuit	Name of the circuit the protocol runs on.
Line.LLIndex	Line number associated with the circuit.
LCP State	State of the Line Control Protocol — either Disabled, or if Enabled, any of the states listed under the **alerts** command.
Magic Number	Number that the line uses.
MRU	Maximum receive unit, which specifies the MTU size to use for the line.
Local Auth. Prot.	Local authorization protocol that the peer needs to use for the originator's side of the link.
Remote Auth. Prot	Remote authorization protocol that the peer wants the originating router to use on its side of the link.

Sample Display – show ppp line param

```
PPP Line: Parameter Information
------------------------------

           Line.      LCP                                  Local         Remote
 Circuit   LLIndex    State     Magic Number     MRU     Auth. Prot.   Auth. Prot.
 --------  --------  --------  ---------------- --------  ------------  ------------
 S31       203101.0  Opened    0xd45cf8f9       1594      None          None
 S32       203102.0  Stopped   0x5eeac969       1594      None          None

 2 Entries found.
```

lqr {configuration | stats}

configuration — Displays all configurable parameters associated with line quality reporting (LQR).

The display includes the following information:

Circuit	Name of the circuit the protocol runs on.
Line.LLIndex	Line number associated with the circuit.
Line Quality Protocol	Link quality protocol configured for the line.
Remote Timer	State of the LQR timer — Enabled or Disabled; only one side maintains the timer.
LQR Repeat Period	Time in seconds between the transmission of LQR packets.
Inbound Quality	Percentage of LQR packets that the originating router expects to receive from the peer, averaged over the last five LQR reporting periods. A value of 100% indicates that the router will tolerate no loss.
Outbound Quality	Percentage of LQR packets that the peer router expects to receive from this router, averaged over the last five LQR reporting periods.

Sample Display – show ppp lqr config

```
PPP Line: Line Quality Reporting Configuration
----------------------------------------------

           Line.   Line Qual  Remote  LQR Repeat Inbound  Outbound
 Circuit  LLIndex  Protocol   Timer     Period   Quality  Quality
 -------- -------- --------- -------- ---------- -------- --------
 S31      203101.0 LQR        Enabled          3      90%      90%
 S32      203102.0 None       Enabled          3      90%      90%
```

stats — Displays the number of line quality reporting packets exchanged as well as the line quality.

The display includes the following information:

Circuit	Name of the circuit the protocol runs on.
Line.LLIndex	Line number associated with the circuit.
LCP State	State of the Line Control Protocol — either Disabled, or if Enabled, any of the states listed under the **alerts** command.
LQR Repeat Period	Maximum number of seconds between the transmission of LQR packets, as agreed upon with the peer router.
Inbound Quality	Percentage of LQR packets that the originating router expects to receive from the peer, averaged over the last five LQR reporting periods. A value of 100% indicates that the router will tolerate no loss.
Outbound Quality	Percentage of LQR packets that the peer router expects to receive from this router, averaged over the last five LQR reporting periods.
In LQRs	Number of LQR packets received from the peer.
Out LQRs	Number of LQR packets transmitted.

Sample Display – show ppp lqr stats

```
PPP Line: Line Quality Reporting Stats
--------------------------------------

           Line.      LCP    LQR Repeat Inbound  Outbound
 Circuit  LLIndex   State     Period   Quality  Quality  In LQRs  Out LQRs
 -------- -------- -------- ---------- -------- -------- -------- --------
 S31      203101.0 Opened            3     100%     100%    61044    61052
 S32      203102.0 Stopped           3       0%       0%        0        0

 2 Entries found.
```

multilink {information | circuits}

information Displays information about the multilink bundle. The display includes the following information:

Circuit	Displays the circuit number.
Line Count	Shows the number of lines in the multilink bundle.
Bundle Speed	Lists the current speed of each line in the multilink bundle.
Line	Lists the line number of each line in the multilink bundle.

Sample Display – show ppp multilink information

```
PPP Multilink Information
-------------------------

                       Bundle
 Circuit  Line Count   Speed      Line
 -------- ----------- --------- ----------
 S31                0         0          0
 S32                0         0          0
 Demand 4           0         0          0
 Demand 5           0         0          0
 Demand 6           0         0          0

 5 Entries found.
```

circuits — Displays information about each circuit in the multilink bundle. Thedisplay includes the following information:

Circuit	Displays the circuit number.
Config. Mode	Shows the mode you configured for this circuit. • Normal – this is a nonmultilink circuit. • Multilink – the circuit is a multilink circuit. • Monitor – the circuit is a multilink circuit and the router for which this circuit is configured is the congestion monitor. The congestion monitor is responsible for monitoring congestion on the line.
Actual Mode	Displays the actual mode in which this circuit is operating.
Tx Packets	Displays the number of packets transmitted over the circuit.
Rx Packets	Displays the number of packets received over the circuit.

Sample Display – show ppp multilink circuits

```
PPP Multilink Circuits
----------------------


 Circuit   Config Mode    Actual Mode   Tx Packets  Rx Packets
 -------- -------------- -------------- ----------- -----------
 S31      Normal         Normal                   0           0
 S32      Normal         Normal                   0           0
 Demand 4 Normal         Inactive                 0           0
 Demand 5 Normal         Inactive                 0           0
 Demand 6 Normal         Inactive                 0           0

 5 Entries found.
```

osi

Displays the state of the OSI NCP for all circuits on which PPP is configured. State is either Disabled, or if Enabled, any of the states listed under the **alerts** command.

The display includes the following information:

Circuit	Displays the circuit number.
State	Displays whether OSI NCP is enabled or disabled.

Sample Display – show ppp osi

```
PPP: OSI NCP Information
--------------------------

 Circuit   State
 -------- --------
 S31      Disabled
 S32      Starting

 2 Entries found.
```

pap {local | remote}

local — Displays the configured Password Authentication Protocol (PAP) identifier and password of the local router.

The display includes the following information:

Circuit	Name of the circuit the protocol runs on.
Line.LLIndex	Line number associated with the circuit.
LCP State	State of the Line Control Protocol — either Disabled, or if Enabled, any of the states listed under the **alerts** command.
Local PAP ID	PAP identifier assigned to this interface. During the authentication phase, all password Authenticate-Request messages that the peer sends to this interface must include this PAP ID.
Local PAP Password	PAP password assigned to this interface. During the authentication phase, all Authenticate-Request messages that the peer sends to this interface must include this password.

Sample Display – show ppp pap local

```
PPP Line: Local PAP Configuration
---------------------------------

           Line.     LCP             Local                    Local
 Circuit  LLIndex   State           PAP ID                PAP Password
 -------- -------- -------- ----------------------- -----------------------
 S31      203101.0 Opened   None                    None
 S32      203102.0 Stopped  None                    None

 2 Entries found.
```

remote Displays the configured Password Authentication Protocol (PAP) identifier and password of the remote router.

The display includes the following information:

Circuit	Name of the circuit the protocol runs on.
Line.LLIndex	Line number associated with the circuit.
LCP State	State of the Line Control Protocol — either Disabled, or if Enabled, any of the states listed under the **alerts** command.
Remote PAP ID	PAP identifier assigned to the peer router. During the authentication phase, this interface must include this PAP ID in all password Authenticate-Request messages it sends to the peer router.
Remote PAP Password	PAP password assigned to the peer router. During the authentication phase, this interface must include this password in all password Authenticate-Request messages it sends to the peer router.

Sample Display – show ppp pap remote

```
PPP Line: Remote PAP Configuration
----------------------------------

           Line.     LCP             Remote                    Remote
 Circuit  LLIndex   State           PAP ID                PAP Password
 -------- -------- -------- ---------------------- ----------------------
 S31      203101.0 Opened   None                   None
 S32      203102.0 Stopped  None                   None

 2 Entries found.
```

state [*<circuit name>*]

For all circuits or for a specified circuit, displays the state of LCP and of all the NCPs per circuit. There are two types of displays: one the Sync driver and the other for the HSSI driver. State is either Disabled, or if Enabled, any of the states listed under the **alerts** command. The table also displays the line the circuit is currently on, since with dial backup, the backup circuit can be on another line when the primary connection fails.

Sample Display – show ppp state

```
PPP State Information
---------------------

 PPP over Sync Driver
 --------------------
                    Driver
 Circuit   Line #   State     Protocol      State
 -------- -------- -------- ------------ ------------
 S31      203101   Init     LCP          Opened
                            IP           Starting
                            IPX          Disabled
                            OSI          Disabled
                            XNS          Disabled
                            VINES        Disabled
                            BRIDGE       Disabled
                            DECnet       Disabled
                            APPLETALK    Disabled

 Special  203102   Init     LCP          Starting
                            IP           Initial
                            IPX          Initial
                            OSI          Disabled
                            XNS          Disabled
                            VINES        Disabled
                            BRIDGE       Disabled
                            DECnet       Disabled
                            APPLETALK    Initial

 Demand 3 203103   Up       LCP          Opened
                            IP           Opened
                            IPX          Disabled
                            OSI          Disabled
                            XNS          Disabled
                            VINES        Disabled
                            BRIDGE       Disabled
                            DECnet       Disabled
                            APPLETALK    Disabled
```

Note: *As the sample display shows, the circuit labeled Special is only for lines configured for dial-on-demand, dial backup, and bandwidth-on-demand. A circuit name of Special means that PPP created the circuit for negotiating addresses on a demand, backup, or bandwidth line.*

If your two circuit entries have the same name, one of them is a primary circuit and the other is a backup circuit. See “show sws” for more information.

A demand or backup circuit becomes associated to a physical line when the call is in progress. So, the PPP circuit and the line records may seem to be inconsistent. The following display shows three entries; circuit 3 is a dial-on-demand circuit.

Sample Display – show ppp ip

```
PPP: IP NCP Information
-----------------------

                      Local        Local        Remote       Remote
Circuit   State   Cfg. IP Addr Neg. IP Addr Cfg. IP Addr Neg. IP Addr
-------- -------- ------------ ------------ ------------ ------------
S31      Starting 12.1.1.1     12.1.1.1     12.1.1.2     12.1.1.2
Demand 3 Starting 13.1.1.1     13.1.1.1     13.1.1.2     13.1.1.2
Special  Initial  0.0.0.0      0.0.0.0      0.0.0.0      0.0.0.0

3 Entries found.
```

version

Displays the current version and modification date of the *ppp.bat* script.

Sample Display – show ppp version

```
PPP.bat Version: Date: 9-9-94
```

vines

Displays the state of the VINES NCP for all circuits on which PPP is configured. State is either Disabled, or if Enabled, any of the states listed under the **alerts** command.

The display includes the following information:

Circuit	Displays the circuit number.
State	Displays whether VINES NCP is enabled or disabled.

Sample Display – show ppp vines

```
PPP: VINES NCP Information
--------------------------

 Circuit   State
 -------- --------
 S31      Disabled
 S32      Starting

 2 Entries found.
```

wcp

Displays whether data compression is enabled for all circuits configured for PPP. The state is either Disabled, or if Enabled, any of the states listed under the **alerts** command.

The display includes the following information:

Circuit	Displays the circuit number.
State	Displays whether data compression is enabled or disabled.

Sample Display – show ppp wcp

```
[2:1]$ show ppp wcp


PPP: WCP NCP Information
------------------------

 Circuit   State
 -------- --------
 S31      Disabled
 S32      Disabled
 Demand 4 Initial
 Demand 5 Disabled
 Special  Disabled

 5 Entries found.
```

xns

Displays the state of the XNS NCP for all circuits on which PPP is configured. State is either Disabled, or if Enabled, any of the states listed under the **alerts** command.

The display includes the following information:

Circuit	Displays the circuit number.
State	Displays whether XNS NCP is enabled or disabled.

Sample Display – show ppp xns

```
PPP: XNS NCP Information
---------------------------

 Circuit   State
 -------- --------
 S31      Disabled
 S32      Starting

 2 Entries found.
```

show process

The **show process** *<option>* commands display information about the use of resources (buffers, cpu, memory, lists, etc.) on the router.

The **show process** command supports the following subcommand options:

buffers	list
cpu	version
memory	

buffers

Displays the number and percentage of buffers used by all processes on the router. By specifying the options that appear in the following command line, you can customize the output to display buffer usage for a particular process or slot on the router.

show process buffers *<process>* [**sample** *<seconds> <repeat>*] [*<slot>*]

process	Specifies the process for which you want to view buffer statistics. Specify **all** to display buffer statistics for all processes running on the router. Specify **total** to display only buffer statistic totals. For information on how to obtain a list of available processes, refer to the **show process list** command later in this section.
sample <seconds> <repeat>	Periodically samples and displays buffer usage statistics. The mandatory <*seconds*> argument indicates the time interval between samples. The manadatory <*repeat*> argument indicates the number of times to sample buffer usage. If you use sampling, the values displayed represent the amount of buffer usage for the interval last sampled. The minimum sample interval is 5 seconds. If you specify a shorter interval, the command automatically substitutes the minimum interval of 5 seconds. If you choose not to use sampling, the values displayed represent the total buffer usage since slot boot time. .
slot	Limits display to statistics for the slot you specify.

Sample Display – show process buffers total

```
Total Buffer Use Statistics
---------------------------
Slot  Max  Free  Used  %Used
----  ---  ----  ----  -----
2     781  458   323   41
3     781  457   324   41
4     781  457   324   41
```

cpu

Displays the use in 100ths of seconds and percentage of cpu used by all processes on the router. By specifying the options that appear in the following command line, you can customize the output to display cpu usage for a particular process or slot on the router.

show process cpu *<process>* [**sample** *<seconds> <repeat>*] [*<slot>*]

process	Specifies the process for which you want to view cpu statistics. Specify “all” to display cpu statistics for all processes running on the router. Specify “total” to display only cpu statistic totals. For information on how to obtain a list of available processes, refer to the **show process list** command later in this section.
sample <seconds> <repeat>	Periodically samples and displays cpu usage statistics. The mandatory <*seconds*> argument indicates the time interval between samples. The manadatory <*repeat*> argument indicates the number of times to sample cpu usage. If you use sampling, the values displayed represent the amount of cpu usage for the interval last sampled. The minimum sample interval is 5 seconds. If you specify a shorter interval, the command automatically substitutes the minimum interval of 5 seconds. If you choose not to use sampling, the values displayed represent the total cpu usage since slot boot time.
slot	Limits display to statistics for the slot you specify.

Sample Display – show process cpu total

```
Total Cpu Use Statistics
--------------------------
Slot  Max         Idle        Used        %Used
----  ----------  ----------  ----------  -----
2     17463       17191       272         1
3     17315       17045       270         1
4     19427       16075       3352        17
```

memory

Displays the number and percentage of memory used by all processes on the router. The output can be tailored to only display memory usage for a particular process or a particular slot by using the options described below.

show process memory *<process>* [**sample** *<seconds> <repeat>*] [*<slot>*]

process	Specifies the process for which you want to view memory statistics. Specify “all” to display memory statistics for all processes running on the router. Specify “total” to display only memory statistic totals. For information on how to obtain a list of available processes, refer to the **show process list** command later in this section.
sample <seconds> <repeat>	Periodically samples and displays memory usage statistics. The mandatory <*seconds*> argument indicates the time interval between samples. The manadatory <*repeat*> argument indicates the number of times to sample memory usage. If you use sampling, the values displayed represent the amount of memory usage for the interval last sampled. The minimum sample interval is 5 seconds. If you specify a shorter interval, the command automatically substitutes the minimum interval of 5 seconds. If you choose not to use sampling, the values displayed represent the total memory usage since slot boot time.
slot	Limits the display statistics to the specified slot.

Sample Display – show process memory total

```
Total Memory Use Statistics
---------------------------
Slot  Max       Free      Used      %Used
----  --------  --------  --------  -----
2     2839760   2111768   727992    25
3     2839760   2111608   728152    25
4     2839760   1994088   845672    29
```

list

Displays a list of all the processes that are or may have run on the router since boot time. The **show process list** command supports only the *<slot>* option.

show process list [*<slot>*]

If you do not specify a slot, the command returns a list of processes that have run on all slots. Use the slot option to display processes only on the slot you specify.

Sample Display – show process list

```
List of Processes
-----------------
Name              Slot
----------------  ----
kernel            2
kernel            3
kernel            4
qenet             2
qenet             3
qenet             4
ilacc             2
ilacc             3
ilacc             4
```

version

Displays the current version number and modification date of the *process.bat* script.

Sample Display – show process version

```
Process.bat Version: 1.2 Date: 11/12/94
```

show protopri

The **show protopri** *<option>* commands display information about DLSw protocol prioritization queues. For detailed information on the Bay Networks implementation of protocol prioritization for DLSw traffic, refer to *Configuring Traffic Filters and Protocol Prioritization*.

The **show protopri** command supports the following subcommand options:

cc_stats	qstats
filters	version

cc_stats

Displays current congestion control statistics for DLSw priority queues. Generally, it is a good idea to increase bandwidth to a queue with consistently high congestion statistics. The table includes the following information:

Peer IP Address	IP address of configured DLSw peers.
Queue Number	Associated DLSw priority queue number.
Bytes	Number of bytes backed up and held in a congestion control queue before transmission.
Packets	Number of packets backed up and held in a congestion control queue before transmission.

Sample Display – show protopri cc_stats

```
Protocol Priority Congestion Control Statistics
 ------------------------------------------------

 Peer IP            Queue
 Address            Number   Bytes    Packets
 -------            ------   -----    -------
 5.5.5.2            0        0        0
 5.5.5.2            1        4972     2

2 Entries found.
```

filters

Displays current information on filters that implement DLSw priority queueing. The table includes the following information:

Filter Name	Filter name assigned using Site Manager.
Rule Number	Rule number assigned when creating filters (determines precedence).
Fragment Number	Number of octet fragments required to store the filter rule. (Used by Site Manager; you cannot modify this number.)
Rx Matches	Number of packets that meet the filter criteria.
Mode	Current state of Protocol Prioritization (Enabled or Disabled).
Status	Current state of configured priority queues (Active or Inactive).

Sample Display – show protopri filters

```
Protocol Priority Traffic Filters
 --------------------------------

                    Rule     Fragment Rx
 Filter Name        Number   Number   Matches  Mode     Status
 -----------        ------   -------- -------  ----     ------
 SNA_High           1        1        225228   Enabled  Active
 NetBIOS_Low        2        1        2183     Enabled  Active

2 Entries found.
```

qstats

Displays current queue statistics for DLSw priority queues. The table includes the following information:

Peer IP Address	IP address of configured DLSw peers.
Queue Number	Associated DLSw priority queue number.
Bandwidth Percent	Percent of bandwidth assigned to this queue.
Bytes Xmitted	Number of bytes transmitted for this queue.
Packets Xmitted	Number of packets transmitted for this queue.

Sample Display – show protopri q_stats

```
Protocol Priority Queue Statistics
 ---------------------------------

 Peer IP            Queue    Bandwidth  Bytes    Packets
 Address            Number   Percent    Xmitted  Xmitted
 -------            ------   ---------  -------  -------
 5.5.5.2            0        90         137055412 225245
 5.5.5.2            1        10         546115    2156

2 Entries found.
```

version

Displays the current version number and modification date of the *protopri.bat* script.

Sample Display – show protopri version

```
protopri.bat Version: 1.00 Date: 6/19/95.
```

show rarp

The **show rarp** *<option>* commands display information about Reverse Address Resolution Protocol (RARP) services. For detailed information on the Bay Networks implementation of RARP, refer to *Configuring SNMP, BOOTP, DHCP, and RARP Services*.

The **show rarp** command supports the following subcommand options:

base	enabled
circuits [<circuit name>]	version
disabled	

base

Displays the base record for RARP services. The base record controls RARP for the entire system. The table includes the name of the protocol, its state: Enabled or Disabled, and the number of failed requests. These requests were dropped because the router could not locate the IP address in the MAC address-to-IP address mapping table.

Sample Display – show rarp base

```
RARP Base Information
---------------------

                        Failed RARP
Protocol   State          Request
--------   -----        -----------
RARP       Enabled                6
```

circuits [*<circuit name>*]

Displays information about all RARP circuits or for a specific circuit. The table includes the circuit name, the RARP server's IP address on this circuit, and the circuit's state: Enabled or Disabled.

Sample Display – show rarp circuits

```
RARP Circuits
-------------

Circuit     IP Address      State
------- ---------------- ----------
E21      192.32.28.65     Enabled
E22      192.32.36.1      Disabled

2 entries
```

disabled

Displays all RARP circuits that a user has manually disabled. In this case, State is Disabled. The table also includes the name of the circuit and the RARP server's IP address.

Sample Display – show rarp disabled

```
Disabled RARP Circuits
----------------------

Circuit     IP Address      State
------- ---------------- ----------
E22      192.32.36.1      Disabled

1 entries
```

enabled

Displays all enabled RARP circuits. In this case, State is Enabled. The table also includes the name of the circuit and the RARP server's IP address.

Sample Display – show rarp enabled

```
Enabled RARP Circuits
---------------------

Circuit     IP Address      State
-------- ---------------- ----------
E21      192.32.28.65      Enabled

1 entries
```

version

Displays the current version number and modification date of the *rarp.bat* script.

Sample Display – show rarp version

```
RARP.bat Version: 1.8 Date: 10/31/94
```

show rptr

The **show rptr** *<option>* commands display configuration, status, and statistical information about Bay Networks Access Node products. For detailed information on ANs, refer to *Connecting BayStack AN and ANH Systems to a Network* and *Connecting ASN Routers and BNX Platforms to a Network.*

The **show rptr** command supports the following subcommand options:

info [last_addr]	status [ports]
sample [<period in seconds>] [port [<port number>]]	version
stats [all] | [totals] | [port [<port number>]] | [errors]	

info [last_addr]

Displays general information about the repeater or about the last source MAC address of the packets entering the ports of the repeater.

Sample Display – show rptr info

```
802.3 Repeater (HUB) Information:
---------------------------------

      Repeater Group Capacity: 1
          Group Port Capacity: 13
    Group Wellfleet Object ID: 1.3.6.1.4.1.18
            Group Description: "Wellfleet Comm. ANmpr 12 Port 10BASE-T
                                Router/Repeater - Rev 2"
```

Sample Display – show rptr info last_addr

```
802.3 Repeater(HUB) Port Last Source Address Information:
-------------------------------------------------------

          Port        Last Source       Total
         Number         Address        Changes
       ----------  -----------------  ----------
            1      01-02-04-08-10-20           9
            2      01-02-04-08-10-20           0
            3      00-00-A2-06-B9-85           4
            4      01-02-04-08-10-20   624029193
            5      01-02-04-08-10-20           0
            6      00-00-A2-06-B9-85           3
            7      00-00-A2-06-B9-85           3
            8      00-00-A2-06-B9-85   545299270
            9      01-02-04-08-10-20  4294967295
           10      01-02-04-08-10-20  4294967295
           11      01-02-04-08-10-20  4294967295
           12      00-80-2D-00-98-01   130506617
           13      00-00-A2-03-C1-C0    17870737
```

sample [*<period in seconds>*] [**port** [*<port number>*]]

Displays the repeater statistics generated during a prescribed period (default 10 seconds). This command can be used for all ports (default) or for selected ports.

Sample Display – show rptr sample

```
ALL Repeater Ports Statistics Sampled Data over  10 seconds
-----------------------------------------------------------

Port  Readable  Readable    Total       Auto
 #    Frames     Octets     Errors   Partitions   Runts    Collisions
--- ---------- ---------- ---------- ---------- ---------- ----------
1            0          0          0          0          0          0
2            0          0          0          0          0          0
3            3        192          0          0          0          0
4            0          0          0          0          0          0
5            0          0          0          0          0          0
6            0          0          0          0          0          0
7            0          0          0          0          0          0
8            0          0          0          0          0          0
9            0          0          0          0          0          0
10           0          0          0          0          0          0
11           0          0          0          0          0          0
12         700      97973          0          0          0          0
13           3        192          0          0          0          0

Port   FCS     Alignment     Long      Short       Late    Very Long  Data Rate
 #    Errors     Errors     Frames     Events     Events     Events    Mismatch
--- ---------- ---------- ---------- ---------- ---------- ---------- ---------
-
1            0          0          0          0          0          0          0
2            0          0          0          0          0          0          0
3            0          0          0          0          0          0          0
4            0          0          0          0          0          0          0
5            0          0          0          0          0          0          0
6            0          0          0          0          0          0          0
7            0          0          0          0          0          0          0
8            0          0          0          0          0          0          0
9            0          0          0          0          0          0          0
10           0          0          0          0          0          0          0
11           0          0          0          0          0          0          0
12           0          0          0          0          0          0          0
13           0          0          0          0          0          0          0
```

Sample Display – show rptr sample 3 port 12

```
Repeater Port Statistics Sampled Data over   3 seconds
-----------------------------------------------------

Port  Readable  Readable    Total       Auto
 #    Frames     Octets     Errors   Partitions   Runts    Collisions
--- ---------- ---------- ---------- ---------- ---------- ----------
12          41       8053          0          0          0          0

Port   FCS     Alignment     Long      Short       Late    Very Long  Data Rate
 #    Errors     Errors     Frames     Events     Events     Events    Mismatch
--- ---------- ---------- ---------- ---------- ---------- ---------- ---------
-
12           0          0          0          0          0          0          0
```

stats [**all**] | [**totals**] | [**port** [*<port number>*]] | [**errors**]

Displays statistical information for all ports or a specified port. This command displays either a total list of statistics or error statistics only.

This command displays the actual values of the SNMP counters maintained within the repeater MIB. These counters are not initialized to 0 at system startup; therefore, only time-relative deltas of these counters are meaningful. These counter cannot be reset to 0.

Sample Display – show rptr stats

```
802.3 Repeater (HUB) Statistics:
--------------------------------

Port  Readable  Readable    Total       Auto
 #    Frames     Octets     Errors   Partitions   Runts    Collisions
--- ---------- ---------- ---------- ---------- ---------- ----------
1          104       6719         24         14         43        456
2            0         63 4294967289          6 4294967295        150
3       931675  296890590         22          6 4294967295       5862
4   1354357247 1629798783 4294967289          4 4294967295 1620234528
5           10       4271 4294967289          9 4294967295        195
6          348     111353 4294967289        177 4294967295        951
7          297      95157 4294967289  522055204 4294967295  962400002
8    317023833 1077284480 4294967289         87         36       7187
9   4294967295 4294967295 4160749557          4 4294967295         35
10  4294967295 4294967295 4294967285 1096835530 4294967295        570
11  4294967295 4294967295 4294967289          4 4294967295          4
12   576590566 2908601712 2324114227  201334951 2569404471  101226678
13  2157788935 1628793423 1100513600         14        194 2832631700
```

Sample Display – show rptr stats all

```
802.3 Repeater (HUB) Statistics:
--------------------------------

        Repeater Total Frames:  111726086
        Repeater Total Octets: 3246687465
        Repeater Total Errors: 3290410074
 Repeater Transmit Collisions:  805377464


Port  Readable  Readable    Total       Auto
 #    Frames     Octets     Errors   Partitions   Runts    Collisions
--- ---------- ---------- ---------- ---------- ---------- ----------
1          104       6719         24         14         43        456
2            0         63 4294967289          6 4294967295        150
3       931688  296895150         22          6 4294967295       5862
4   1354357247 1629798783 4294967289          4 4294967295 1620234528
5           10       4271 4294967289          9 4294967295        195
6          348     111353 4294967289        177 4294967295        951
7          297      95157 4294967289  522055204 4294967295  962400002
8    317023833 1077284480 4294967289         87         36       7187
9   4294967295 4294967295 4160749557          4 4294967295         35
10  4294967295 4294967295 4294967285 1096835530 4294967295        570
11  4294967295 4294967295 4294967289          4 4294967295          4
12   576591092 2908688941 2324114227  201334951 2569404472  101226678
13  2157788948 1628797983 1100513600         14        194 2832631700

Port   FCS     Alignment     Long      Short       Late    Very Long  Data Rate
 #    Errors     Errors     Frames     Events     Events     Events    Mismatch
--- ---------- ---------- ---------- ---------- ---------- ---------- ---------
-
1          62 4294967295 4294967295 4294967263 4294967295 4294967295 4294967295
2   4294967295 4294967295 4294967295 4294967295 4294967295 4294967295 4294967295
3   4294967295 4294967295 4294967295 4294967295          0         27 4294967295
4   4294967295 4294967295 4294967295 4294967295 4294967295 4294967295 4294967295
5   4294967295 4294967295 4294967295 4294967295 4294967295 4294967295 4294967295
6   4294967295 4294967295 4294967295 4294967295 4294967295 4294967295 4294967295
7   4294967295 4294967295 4294967295 4294967295 4294967295 4294967295 4294967295
8   4294967295 4294967295 4294967295 4294967295 4294967295 4294967295 4294967295
9   4294967295 4294967295 4294967295 4294967295 4294967295 4294967295 4160749563
10  4294967295 4294967295 4294967295 4294967295 4294967295 4294967295 4294967291
11  4294967295 4294967295 4294967295 4294967295 4294967295 4294967295 4294967295
12           2    4464905         39 4294967295 2182103142  137546127         13
13  4294967295 4294967295 4294967295 4294967295          2 1100513603 4294967295
```

Sample Display – show rptr stats totals

```
802.3 Repeater (HUB) Statistics Totals:
---------------------------------------

        Repeater Total Frames:  111728214
        Repeater Total Octets: 3247091908
        Repeater Total Errors: 3290410074
 Repeater Transmit Collisions:  805377464
```

Sample Display – show rptr stats port 1

```
802.3 Repeater (HUB) Port Statistics:
-------------------------------------


Port  Readable  Readable    Total       Auto
 #    Frames     Octets     Errors   Partitions   Runts    Collisions
--- ---------- ---------- ---------- ---------- ---------- ----------
1          104       6719         24         14         43        456

Port   FCS     Alignment     Long      Short       Late    Very Long  Data Rate
 #    Errors     Errors     Frames     Events     Events     Events    Mismatch
--- ---------- ---------- ---------- ---------- ---------- ---------- ---------
-
1          62 4294967295 4294967295 4294967263 4294967295 4294967295 4294967295
```

Sample Display – show rptr stats errors

```
802.3 Repeater (HUB) Error Statistics:
--------------------------------------

Port   FCS     Alignment     Long      Short       Late    Very Long  Data Rate
 #    Errors     Errors     Frames     Events     Events     Events    Mismatch
--- ---------- ---------- ---------- ---------- ---------- ---------- ---------
-
1          62 4294967295 4294967295 4294967263 4294967295 4294967295 4294967295
2   4294967295 4294967295 4294967295 4294967295 4294967295 4294967295 4294967295
3   4294967295 4294967295 4294967295 4294967295          0         27 4294967295
4   4294967295 4294967295 4294967295 4294967295 4294967295 4294967295 4294967295
5   4294967295 4294967295 4294967295 4294967295 4294967295 4294967295 4294967295
6   4294967295 4294967295 4294967295 4294967295 4294967295 4294967295 4294967295
7   4294967295 4294967295 4294967295 4294967295 4294967295 4294967295 4294967295
8   4294967295 4294967295 4294967295 4294967295 4294967295 4294967295 4294967295
9   4294967295 4294967295 4294967295 4294967295 4294967295 4294967295 4160749563
10  4294967295 4294967295 4294967295 4294967295 4294967295 4294967295 4294967291
11  4294967295 4294967295 4294967295 4294967295 4294967295 4294967295 4294967295
12           2    4464905         39 4294967295 2182103142  137546127         13
13  4294967295 4294967295 4294967295 4294967295          2 1100513603 4294967295
```

status [**ports**]

Displays the operational status of the repeater or of the individual ports that comprise the repeater.

Sample Display – show rptr status

```
802.3 Repeater (HUB) Status:
----------------------------

    Repeater Operating Status: OK
         Repeater Health Text: "Repeater Health: Operational "
      Total Partitioned Ports: 2
       Group Operating Status: Operational
     Last Group Status Change: 0 (SNMP SysUpTime of Change)
```

Sample Display – show repeater status ports

```
802.3 Repeater (HUB) Ports Status:
---------------------------------

     Port       Admin         Autopart        Link
    Number      Status         State          Test
    ------     --------     ------------     ------
      1        Enabled      Reconnected      Passed
      2        Enabled      Reconnected      Failed
      3        Enabled      Reconnected      Passed
      4        Disabled     Reconnected      Failed
      5        Enabled      Reconnected      Failed
      6        Enabled      Partitioned      Passed
      7        Enabled      Reconnected      Failed
      8        Enabled      Reconnected      Failed
      9        Disabled     Reconnected      Failed
      10       Enabled      Partitioned      Passed
      11       Enabled      Reconnected      Failed
      12       Enabled      Reconnected      Passed
      13       Enabled      Reconnected      Passed
```

version

Displays the current version number and date of the *rptr.bat* script.

Sample Display – show rptr version

```
RPTR.bat Version: 1.5 Date: 12/28/94.
```

show rredund

The **show rredund** *<option>* commands display information about router redundancy. For detailed information on the Bay Networks implementation of router redundancy, refer to *Configuring Interface and Router Redundancy.*

The **show rredund** command supports the following subcommand options:

base	resources
circuits [<circuit name>]	role
disabled	sonmp
enabled	version
remote	

base

Displays the base record information for router redundancy. The base record controls router redundancy for the entire system. The table includes the following information:

State	State of the protocol. States include the following: Up Down Init (initializing) and bidding Not Pres (enabled but not yet started) Wait SOS Reply (waiting for a reply to an SOS PDU) Wait Pri Gdby (waiting for a Primary Good-bye PDU Rcvd Pri Gdby (received a Primary Good-bye PDU) Wait New Pri (Waiting for a New Primary PDU) Delay Bidding
Role	Role of the router: Primary or Secondary.
Group ID	Identification number of this router redundancy group.
Member ID	Identification number of this member of the group.
Priority	This router's priority to become the primary router if the current primary router fails. A high value indicates higher priority.
Hello Timer	The configured time interval, in seconds, between sending Hello protocol data units (PDUs).
Bid Duration	The amount of time, in seconds, for the bidding period that determines which router in the group becomes the primary router.
Timeout Counter	The number of Hello timer periods when the secondary routers do not receive a Hello PDU from the primary router before they begin to choose a new primary router.
Primary cfg file	The name of the primary configuration file the router uses when it boots or reboots as the primary router.
Role Switch Delay	This parameter is not currently used.

Sample Display – show rredund base

```
Router Redundancy Base Record Information
 ----------------------------------------

  Attribute                   Value
  ---------                   -----
  State                          Up
  Role                    Secondary
  Group-ID                        1
  Member-ID                       1
  Priority                        1
  Hello Timer                     2
  Bid Duration                   45
  Timeout Counter                 5
  Primary cfg file      4:mpass.pri
  Role Switch Delay               5
```

circuits [*<circuit name>*]

Displays circuit and state information for all router redundancy ports or for a specific port. The table includes the following information:

Circuit	Name of the circuit the port is on.
Port	The port number.
State	Indicates whether router redundancy is Enabled or Disabled for this circuit.
Send PDU	Sending of PDUs enabled or disabled.
Primary Mac Addr	The MAC address to be used for this circuit when this router is the primary router.

Sample Display – $show rredund circuits

```
Router Redundancy Circuit Table
 -------------------------------

 Circuit    Port      State      Send PDU    Primary MAC Addr
 -------- -------- ------------ ------------ -----------------
 E41      1        Enabled      Enabled      00-00-A2-03-42-96
 E42      2        Enabled      Enabled      00-00-A2-03-42-97

2 Entries found.
```

disabled

Displays all interface circuits that have backup router redundancy and are disabled currently. A circuit is disabled if the disable/enable parameter is set to disable and the state is down. For definitions of the columns in the table, see the **circuits** command.

Sample Display – $show rredund disable

```
Router Redundancy Circuit Table
 -------------------------------

 Circuit    Port      State      Send PDU    Primary MAC Addr
 -------- -------- ------------ ------------ -----------------

0 Entries found.
```

enabled

Displays all interface circuits that have backup router redundancy and are enabled currently. A circuit is enabled if the disable/enable parameter is set to enable and the state is up. For definitions of the columns in the table, see the **circuits** command.

Sample Display – show rredund enable

```
Router Redundancy Circuit Table
 ------------------------------

 Circuit    Port      State      Send PDU    Primary MAC Addr
 -------- -------- ------------ ------------ -----------------
 E41      1        Enabled      Enabled      00-00-A2-03-42-96
 E42      2        Enabled      Enabled      00-00-A2-03-42-97

2 Entries found.
```

remote

Displays information about the other routers in the router redundancy group. The table includes the following information.

Group ID	Identification number of the router redundancy group.
Member ID	Identification number of the remote member of the group.
IP Address	The IP address of the remote member.
Role	Role of the remote member: Primary or Secondary.
State	State of the remote member: States include the following: Up Down Init (initializing and bidding) Not Pres (enabled but not yet started) Wait SOS Reply (waiting for a reply to an SOS PDU) Wait Pri Gdby (waiting for a Primary Goodbye PDU Rcvd Pri Gdby (received a Primary Goodbye PDU) Wait New Pri (Waiting for a New Primary PDU) Delay Bidding

Sample Display – $show rredund remote

```
Router Redundancy Remote Members
 -------------------------------

 Group ID  Member ID    IP Address        Role       State
 --------- ---------- --------------- ----------- -----------
 1         2          0.0.0.0         Primary     Up
```

resources

Displays resources the router can access, by the IP addresses of the resources. The table includes the following information.

Circuit Name	The name of the circuit (such as E54).
Circuit Number	The circuit number (representing the circuit name in the MIB).
IP Address	The IP address of the resource.
Update	Updates information about whether resources are reachable by this router. Configurable to Enable or Disable.
Status	Results of update: Reachable, Unreachable, Unknown

Sample Display – $show rredund resources

```
Router Redundancy Resources
 ---------------------------

 Circuit  Circuit     IP Address      Update      Status
 Name     Number
 -------- -------- --------------- ------- -----------
  E54         4       23.23.23.23    Enable      Reachable
```

role

Displays the roles of known members of this redundancy group, from the point of view of this router. The first member displayed is the local member; others are the remote members. The table includes the following information.

Member ID	Identification number of the member of the group.
Role	Role of the router: Primary or Secondary.
Good IF	Count of usable interfaces on the member.
Good RES	Count of resources the member can reach.
Priority	The member's priority to become the primary router if the current primary router fails.

Sample Display – $show rredund role

```
Router Redundancy Role Selection Information
 -----------------------------------------

   Member-ID     Role       Good IF     Good RES    Priority
  ----------- ----------- ----------- ----------- -----------
  1           Secondary   2           0           1
  2           Primary     2           0           1
```

sonmp

Displays the status of sonmp. The table includes the following information.

Circuit name	The name of the circuit.
Circuit number	The circuit number (representing the circuit name in the MIB).
Transmit count	The number of frames transmitted on the circuit.
Receive count	The number of frames received on the circuit.
Receive error count	The number of error frames received on the circuit.

Sample Display – $show rredund sonmp

```
Router Redundancy SONMP Stats
 ----------------------------

 Circuit  Circuit  Transmit     Receive     Receive Error
 Name     Number   Count        Count          Count
 -------- -------- ------------ ------------ -----------------
 E41      1        0            0            0
 E42      2        0            0            0

2 Entries found.
```

version

Displays the current version and modification date of the *rredund.bat* script.

Sample Display – show rredund version

```
rredund.bat Version: 1.18.2.1 Date: 1/17/95.
```

show rsc

The **show rsc** *<option>* commands display information about managed line resources. The Bay Networks Line Resource Manager (LRM) lets you define a certain percentage of bandwidth as *reservable* resources on lines configured with the ST2 protocol. ST2 applications that require a guaranteed quality of service can negotiate for the reservable bandwidth.

Refer to *Configuring Line Services* for detailed information about LRM.

The **show rsc** command supports the following subcommand options:

bandwidth	unreserved
reserved	

bandwidth

Displays information about an ST2 line's reserved bandwidth. The table includes the following information:

Line	Internal line number.
Circuit	Site Manager circuit name.
Reservable	The remaining reservable bandwidth available for reserved flows on this line (bits per second).
Allocated	The bandwidth currently allocated to reserved flows on this line (bits per second).
Current	Bandwidth used for reserved flows during the last measurement interval.
Average	Average bandwidth used by reserved flows during the last measurement interval.
Maximum	Maximum bandwidth used by reserved flows over one measurement interval since the line came up.

Note: *The measurement interval for the Current, Average, and Maximum statistics is, by default, 10 seconds. You can change this interval by setting the MIB object* Bandwidth Interval *at the Configuration Manager Edit Line Resources window.*

Sample Display – show rsc band

```
TX Line Resources: Reserved Bandwidth Statistics
------------------------------------------------

                          Reserved Bandwidth in bits per second
  Line     Circuit   Reservable Allocated  Current   Average   Maximum
-------- ----------  ---------- --------- --------- --------- ---------
  203102        S32     1311821     70579     21745     95426    124887
  204101        S41      460800         0         0         0         0
  204102        S42     1259428    122972    110880     95368    122530
  204103        S43     1389600         0         0         0         0
```

reserved

Displays information about reserved flows. The table includes the following information:

Line	Internal line number
Circuit	Site Manager circuit name.
Flows	Number of reserved flows being served.
Transmitted Packets	Total number of reserved flow packets transmitted since the line came up.
Transmitted Bytes	Total number of reserved flow bytes transmitted since the line came up.
Policed Packets	Total number of reserved flow packets dropped since the line came up. These packets were dropped because the data received on one or more flows exceeded their reservation.
Policed Bytes	Total number of reserved flow bytes dropped since the line came up. These packets were dropped because the data received on one or more flows exceeded their reservation.

Delay Avg	Average packet delay, in milliseconds, during the measurement interval. Measured delay includes transmission time.
Delay Max	Maximum single packet delay (ms) since the line came up.

Sample Display – show rsc res

```
TX Line Resources: Reserved Flow Statistics
-------------------------------------------

                                Transmitted          Policed        Delay (ms)
  Line     Circuit   Flows   Packets    Bytes    Packets    Bytes    Avg   Max
-------- ----------  -----  --------- --------- --------- --------- ----- -----
  203102        S32      2     22122  11943504         0         0     0 24339
  204101        S41      1         0         0         0         0     0     0
  204102        S42      2     22172  11963112         6      3360     0 15630
  204103        S43      0         0         0         0         0     0     0
```

If the display for your lines indicates unacceptable amounts of dropped traffic (Policed Packets and Policed Bytes), try inflating the reservations percentage (MIB object *Inflate Reservations*). If command output indicates large delays, try decreasing the reserved latency (MIB object *Reserved Latency*). You can edit both parameters at the Configuration Manager Edit Line Resources window.

unreserved

Displays information about the portion of bandwidth left to service best-effort traffic. The table includes the following information:

Line	Internal line number.
Circuit	Site Manager circuit name.
Policed Packets	Total number of unreserved packets dropped since the line came up.
Policed Bytes	Total number of unreserved bytes dropped since the line came up.

Sample Display – show rsc unres

```
TX Line Resources: Unreserved Traffic Statistics
------------------------------------------------

                          Policed
  Line     Circuit    Packets    Bytes
-------- ----------  --------- ---------
  203102        S32          0         0
  204101        S41          0         0
  204102        S42          0         0
  204103        S43          0         0

 5 total entries.
```

Note: *If Priority Queueing is enabled for the line,* **show rsc unreserved** *will not show the policing statistics for unreserved flows.*

show sdlc

The **show sdlc** *<option>* commands display information about the Synchronous Data Link Control (SDLC) protocol. For detailed information on the Bay Networks implementation of SDLC, refer to *Configuring SDLC Services*.

The **show sdlc** command supports the following subcommand options:

base	enabled
circuits [<circuit number>]	stats [<circuit number>]
disabled	version

base

Displays the base record for SDLC. The base record controls SDLC for the entire system. The table includes information on the protocol type, in this case SDLC, and state of the protocol. The state can be Active, Inactive, Pending Active, Not Present, Enabled, or Disabled.

Sample Display – sdlc show base

```
SDLC Base Record Information
----------------------------

     Protocol       State
 ---------------- ----------
 SDLC             Inactive
```

circuits [*<circuit number>*]

Displays SDLC configuration information for all circuits or for a specific circuit. The table contains the following information:

Circuit #	Circuit number of this interface.
State	Operational state of this interface: Active, Inactive, Pending Active, Not Present, Enabled, or Disabled.
Role	Link station role: Primary, Secondary, or Negotiable.
Link Type	Indicates whether the SDLC port is connected to a Leased or Switched line.
Duplex Primary	Indicates whether the primary SDLC station is full duplex or half duplex.
Duplex Secondary	Indicates whether the secondary SDLC station is full duplex or half duplex.
SDLC Address	Link station address of the secondary link station on this SDLC link.

Sample Display – show sdlc circuits

```
SDLC Circuits
------------

 Circuit     State          Role     Link Type  Duplex      Duplex      SDLC
    #                                           Primary     Secondary  Address
 ------- -------------- ------------ --------- ----------- ----------- -------
 1       Enabled        Negotiable   Leased    Half Duplex Half Duplex
 2       Enabled        Secondary    Leased    Half Duplex Half Duplex       4
 4       Enabled        Secondary    Leased    Half Duplex Half Duplex       6

 3 Total entries.
```

disabled

Displays all disabled SDLC interfaces. For more information on column definitions, see the **circuits** command.

Sample Display – sdlc show disabled

```
SDLC Circuits
------------

 Circuit     State          Role     Link Type  Duplex      Duplex      SDLC
    #                                           Primary     Secondary  Address
 ------- -------------- ------------ --------- ----------- ----------- -------
No Entries.
```

enabled

Displays all enabled SDLC interfaces. For more information on column definitions, see the **circuits** command.

Sample Display – sdlc show enabled

```
SDLC Circuits
------------

 Circuit     State          Role     Link Type  Duplex      Duplex      SDLC
    #                                           Primary     Secondary  Address
 ------- -------------- ------------ --------- ----------- ----------- -------
 1       Enabled        Negotiable   Leased    Half Duplex Half Duplex
 2       Enabled        Secondary    Leased    Half Duplex Half Duplex       4
 4       Enabled        Secondary    Leased    Half Duplex Half Duplex       6

3 Entries found.
```

stats [*<circuit number>*]

Displays statistical information for all circuits or for a specified circuit. The table includes the following information:

Circuit #	Circuit number of this interface.
SDLC Add.	Poll address of the secondary link station in this SDLC link. It uniquely identifies the SDLC link station within a single SDLC port.
I Frames Received	Total number of information frames received from an adjacent SDLC link station since last reset or system startup.
I Frames Sent	Total number of information frames transmitted to an adjacent SDLC link station since last reset or system startup.
Re Tx's	Total number of information frames retransmitted to an adjacent SDLC link station since last reset or system startup.
Rejects Received	Total number of reject frames received from an adjacent SDLC link station since last reset or system startup.
Rejects Sent	Total number of reject frames transmitted to an adjacent SDLC link station since last reset or system startup.

Sample Display – show sdlc stats

```
SDLC Statistics
--------------
  Circuit  SDLC  I Frames   I Frames           Rejects  Rejects
    #     Add.  Received    Sent     Re Tx's  Received   Sent
 -------- ---- ---------- ---------- -------- -------- --------
 1           1          0          0        0        0        0
 1         193          0          0        0        0        0
 2           3          0          0        0        0        0
 2           4          0          0        0        0        0
 4           5          0          0        0        0        0
 4           6         38         22        4        1        2
```

version

Displays the current version number and modification date of the *sdlc.bat* script.

Sample Display – show sdlc version

```
SDLC.bat Version: 1.1 Date: 1/23/95.
```

show smds

The **show smds** *<option>* commands display configuration, status, and statistical information about the Switched Multi-Megabit Data Service (SMDS) protocol. For detailed information on the Bay Networks implementation of SMDS, refer to *Configuring SMDS Services*.

The **show smds** command supports the following subcommand options:

addresses [<circuit name>]	enabled
alerts	stats [<circuit name>]
circuits [<circuit name>]	version
disabled	

addresses [*<circuit name>*]

Displays the individual, group, and ARP addresses of all SMDS circuits or for a specific circuit. The information displayed is useful for determining whether you have properly configured the station to receive and send data.

The table contains the following information:

Circuit	Name of the circuit this interface is on.
Individual Address	MAC-layer address, a complete SMDS E.164 address provided by the SMDS subscription agreement.
Group Address	MAC-layer multicast address, a complete SMDS E.164 address provided by the SMDS subscription agreement.
ARP Address	Address resolution multicast address, a complete SMDS E.164 address provided by the SMDS subscription agreement.

Sample Display – show smds addresses

```
SMDS Circuit Address Table
--------------------------

Circuit  Individual Address   Group Address        ARP Address
-------  ------------------   ------------------   ------------------
S21      0xC16175551212FFFF   0xE16175551313FFFF   0xE16165551313FFFF
S22      0xC15084363835FFFF   0xE15085551414FFFF   0xE15085551515FFFF
S23      0xC15086632222FFFF   0xE15085556677FFFF   0xE15085556677FFFF
```

alerts

Displays all SMDS interfaces that are enabled but not up. The table identifies the circuit, whether or not it's configured to be enabled, and its current state. State can be Down, Init (initializing), or Not Pres (enabled but not yet started). To search for possible reasons for the problem, examine the log file.

Sample Display – show smds alerts

```
SMDS Circuit ALERT Table
------------------------

Circuit  Mode     State
-------  -------- --------
S21      Enabled  Down
```

circuits [*<circuit name>*]

Displays SMDS configuration information for all interfaces or for a specific interface. Use this display to determine whether or not the interface has been properly configured for the SMDS network. The table contains the following information:

Circuit	Name of the circuit this interface is on.
State	Operational state of the interface: Down, Init (initializing), Not Present (not started), or Up.

Polling	State of heartbeat polling on the interface: Enabled or Disabled. Polling verifies the integrity of the Bay Networks router/DSU connection by regularly transmitting Keep Alive messages from the Bay Networks router to the DSU and acknowledging their receipt by DSU.
Net Mgt	State of LMI network management on the interfac: Enabled or Disabled. LMI is an SNMP-like protocol that enables the Bay Networks router and the DSU to exchange management information.
Version	Value indicating the version(s) of the SNMP Interface Protocol (SIP) that this interface supports. The value is a sum, initialized at zero. For each version, V, that this interface supports, 2 raised to (V - 1) is added to the sum. For example, a port supporting versions 1 and 2 would have a value of (2^(1-1)+2^(2-1))=3. The SipL3VersionSupport parameter is effectively a bit mask with Version 1 equal to the least significant bit (LSB).

Sample Display – show smds circuit

```
SMDS Circuit Interface Table
----------------------------

Circuit  State    Polling  Net Mgt   Version
-------  -------- -------- -------- --------  -------
S21      Init     Enabled  Disabled        1
S22      Down     Enabled  Disabled        1
S23      Up       Disabld  Disabled        1
```

disabled

Displays all SMDS interfaces that a user has manually disabled. In this case, State is always Down.

Sample Display – show smds disabled

```
SMDS Disabled Table
-----------------------

Circuit  Mode     State
-------  -------- --------
S22      Disabled  Down
```

enabled

Displays all enabled SMDS interfaces.

Sample Display – show smds enabled

```
SMDS Circuit Interface Enabled Table
 ------------------------------

Circuit  State
-------  --------
S21      Init
S23      Up
```

stats [*<circuit name>*]

Displays sent and received SIP Level 3 frames for all SMDS interfaces or for a specific interface. The totals include only PDUs without errors. The table includes statistics for both individual and group addressed PDUs. You can use this information with the synchronous and protocol statistics to determine where frames are going and at what level they may have been dropped.

Sample Display – show smds stats

```
SMDS Statistics
---------------

              L3 PDUs Sent          L3 PDUs Received
Circuit    Individual    Group      Individual    Group
--------   ---------- --------      ---------- --------
S21                 0        0               0        0
S22                 0        0               0        0
S23                 0        0               0        0
```

version

Displays the current version number and modification date of the *smds.bat* script.

Sample Display – show smds version

```
SMDS.bat Version: 1.6 Date: 11/1/94.
```

show snmp

The **show snmp** *<option>* commands display status, configuration, and performance information about the Simple Network Management Protocol (SNMP) services. For detailed information on the Bay Networks implementation of SNMP, refer to *Configuring SNMP, BOOTP, DHCP, and RARP Services*.

The **show snmp** command supports the following subcommand options:

base	exceptions [find {entity <entity number> | event <event number> | name <entity name>}]
community	version
entity traps [find entity <entity number> | name <entity name> | slot <slot number>]	

base

Displays the base record for SNMP. The base record controls SNMP for the entire system. The table includes the following information:

State	Operating state of SNMP: Enabled or Disabled.
Authentication	Type of authentication the agent uses, as follows: • *Trivial* – Standard SNMP network security. • *Party* – Reserved for future use. • *Proprietary* – Bay Networks network security; only for set requests. With this type, you can prohibit specific users from executing set requests.
Packets Received	Number of PDUs that SNMP has received from the transport system.
Packets Sent	Number of PDUs that SNMP has sent to the transport system.
# Invalid Communities	Number of PDUs containing an invalid community string.

Get Requests	Number of get request PDUs accepted and processed.
Get-Next Requests	Number of get next request PDUs accepted and processed.
Set Requests	Number of set request PDUs accepted and processed.
# noSuchName Errors	Number of PDUs that the agent has generated with an error status of noSuchName.
# Trap PDUs	Number of trap PDUs the agent has generated.

Sample Display – show snmp base

```
SNMP Base Information
---------------------


                          Packets    Packets    # Invalid
  State   Authentication  Received     Sent    Communities
--------- -------------- ---------- ---------- -----------
Enabled   Trivial                0          0           0


   Get      Get-Next     Set      # noSuchName     # Trap
 Requests   Requests   Requests      Errors         PDUs
---------- ---------- ---------- --------------- ----------
          0          0          0               0          0
```

community

Displays information about communities. An SNMP community is a logical relationship between an SNMP agent and one or more SNMP managers. The table includes the following information:

Community Index	Unique number that corresponds to the community name.
Community Name	Name of the community.

Community Access	Access privileges the router grants to all members of this community, as follows: • *Read* – All members of this community can only view configuration and performance information about this router. • *Read/Write* – All members of this community can both view configuration and performance information about this router and change the router's configuration.
Manager Community Index	Number that associates this manager with a community in the community table.
Manager Address	Internet address of this manager.
Manager Trap Port	UDP port on which this manager is listening for traps.
Manager Trap Type	Valid trap types to be sent to the manager, as follows: • *None* – Prohibits the agent software from transmitting traps to this manager. • *Generic* – Lets the agent software transmit the well-defined SNMP traps (coldStart, warmStart, egpNeighborLoss, linkUp, linkDown, authenticationFailure, and enterpriseSpecific) to the manager. • *Specific* – Lets the agent software transmit all enabled log event traps to this manager. • *All* – Transmits both generic and specific trap types to this manager.

Sample Display – show snmp community

```
SNMP Community Information
--------------------------
 Community  Community  Community
   Index       Name      Access
 ---------- ---------- ----------
          1 public     Read/Write


SNMP Community Manager Information
----------------------------------

  Manager
 Community                     Manager   Manager
   Index    Manager Address Trap Port  Trap Type
 ---------- --------------- ---------- ----------
          1 0.0.0.0                162 Generic
```

entity traps [**find entity** *<entity number>* | **name** *<entity name>* | **slot** *<slot number>*]

Displays general information about entity traps or displays information for a specific entity number, entity name or slot number.

find entity *<entity number>*	Limits the display to the entity number specified.
find name *<entity name>*	Limits the display to the entity name specified.
find slot *<slot number>*	Limits the display to the slot number specified.

The displays contain the following information:

Entity Number	Number that uniquely defines the entity.
Slot Number	Number of the slot where the entity resides.
State	Operating state of the entity's traps: Enabled or Disabled.
Name	Name of the entity.
Fault	Attribute that controls the entity's fault messages: On or Off. The router generates a trap when this attribute is on.
Warn	Attribute that controls the entity's warning messages: On or Off. The router generates a trap when this attribute is on.
Info	Attribute that controls the entity's informational messages: On or Off. The router generates a trap when this attribute is on.
Trace	Attribute that controls the entity's tracing messages: On or Off. The router generates a trap when this attribute is on.
Debug	Attribute that controls the entity's debug messages: On or Off. The router generates a trap when this attribute is on.

Sample Display – show snmp entity traps

```
SNMP Entity Trap Information
----------------------------

 Entity    Slot
 Number   Number   State   Name       Fault  Warn   Info   Trace  Debug
-------- -------- -------- ---------- ------ ------ ------ ------ ------
      11        2 Enabled  NVFS       Off    Off    On     Off    Off
      13        2 Enabled  MIB        Off    Off    On     Off    Off
```

exceptions [**find** {**entity** *<entity number>* | **event** *<event number>* | **name** *<entity name>*}]

Displays general information about exceptions or displays information for a specific entity number, event, or entity name.

find entity *<entity number>*	Limits the display to the entity number specified.
find event *<event number>*	Limits the display to the slot number specified.
find name *<entity name>*	Limits the display to the entity name specified.

The tables display the following information:

Entity Number	Number of the entity.
Event Number	Number of the event.
State	Operating state of the exception: Enabled or Disabled.
Name	Name of the entity.

Sample Display – show snmp exceptions

```
SNMP Exception Information
--------------------------

   Entity     Event
   Number     Number     State       Name
 ---------- ---------- ---------- ----------
         13         22 Disabled   MIB
         13         24 Disabled   MIB
         14         20 Disabled   TBL
```

version

Displays the current version number and modification date for the *snmp.bat* script.

Sample Display – show snmp version

```
SNMP.bat Version: 1.8 Date: 6/20/94.
```

show span

The **show span** *<option>* commands display information about Spanning Tree Bridge services. For detailed information about the Spanning Tree algorithm and parameters, refer to *Configuring Bridging Services*.

The **show span** command supports the following subcommand options:

alerts	disabled
base	enabled
circuits [<circuit name>]	stats
configuration	version
configuration circuits [<circuit name>]	

alerts

Displays all enabled circuits that are not up. Use this display to identify the ports that are not working. The table includes the following information:

Circuit	Name of the circuit this port is on.
State	Current state of the port as the Spanning Tree Protocol application defined it, which in this case is Port Disabled.
Designated Root	Unique Bridge ID recorded as the root in the Configuration BPDUs. The Designated Bridge for the segment to which this port is attached transmits this value.
Designated Port	Port Identifier on the Designated Bridge for this port’s segment.

Sample Display – show span alerts

```
Spanning Tree Circuit Alert Information
---------------------------------------

                                                        Designated
 Circuit     State          Designated Root               Port
 -------- ------------   ---------------------- --------------
 E51      Port Disabled  00:0A:00:00:00:00:00:01         32770

 S31      Port Disabled  00:0A:00:00:00:00:00:01         32771

 S41      Port Disabled  00:0A:00:00:00:00:00:01         32772


3 Entries found.
```

base

Displays Spanning Tree global parameters in the base record. The table includes the following information:

State	Current state of the Spanning Tree: Down, Init (initializing), Not Present (enabled but not yet started), or Up.
Root Bridge ID	Bridge ID of the root of the Spanning Tree. This is the lowest Bridge MAC address; or if there is no Bridge MAC address, the bridge with the lowest priority.
Time Since last top chg	Time in hundredths of a second since the bridge detected the last change in topology.
Number of Topology Changes	Total number of topology changes that this bridge has detected since it was last reset or initialized.
Bridge ID	Identifier of the bridge the script is running on. You can compare this ID to the Root Bridge ID above it.

Sample Display – show span base

```
Spanning Tree Base Record Information
-------------------------------------

                                      Time Since       Number Of
    State         Root Bridge ID     last top chg   Topology Changes
 ----------- ---------------------- ------------ --------------------
 Up          00:0A:00:00:00:00:00:01       256500                    1

                Bridge ID:
              ----------------------
              00:0A:00:00:00:00:00:01
```

circuits [*<circuit name>*]

Displays Spanning Tree circuit information for all circuits or for a specified circuit. For definitions of the columns in the table, see the **alerts** command.

Sample Display – show span circuits

```
Spanning Tree Circuit Information
---------------------------------

                                                    Designated
 Circuit     State         Designated Root           Port
 -------- ------------ ---------------------- --------------
 S21      Forwarding    00:0A:00:00:00:00:00:01         32769

 E51      Port Disabled 00:0A:00:00:00:00:00:01         32770

 S31      Port Disabled 00:0A:00:00:00:00:00:01         32771

 S41      Port Disabled 00:0A:00:00:00:00:00:01         32772

4 Total entries.
```

configuration

Displays Spanning Tree global configuration parameters. These parameters are all user configurable. The table includes the following information:

Bridge ID	Spanning Tree Bridge ID assigned to this bridge. The Bridge ID is a combination of the Bridge Priority and the Bridge MAC address.
Bridge Max Age	Maximum time in hundredths of a second that the protocol information (BPDUs) is valid. After this time, the protocol discards the information.
Bridge Hello Time	Interval in hundredths of a second between BPDUs that the bridge transmits. BPDUs are periodic transmissions exchanged between bridges in the network to convey configuration and topology change data.
Bridge Forward Delay	Value all bridges use for Forward Delay when this bridge is acting as the root; specifies the time in hundredths of a second that a circuit spends in the Listening and Learning states.

Sample Display – show span configuration

```
Spanning Tree Configuration Table
---------------------------------

                         Bridge    Bridge      Bridge
       Bridge ID        Max Age  Hello Time Forward Delay
 ---------------------- -------- ---------- -------------
 00:0A:00:00:00:00:00:01     2000        200          1500
```

configuration circuits [*<circuit name>*]

Displays configuration parameters for all Spanning Tree circuits or for a specified Spanning Tree circuit. These parameters are user configurable. The table includes the following information:

Circuit	Name of the circuit this port is on.
Mode	Mode of the port: Enabled or Disabled.

Priority	Value of the priority field contained in the first octet of the 2-octet port ID for this circuit. This value specifies the relative priority of the port. The lower the priority, the more likely this will be the root bridge.
Path Cost	Contribution of this port to the root path cost offered in all configuration BPDUs that the bridge transmits.
802.9 Translation	Status of the translation parameter: Enabled or Disabled. Enabled means that the Spanning Tree protocol is used as part of the transparent-to-source-routing, translation-bridged network for this interface.

Sample Display – show span configuration circuits

```
Spanning Tree Circuit Configuration Parameters
----------------------------------------------

 Circuit    Mode    Priority  Path Cost    802.9 Translation
 -------- --------  -------- ------------ --------------------
 S21      Enabled        128            1            Disabled
 E51      Enabled        128            1            Disabled
 S31      Enabled        128            1            Disabled
 S41      Enabled        128            1            Disabled
```

disabled

Displays Spanning Tree circuits that are disabled. For definitions of the columns in the table, see the **alerts** command.

Sample Display – show span disabled

```
Spanning Tree Disabled Circuit Information
------------------------------------------

                                                  Designated
 Circuit     State         Designated Root          Port
 -------- ------------ ---------------------- --------------

0 Entries found.
```

enabled

Displays Spanning Tree circuits that are currently enabled. For definitions of the columns in the table, see the **alerts** command.

Sample Display – show span enabled

```
Spanning Tree Enabled Circuit Information
-----------------------------------------

                                                    Designated
 Circuit     State         Designated Root           Port
 -------- ------------ ----------------------- --------------
 S21      Forwarding    00:0A:00:00:00:00:01         32769

1 Entries found.
```

stats

Displays Spanning Tree traffic statistics. The table includes the following information:

Circuit	Name of the circuit this port is on.
Rx Packets	Number of BPDU packets received on this port.
Tx Packets	Number of BPDU packets transmitted out this port.

Sample Display – show span stats

```
Spanning Tree Statistics
------------------------

 Circuit  Rx Packets Tx Packets
 -------- ---------- ----------
 S21               0       1521
 E51               0          0
 S31               0          0
 S41               0          0
```

version

Displays the current version number and date of the *span.bat* script.

Sample Display – show span version

```
SPAN.bat Version: 1.15 Date: 10/31/94.
```

show sr

The **show sr** *<option>* commands display information about Source Routing interfaces. For detailed information on Source Routing, refer to *Configuring Bridging Services*.

The **show sr** command supports the following subcommand options:

alerts	enabled
base	ip
bridges	stats
circuit [<circuit name>]	stats circuit [<circuit name>]
configuration [circuit [<circuit name>]]	version
disabled	

alerts

Displays Source Routing interfaces that have been enabled but are not currently up. In this case, Mode is always Enabled and State is always Down. The table helps determine which Source Routing interfaces are not forwarding traffic.

Sample Display – show sr alerts

```
Source Routing (SR) Interface Information
-----------------------------------------

 Circuit   Mode    State
 -------  -------  -----
 O31      Enabled  Down

1 entries found.
```

base

Displays global Source Routing information (Base Record). The base record controls Source Routing for the entire system. The table indicates whether or not Source Routing is operating and includes the following information:

Protocol	Name of the protocol, in this case Source Routing.
Mode	Mode of SR: Enabled or Disabled.
State	State of SR: Up or Down.

Sample Display – show sr base

```
Source Routing (SR) Base Record Information
-------------------------------------------

     Protocol       Mode         State
  --------------   -------       -----
  Source Routing   Enabled       Up
```

bridges

Displays all Bay Networks Source Routing Bridge IDs used in the network. A Source Routing Bridge ID ranges from 0x1 to 0xF. This display helps determine which bridges the system recognizes as Bay Networks Source Route bridges.

Sample Display – show sr bridges

```
Source Routing (SR) Bridge IDs
------------------------------
                            0xA (This Bridge)
                            0xB

 2 entries found.
```

circuit [*<circuit name>*]

Displays all Source Routing interfaces or a specific interface. Mode is Enabled or Disabled and State is Down or Up. You can use this display to identify the Source Routing interfaces in the router.

Sample Display – show sr circuit

```
Source Routing (SR) Interface Information
-----------------------------------------

Circuit   Mode    State
-------  -------  -----
O31      Disabled Down

1 entries found.
```

configuration [**circuit** [*<circuit name>*]]

Displays Source Routing global configuration. You can use this information to determine how a Bay Networks Source Route Bridge is configured. The table includes the following information:

Mode	Mode is Enabled or Disabled.
Bridge ID	SR bridge's identification number; ranges from 0x1 to 0xF.

Internal Ring ID	Unique network-wide internal or virtual LAN identification number; ranges from 0x001 to 0xFFF.
Group Lan ID	Routing identifier that serves as a Routing Information Field (RIF) place holder and Bay Networks identifier; ranges from 0x001 to 0xFFF.

Sample Display – show sr configuration

```
Source Routing (SR) Base Record Configuration
---------------------------------------------

                                Internal   Group
  Mode            Bridge ID     Ring ID    Lan ID
 -------          ---------     --------   ------
 Enabled                0xA        0x101    0xFFF
```

circuit [*<circuit name>*] Displays the circuit configuration of all Source Routing circuit interfaces or a specific circuit interface. You can use this information to determine how a Bay Networks Source Route Bridge Interface has been configured.

The table includes the following information:

Circuit	Name of the circuit the interface runs on.
Mode	Mode of the circuit: Enabled or Disabled.
Ring ID	Unique network-wide identification number that SR assigns to the segment; ranges from 0x001 to 0xFFF.
STE In	Source Routing Spanning Tree Explorer packet. STE In is either Accept or Blocked, determining whether or not Source Routing is forwarding or filtering STE packets coming in on this interface.
STE Out	STE Out is either Accept or Blocked, determining whether or not Source Routing is forwarding or filtering STE packets going out on this interface.

Sample Display – show sr configuration circuit

```
Source Routing (SR) Interface Record Configuration
-------------------------------------------------

 Circuit   Mode     Ring ID STE In   STE Out
 -------  -------   ------- ------   -------
 O31      Enabled     0x003 Accept   Accept

1 entries found.
```

disabled

Displays the Source Routing interfaces that are disabled. Mode is always Disabled and State is always Down. You can use this display to determine which Source Routing interfaces have not been enabled.

Sample Display – show sr disabled

```
Source Routing (SR) Interface Information
-----------------------------------------

 Circuit   Mode    State
 -------  -------  -----
 O31      Disabled Down

1 entries found.
```

enabled

Displays the Source Routing interfaces that are enabled. Mode is always Enabled and State will be Up or Down. You can use this display to determine which Source Routing interfaces have been enabled.

Sample Display – show sr enabled

```
Source Routing (SR) Interface Information
------------------------------------------

 Circuit   Mode    State
 -------  -------  -----
 O31      Enabled  Down

1 entries found.
```

ip

Use with the following subcommands:

- **?**
- **alerts**
- **base**
- **circuits** [*<circuit name>*]
- **configuration**
- **configuration circuit** [*<circuit name>*]
- **disabled**
- **enabled**
- **explorers**
- **routes**
- **stats**
- **stats circuit** [*<circuit name>*]

ip ? Displays a list of Source Routing IP subcommands and their syntax.

ip alerts Displays Source Routing IP interfaces that have been enabled but are not currently up. In this case, Mode is always Enabled and State is always Down. The table helps determine which Source Routing IP interfaces are not forwarding traffic.

Sample Display – show sr ip alerts

```
Sample Display:

Source Route IP Encapsulation (SR IP) Interface Information
------------------------------------------------------------

 Circuit   Mode    State
 -------  -------  -----
 O31      Enabled  Down

1 entries found.
```

ip base Displays the state of Source Route IP Encapsulation. The SR IP Mode is Enabled or Disabled and SR State is Down or Up.

Sample Display – show sr ip base

```
Source Route IP Encapsulation (SR IP) Base Record Information
-------------------------------------------------------------

 Protocol         SR IP Mode    SR State
 --------         ----------    --------
 SR IP            Enabled       Up
```

ip circuits [*<circuit name>*] Displays all Source Routing IP interfaces or a specific interface. Mode is Enabled or Disabled and State is Down or Up. You can use this display to determine the Source Route IP interfaces present.

Sample Display – show sr ip circuits

```
Source Route IP Encapsulation (SR IP) Circuit Information
---------------------------------------------------------

 Circuit  SR Mode  SR State
 -------- -------- --------
 O21      Enabled  Down
 S51      Enabled  Up
 O43      Enabled  Down

3 entries found.
```

ip configuration Displays the Source Route IP Encapsulation global configuration. SR IP Ring ID can range from 0x011 to 0xFFF. Mtu Size is any integer.

Sample Display – show sr ip configuration

```
Source Route IP Encapsulation (SR IP) Base Record Configuration
---------------------------------------------------------------

    SR IP Mode    SR IP Ring ID  MTU Size
 ---------------- ------------- ----------
 Disabled                0x000       4562
```

ip configuration circuit Displays the Source Route IP Encapsulation interface record configuration. SR Mode is Enabled or Disabled and Forwarding Explorers is Yes or No.

Sample Display – show sr ip configuration circuit

```
Source Route IP Encapsulation (SR IP) Circuit Record Configuration
------------------------------------------------------------------

                                    Fowarding
 Circuit  SR Mode     IP Address    Explorers
 -------- -------- ---------------- ---------
 O21      Enabled  0.0.0.0          No
 S51      Enabled  0.0.0.0          No
 O43      Enabled  0.0.0.0          No

3 entries found.
```

ip disabled Displays Source Route IP interfaces that are disabled. Mode is always Disabled and State is always Down. You can use this display to determine which Source Route IP interfaces have not been enabled.

Sample Display – show sr ip disabled

```
Source Route IP Encapsulation (SR IP) Circuit Information
---------------------------------------------------------

 Circuit  SR Mode  SR State
 -------- -------- --------

0 entries found.
```

ip enabled Displays Source Route IP interfaces that are enabled. Mode is always enabled and State is either Down or Up. You can use this display to determine which Source Route IP interfaces have been enabled.

Sample Display – show sr ip enabled

```
Source Route IP Encapsulation (SR IP) Circuit Information
---------------------------------------------------------

 Circuit  SR Mode  SR State
 -------- -------- --------
 O21      Enabled  Down
 S51      Enabled  Up
 O43      Enabled  Down

3 entries found.
```

ip explorers Displays the list of Source Route IP Encapsulation explorers. Source Routing sends a copy of each Source Route Broadcast packet to each IP address in the list.

Sample Display – show sr ip explorers

```
Source Route IP Encapsulation (SR IP) Explorers
-----------------------------------------------
11.0.0.5

1 entries found.
```

ip routes Displays the list of Source Route IP Encapsulation learned routes. Ring ID is the identifier that SR assigns to the network segment and can range from 0x001 to 0xFFF. Bridge ID can range from 0x1 to 0xF. You can use the display to identify the address to use for routing specific packets over an IP network.

Sample Display – show sr ip routes

```
Source Route IP Encapsulation (SR IP) Routes
--------------------------------------------

  IP Address     Ring ID  Bridge ID
---------------  -------  ---------
11.0.0.5           0x024        0xA

1 entries found.
```

ip stats circuit [*<circuit name>*] Displays the packets (Packets Rx) that SR received from the IP network and the number of out-of-sequence packets (Sequence Errors).

Sample Display – show sr ip stats circuit

```
Source Route IP Encapsulation (SR IP) Circuit Statistics
--------------------------------------------------------

            Out
 Circuit   Frames
 -------- --------
 O21           0
 S51           0
 O43           0

3 entries found.
```

stats

Displays all Source Routing interface statistics or statistics for a specific circuit. The table includes the following information:

In Frames	Number of Source Routing packets that the interface received.
Out Frames	Number of Source Routing packets that the interface sent out.
Dropped Frames	Sum of packets dropped because of an invalid routing control field, invalid ring, or filtering.

Sample Display – show sr stats

```
Source Routing (SR) Circuit Statistics
--------------------------------------

             In       Out   Dropped
 Circuit   Frames   Frames   Frames
 -------- -------- -------- --------
 O21             0        0        0
 S51             0        0        0
 O43             0        0        0

3 entries found.
```

stats circuit [*<circuit name>*]

Displays the same information as the **show sr stats** command displays. However, this command enables you to specify a specific circuit.

version

Displays the current version and modification date of the *sr.bat* script.

Sample Display – show sr version

```
SR.bat Version: 1.7 Date: 10/31/94.
```

show srspan

The **show srspan** *<option>* commands display information about Source Route Spanning Tree Bridge services. For detailed information about the Spanning Tree algorithm and parameters, refer to *Configuring Bridging Services*.

The **show srspan** command supports the following subcommand options:

alerts	disabled
base	enabled
circuits [<circuit name>]	stats
configuration	version
configuration circuits [<circuit name>]	

alerts

Displays all enabled circuits that are not up. Use this display to identify the ports that are not working. The table includes the following information:

Circuit	Name of the circuit this port is on.
State	Current state of the port as the Source Route Spanning Tree Protocol application defined it, which in this case is Port Disabled.
Designated Root	Unique Bridge ID recorded as the root in the Configuration BPDUs. The Designated Bridge for the segment to which this port is attached transmits this value.
Designated Port	Port Identifier on the Designated Bridge for this port's segment.

Sample Display – show srspan alerts

```
Source Route Spanning Tree Circuit Alert Information
----------------------------------------------------

                                                    Designated
 Circuit     State          Designated Root           Port
 -------- ------------   ---------------------- --------------
 E51      Port Disabled  00:0A:00:00:00:00:00:01         32770

 S31      Port Disabled  00:0A:00:00:00:00:00:01         32771

 S41      Port Disabled  00:0A:00:00:00:00:00:01         32772


3 Entries found.
```

base

Displays source route Spanning Tree global parameters in the base record. The table includes the following information:

State	Current state of the source route Spanning Tree: Down, Init (initializing), Not Present (enabled but not yet started), or Up.
Root Bridge ID	Bridge ID of the root of the source route Spanning Tree. This is the lowest Bridge MAC address; or if there is no Bridge MAC address, the bridge with the lowest priority.
Time Since last top chg	Time in hundredths of a second since the bridge detected the last change in topology.
Number of Topology Changes	Number of topology changes that this bridge has detected since it was last reset or initialized.
Bridge ID	Identifier of the bridge the script is running on. You can compare this ID to the Root Bridge ID above it.

Sample Display – show srspan base

```
Source Route Spanning Tree Base Record Information
--------------------------------------------------

                                      Time Since       Number Of
    State         Root Bridge ID      last top chg   Topology Changes
 ------------ ---------------------- ------------ --------------------
 Up           00:0A:00:00:00:00:01       256500                     1

                Bridge ID:
               ----------------------
               00:0A:00:00:00:00:01
```

configuration

Displays source route Spanning Tree global configuration parameters. These parameters are all user configurable. The table includes the following information:

Bridge ID	Source Route Spanning Tree Bridge ID assigned to this bridge. The Bridge ID is a combination of the Bridge Priority and the Bridge MAC address.
Bridge Max Age	Maximum time in hundredths of a second that the protocol information (BPDUs) is valid. After this time, the protocol discards the information.
Bridge Hello Time	Interval in hundredths of a second between BPDUs that the bridge transmits. BPDUs are periodic transmissions exchanged between bridges in the network to convey configuration and topology change data.
Bridge Forward Delay	Value all bridges use for Forward Delay when this bridge is acting as the root; specifies the time in hundredths of a second that a circuit spends in the Listening and Learning states.

Sample Display – show srspan configuration

```
Source Route Spanning Tree Configuration Table
----------------------------------------------

                          Bridge    Bridge      Bridge
        Bridge ID        Max Age  Hello Time Forward Delay
 ---------------------- -------- ---------- -------------
 00:0A:00:00:00:00:00:01     2000        200          1500
```

configuration circuits [*<circuit name>*]

Displays configuration parameters for all source route Spanning Tree circuits or for a specified circuit. These parameters are user configurable. The table includes the following information:

Circuit	Name of the circuit this port is on.
Mode	Mode of the port: Enabled or Disabled.
Path Cost	Contribution of this port to the root path cost offered in all configuration BPDUs that the bridge transmits.
802.9 Translation	Status of the translation parameter: Enabled or Disabled. This field is not currently used.

Sample Display – show srspan configuration circuits

```
Source Route Spanning Tree Circuit Configuration Parameters
-----------------------------------------------------------

 Circuit    Mode     Path Cost    802.9 Translation
 -------- --------  ------------ --------------------
 5        Disabled             1            Disabled
```

circuits [*<circuit name>*]

Displays source route Spanning Tree circuit information. For definitions of the columns in the table, see the **alerts** command.

Sample Display – show srspan circuit

```
Source Route Spanning Tree Circuit Information
----------------------------------------------

                                                  Designated
 Circuit     State         Designated Root          Port
 -------- ------------ ---------------------- --------------
 S21      Forwarding    00:0A:00:00:00:00:00:01         32769

 E51      Port Disabled 00:0A:00:00:00:00:00:01         32770

 S31      Port Disabled 00:0A:00:00:00:00:00:01         32771

 S41      Port Disabled 00:0A:00:00:00:00:00:01         32772

4 Total entries.
```

disabled

Displays source route Spanning Tree circuits that are disabled. For definitions of the columns in the table, see the **alerts** command.

Sample Display – show srspan disabled

```
Source Route Spanning Tree Disabled Circuit Information
-------------------------------------------------------

                                                  Designated
 Circuit      State         Designated Root          Port
 -------- ------------ ---------------------- --------------
 5        Port Disabled                                   0

1 Entries found.
```

enabled

Displays source route Spanning Tree circuits that are currently enabled. For definitions of the columns in the table, see the **alerts** command.

Sample Display – show srspan enabled

```
Source Route Spanning Tree Enabled Circuit Information
------------------------------------------------------

                                                  Designated
 Circuit     State         Designated Root          Port
 -------- ------------ ---------------------- --------------
 S21      Forwarding    00:0A:00:00:00:00:00:01         32769

1 Entries found.
```

stats

Displays source route Spanning Tree traffic statistics. The table includes the following information:

Circuit	Name of the circuit this port is on.
Rx Packets	Number of BPDU packets received on this port.
Tx Packets	Number of BPDU packets transmitted out this port.

Sample Display – show srspan stats

```
Source Route Spanning Tree Statistics
-------------------------------------

 Circuit  Rx Packets Tx Packets
 -------- ---------- ----------
 S21               0       1521
 E51               0          0
 S31               0          0
 S41               0          0
```

version

Displays the current version number and date of the *srspan.bat* script.

Sample Display – show srspan version

```
SRSPAN.bat Version: 1.5 Date: 12/8/94.
```

show st2

The **show st2** *<option>* commands display information about the ST2 protocol and services. For detailed information on the Bay Networks implementation of ST2 services, refer to *Configuring ST2 Services*.

The **show st2** command supports the following subcommand options:

base	streams
circuits [<circuit name>]	version
stats [<circuit name>]	

base

Displays the base record information for ST2. The base record controls ST2 for the entire system. The table includes the following information:

Protocol	Name of the protocol, which is ST2.
State	State of the protocol: Disabled, Down, Init (initializing), Not Pres (enabled but not yet started), or Up.
Tunneling	Tunneling capability: Not Capable or Capable

Sample Display – show ST2 base

```
ST2 Base Information
--------------------

 ST2      Up            Not Tunneling Capable
```

circuits [*<circuit name>*]

Displays information for all ST2 circuits or for a specific circuit. The table includes the following information:

Circuit	Name of a circuit configured for IP and ST2.
State	State of the circuit : Disabled, Down, Init (initializing), Not Pres (enabled but not yet started), or Up.
IP Address	IP address assigned to the circuit.

Note: *If a circuit is down, the rest of the table is blank.*

Sample Display – show ST2 circuit

```
 Circuit   State      IP Address
 -------- -------- ----------------
 S32      Up       192.253.143.2
 S42      Up       192.253.93.2
 S41      Up       192.168.101.14
 S43      Down     192.168.101.10

4 Total entries.
```

stats [*<circuit name>*]

Displays statistics for ST2 circuits. You can limit the display to a specific circuit. The table includes the following information:

Circuit	Name of circuit on which IP and ST2 are configured.
IP Address	IP address assigned to the circuit.
Packets Recd	Number of packets received on the circuit.
Packets Sent	Number of packets sent on the circuit.
Octets Received	Number of octets received on the circuit.
Octets Sent	Number of octets sent on the circuit.

Sample Display – stats

```
ST2 Statistics
-------------

                              Packets    Packets    Octets     Octets
 Circuit  IP Address           Recd       Sent       Recd       Sent
 -------- ---------------- ---------- ---------- ---------- ----------
 S32      192.253.143.2         20575      20508   10951556   10939176
 S42      192.253.93.2          20546      20549   10944412   10954768
 S41      192.168.101.14            0         82          0       2624
 S43      192.168.101.10            0          0          0          0

4 Entries
```

streams

Name	Identifier for tan ST2 stream supported by the router.
Prev Hop	Address of the next hop upstream.
Next Hop	Address of the next hop downstream.
Desired Packet Size	Packet size specified in the flowspec for the stream.
Desired Packet Rate	Packet rate specified in the flowspec for the stream.
Sent Packets	Number of packets forwarded on the specified stream.
Sent Octets	Number of octets forwarded on the specified stream.

Sample Display – streams

```
T2 Streams
-------------

                                  Desired Packet       Sent       Sent
              Name                Size       Rate      Packets    Octets
 ------------------------------ ---------- ---------- ---------- ----------
 x0027:192.253.93.3:x33013494          528        163      20915   11209136
                  Prev Hop   : 192.253.93.3
                  Next Hop(s): 192.253.143.3
 x0066:192.253.143.3:x32CA1592         528        284      20985   11239264
                  Prev Hop   : 192.253.143.3
                  Next Hop(s): 192.253.93.3

2 Entries
```

version

Displays the version number and date for the *st2.bat* script.

Sample Display – show st2 version

```
st2.bat Version: 1.35 Date: 10/31/94.
```

show sta

The **show sta** *<option>* commands display configuration, statistical, and status information about statistical thresholds and alarms. For detailed information on the Bay Networks implementation of thresholds, refer to *Configuring SNMP, BOOTP, DHCP, and RARP Services*.

The **show sta** command supports the following subcommand options:

base	stats [<object ID>]
configuration [<object ID>]	version

base

Displays the base record for statistical thresholds and alarms. The table includes information about the state of thresholds and alarms — Enabled or Disabled, and the polling interval in seconds for examining objects in the threshold table for threshold exceptions.

Sample Display – show sta base

```
Statistical Thresholds and Alarm Information
--------------------------------------------


State        Poll Interval
------------ -------------
Enabled                 5
```

configuration [*<object ID>*]

Displays configuration information for all objects or for a specific object. The table includes the following information:

Object	Identifier of the MIB object to examine for threshold exceptions.
State	Operating state of the threshold: Enabled or Disabled. When State is Disabled, the router ignores the threshold during its polling.
Threshold State	Threshold state: Valid, Ignored, Held, Suspended, or Invalid.
Low	Level of low threshold for this statistic. This is the level at which the system generates a low-threshold exception event.
Medium	Level of medium threshold for this statistic. This is the level at which the system generates a medium-threshold exception event.
High	Level of high threshold for this statistic. This is the level at which the system generates a high-threshold exception event.
Current	Most recently computed threshold value for the polled object.
Action	How to evaluate the threshold with respect to the threshold values: • *Greater than* – Generates threshold events when the value of the statistic is greater than the thresholds specified. • *Less than* – Generates threshold events when the value of the statistic is less than the thresholds specified.

Sample Display – show sta configuration

```
Statistical Thresholds and Alarm Configuration
----------------------------------------------

Object = 1.3.6.1.4.1.18.3.4.1.1.24.2.1

          Threshold
  State     State       Low       Medium     High      Current      Action
--------- ---------- ---------- ---------- ---------- ---------- ------------
Enabled   Valid              12         20         60          0 Greater than
```

stats [*<object ID>*]

Displays statistical information for all objects that are keeping statistics or for a specific object. The table includes the following information:

Object	Identifier of the MIB object to examine for threshold alarms.
Number of Low Alarms	Number of low threshold alarms generated.
Number of Medium Alarms	Number of medium threshold alarms generated.
Number of High Alarms	Number of high threshold alarms generated.

Sample Display – show sta stats

```
Statistical Thresholds and Alarm Statistics
-------------------------------------------

Object = 1.3.6.1.4.1.18.3.4.1.1.24.2.1

  Number of       Number of       Number of
  Low Alarms     Medium Alarms    High Alarms
--------------- --------------- ---------------
              3               5               0
```

version

Displays the current version number and modification date of the *sta.bat* script.

Sample Display – show sta version

```
STA.bat Version: 1.8 Date: 5/18/94.
```

show state

The **show state** command provides an overview of the router. The information displayed depends on your specific configuration. This script executes the lower-level scripts for the protocols and circuits to gather the information for its report. This script provides a good way to find out what is running on your router — what is configured and what is not.

The **show state** command supports the following subcommand options:

show state {all | circuit <circuit name>}	version

show state {all | circuit *<circuit name>*}

all	Displays information on all protocols on all circuits.
circuit *<circuit name>*	Limits the information to a specified circuit.

This sample shows part of the output that the **show state all** command can generate.

Sample Display – show state all

```
More Mode: OFF
  Lines per screen: 24
------------------------------------------------------------------

CSMACD Modules:
---------------
                                                BOFL        HW
Slot Conn Circuit State       MAC Address       TMO  MTU  Filter
---- ---- ------- -------- ----------------- ---- ---- ------
   2    1 E21     Up       00-00-A2-00-94-C5    5 1518 Off

CSMACD Module I/O Statistics:
-----------------------------
Slot Conn Circuit  Rx Bytes  Rx Frames   Rx Bytes  Tx Frames  Tx Deferred
---- ---- ------- ---------- ---------- ---------- ---------- -----------
   2    1 E21       92358250     246588     432048       2689          16

------------------------------------------------------------------
Bridge Base Record Information
------------------------------

     Protocol       State    FDB Entries  FDB Size
--------------- ---------- ----------- ----------
Bridge           Up                  17       1024
```

version

Displays the current version number and modification date of the *state.bat* script.

Sample Display – show state version

```
STATE.bat Version: 1.31 Date: 1/20/95.
```

show sws

The **show sws** *<option>* commands display configuration and status information about Switch Services (SWS) — Dial Backup, Dial-on-Demand, and Bandwidth-on-Demand. For detailed information about configuring SWS, refer to *Configuring Dial Services*.

The **show sws** command supports the following subcommand options:

backup_dialing circuits	outbound filters {ip | data_link}
backup_dialing pools [<pool ID> [<circuit name>]]	ondemand_dialing pools [<pool ID> [<circuit name>]]
backup_dialing schedules	ondemand_dialing schedules
bandwidth circuit	outbound filters {ip | data_link}
bandwidth pool [<pool ID> [<circuit name>]]	version
caller resolution table	

backup_dialing circuits

Displays primary circuits that are configured for dial backup. The display includes the following information:

Primary Circuit	Circuit name of the primary circuit.
Backup Pool	Identifies the backup pool available for the primary circuit; ranges from 1 to 255.
Backup Mode	Operating mode of the router, as follows: *Master* – Initiates the backup call when the primary circuit fails. *Slave* – Waits for the incoming call when the primary circuit fails.
Protocol	Type of WAN protocol configured on this primary circuit, as follows: • *Frame Relay* – Frame Relay protocol. • *PPP* – Point-to-Point Protocol. • *Wlft* – Standard protocol, a proprietary protocol used between two Bay Networks routers. Based on the CCITT HDLC (High-level Data Link Control) protocol, Standard provides LLC1 (connectionless, datagram) service. • *Unknown* – Protocol is unidentified.
Forced Dial	Status of the Forced Dial parameter — Enabled or Disabled. When Enabled, the router immediately activates the backup circuit.
Forced TakeDown	Status of the Forced TakeDown parameter: Enabled or Disabled. When Enabled, the router immediately terminates the backup circuit.

Sample Display – show sws backup_dialing circuits

```
Switched Services Dial Backup Circuit Information
-------------------------------------------------

 Primary   Backup  Backup                   Forced   Forced
 Circuit    Pool    Mode     Protocol        Dial   TakeDown
 -------- -------- ------ --------------- -------- --------
 S21             1 Master Wflt            Disabled Disabled

 Total of    1 Dial Backup Circuits.
```

backup_dialing pools [*<pool ID>* [*<circuit name>*]]

Displays detailed line information for each line in each pool. You can display information about all pools, a specific pool, and/or a specific circuit on the specified pool. The display includes the following information:

Circuit Information:

Primary Circuit	Identifies the primary circuit.
Primary DownTime	Number of seconds the router waits before bringing up the line. This delay prevents the line from going up and down if this is a reactivated primary line and there are problems on the line.
Outgoing Phone Number	Telephone number of the remote router.
Extension	Extension line for a main telephone number.
Phone # Type	Indicates whether the phone type is Dial or ISDN.

Synchronous Line Information:

Slot Num	Identifies the slot where this line resides.
Port Num	Identifies the port where this line connects.
Line State	State of the line, which can be one of the following: • *Down* – Line is not operational. • *DSR Wait* – External equipment, such as a modem, DSU, or CSU, is not currently up and thus is not sending a Data Set Ready signal. • *HoldDown* – Line is in holding mode. • *Init* – Line is initializing. • *LMI Wait* – Line is waiting for the WAN protocol to indicate that a link layer connection has been established to another device. • *Not Pres* – Line is enabled but not active. This state occurs for several reasons. For example, the Link Module may not be physically present in the chassis. The software may be booting and has not yet initialized. The slot may be running diagnostics. Or there may be a problem with the configuration. • *Up* – Line is operating normally.
Active Circuit	Name of the circuit using this line.

Hold Down Time	Number of seconds the router waits before bringing up the line. This delay prevents the line from going up and down if this is a reactivated primary line and there are problems on the line.
Media Type	Signaling method used for this backup line, as follows: • *RaiseDTR* – Router can initiate, monitor, and terminate dial connections using a programmed number in the attached dial-up device. • *V25bis* – Router can initiate, monitor, and terminate dial connections using telephone numbers that the router passed to the dial-up device.
Cable Type	Interface type that the attached dial unit supports: RS232, RS422, V.35, or X.21.
Line Number	ID number of the line.

ISDN Line Information:

Pool ID	ID number of the line pool.
Line Number	ID number of the line.
Channel Count	Number of B channels in the backup pool.
Priority	Specifies the router's order of preference for using each line pool.
Channels In Use	Indicates whether any of the available channels are in use.

Sample Display – show sws backup_dialing pools 1

```
Switched Services Dial Backup Pool Information
----------------------------------------------

 PRIMARY CIRCUIT INFORMATION FOR POOL 1:

   Primary  Primary        Outgoing                  Phone #
   Circuit  DownTime     Phone Number     Extension   Type
   -------- -------- -------------------- ---------- -------
   S12             5              2213527   Not Used ISDN


   Total of 1     Primary Circuits found for this Backup Pool.

 LINE INFORMATION FOR POOL 1:

     Sync Dial Backup Entries
     ------------------------

                                 Hold
 Slot Port   Line      Active    Down    Media   Cable   Line
 Num  Num    State    Circuit   Time     Type   Type   Number
 ---- ---- ---------- -------- ------- -------- ----- --------

 No Sync Lines configured.


     ISDN    Backup Pool Entries
     ---------------------------

Pool    Line    Channel          Channels
 ID    Number    Count  Priority  In Use
---- ---------- ------- -------- --------
   1    1301102       2        1        0


Total of    1 Dial Backup Entries Configured for this Pool.
```

backup_dialing schedules

Displays the scheduled availability of the backup circuits in a backup pool. The display includes the following information:

Circuit	Identifies the name of the circuit.
Pool	Specifies the backup pool that the circuit uses.
Day(s)	Days that the circuit is available.
Start Time	The beginning of the time interval that the circuit is available.
End Time	The end of the time interval that the circuit is available.

Sample Display – show sws backup_dialing schedules

```
Switched Services Backup Schedule Information
---------------------------------------------

   Circuit     Pool     Day(s)   Start Time End Time
 ----------- -------- ---------- ---------- --------
 S11                1 Not Configured

 S21                3 Weekday      0        2359
                      Tuesday      0        2359

 S31                3 Not Configured


 Total of    3    Backup Circuits.
```

bandwidth circuit

Displays all circuits that are configured for bandwidth-on-demand. The display includes the following information:

Primary Circuit	Name of the primary circuit.
Bandwidth Pool	ID number of the bandwidth-on-demand pool; ranges between 1 to 255.

Bandwidth Mode	Operating mode of the router, as follows: • *Monitor*–designates the router as the congestion monitor for the primary line. • *Non-monitor*–indicates that the router does not monitor congestion on the primary line.
Protocol	Type of WAN protocol configured on this primary circuit.
Forced Dial	Status of the Forced Dial parameter — Enabled or Disabled. When Enabled, the router immediately activates the secondary line.
Forced TakeDown	Status of the Forced TakeDown parameter: Enabled or Disabled. When Enabled, the router immediately terminates the secondary line.

Sample Display – show sws bandwidth circuit

```
Switched Services Bandwidth Circuit Information
-----------------------------------------------

 Primary  Bandwidth Bandwidth                  Forced   Forced
 Circuit     Pool     Mode       Protocol       Dial   TakeDown
 -------- --------- --------- --------------- -------- --------
 S51              1 Monitor   PPP             Disabled Disabled

 Total of    1 Bandwidth Circuits.
```

bandwidth pool [*<pool ID>* [*<circuit name>*]]

Displays detailed line information for each line in each pool. You can display information about all pools, a specific pool, and/or a specific circuit in the specified pool. The display includes the following information:

Circuit Information:

Primary Circuit	Identifies the primary circuit.
Bandwidth Mode	Operating mode of the router, as follows: • *Monitor*–designates the router as the congestion monitor for the primary line. • *Non-monitor*–indicates that the router does not monitor congestion on the primary line.
Inactivity Time (Sec)	Number of seconds the router waits without receiving data across the line before bringing down the connection.
Outgoing Phone Number	Telephone number of the remote router.
Extension	Extension line for a main telephone number.
Phone # Type	Indicates whether the phone type is Dial or ISDN.

Synchronous Line Information:

Slot Num	Identifies the slot where this line resides.
Port Num	Identifies the port where the line connects.
Line State	State of the line, which can be one of the following: • *Down* – Line is not operational. • *DSR Wait* – External equipment, such as a modem, DSU, or CSU, is not currently up and thus is not sending a Data Set Ready signal. • *HoldDown* – Line is in holding mode. • *Init* – Line is initializing. • *LMI Wait* – Line is waiting for the WAN protocol to indicate that a link layer connection has been established to another device. • *Not Pres* – Line is enabled but not active. This state occurs for several reasons. For example, the Link Module may not be physically present in the chassis. The software may be booting and has not yet initialized. The slot may be running diagnostics. Or there may be a problem with the configuration. • *Up* – Line is operating normally.

Active Circuit	Name of the circuit using this line.
Hold Down Time	Number of seconds the router waits before bringing up the line. This delay prevents the line from going up and down if this is a reactivated primary line and there are problems on the line.
Media Type	Signaling method used for this line, as follows: • *RaiseDTR* – Router can initiate, monitor, and terminate dial connections using a programmed number in the attached dial-up device. • *V25bis* – Router can initiate, monitor, and terminate dial connections using telephone numbers that the router passed to the dial-up device.
Cable Type	Interface type that the attached dial unit supports: RS232, RS422, V.35, or X.21.
Line Number	ID number of the line.

ISDN Line Information

Pool ID	ID number of the line pool.
Line Number	ID number of the line.
Channel Count	Number of B channels in the pool.
Priority	Specifies the router's order of preference for using each line pool.
Channels In Use	Indicates whether any of the available channels are in use.

Sample Display – show sws bandwidth pool 1

```
Switched Services Bandwidth Pool Information
--------------------------------------------

 PRIMARY CIRCUIT INFORMATION FOR POOL 1:

   Primary  Bandwidth Inactivity       Outgoing                  Phone #
   Circuit    Mode    Time (Sec)     Phone Number     Extension   Type
   -------- --------- ---------- -------------------- ---------- -------
   S51      Monitor           60              1234567   Not Used DIAL


   Total of 1     Primary Circuits found for this Bandwidth Pool.

 LINE INFORMATION FOR POOL 1:

     Sync Dial Bandwidth Entries
     ---------------------------

                                 Hold
 Slot Port   Line      Active    Down    Media   Cable   Line
 Num  Num    State     Circuit   Time     Type   Type    Number
 ---- ---- ---------- -------- ------- -------- ----- --------
    5    5 Up         None          NA V.25bis  RS232   205105


     ISDN Bandwidth Pool Entries
     ---------------------------

Pool    Line    Channel          Channels
 ID    Number    Count  Priority  In Use
---- ---------- ------- -------- --------

No ISDN Bandwidth pool entries found


Total of    1 Dial Bandwidth Entries Configured for this Pool.
```

caller resolution table

Displays the entries in the caller resolution table. The router uses the caller resolution table for identification and security purposes. The display includes the following information:

Caller Name	Lists the name of the calling party. This name needs to be a part of the incoming call from that party.
CHAP Secret	Lists the CHAP secret of the calling party.
PAP Password	Lists the PAP Password of the calling party.
Circuit Number	Displays the circuit number to which the Caller Name is associated.
Circuit Group Number	Lists the demand circuit group to which the circuit belongs.

Sample Display – show sws caller_resolution_table

```
Caller Resolution Table
-----------------------

  Caller    CHAP          PAP        Circuit         Circuit
   Name    Secret       Password      Number       Group Number
  ------ ------------  ------------ ------------   ------------
 Paris    France         UNSECURED             5              0
 Sydney   Australia      UNSECURED             4              0

 2 entries in the Table.
```

ondemand_dialing circuits

Displays all circuits configured for dial-on-demand. The display includes the following information:

Demand Circuit	Name of the demand circuit. Note that the demand circuit uses a default name as a place holder. When the demand circuit is in use, the name changes to the actual name of the circuit that is in use.
Demand Pool	Identifies the demand pool of lines available for the demand circuit; ranges from 1 to 255.
Forced Dial	Status of the forced dial parameter: Enabled or Disabled. When Enabled, the router immediately initiates dialing over the demand line.
Forced TakeDown	Status of the forced takedown parameter: Enabled or Disabled. When Enabled, the router immediately terminates the connection over a demand line.

Sample Display – show sws ondemand_dialing circuits

```
Switched Services Dial OnDemand Circuit Information
---------------------------------------------------

 Demand    Demand   Forced   Forced
 Circuit    Pool     Dial   TakeDown
 -------- -------- -------- --------
 Demand 2        1 Disabled Disabled
 Demand 3        2 Disabled Disabled

 Total of    2 Dial OnDemand Circuits.
```

ondemand_dialing pools [*<pool ID>* [*<circuit name>*]]

Displays line information for each line in a pool. You can display information about all pools, a specific pool, and/or a specific circuit on the pool. The display includes the following information:

Circuit Information:

Circuit	Circuit name of the demand circuit.
Connection Mode	Operating mode of the router, as follows: • *Master* – Retries the call when the first connection attempt fails as a result of a collision on the network. • *Slave* – Waits for the master router to retry the call if the first attempt fails as a result of a collision on the network. • *No Dial*– Never initiates calls; always waits for another router to call.
Inact Time	Number of seconds the router waits without receiving data across the line before bringing down the connection.
MaxUp Time	Specifies the maximum duration of the call in minutes. Once the call meets the specified time, the router terminates the connection.
Outgoing Phone Number	Telephone number of the remote router.
Extension	Extension line for a main telephone number.
Phone # Type	Indicates whether the phone number type is Dial or ISDN.

Synchronous Line Information:

Slot Num	Identifies the slot where this line resides.
Port Num	Identifies the port where this line connects.
Line State	State of the line, which can be one of the following: • *Down* – Line is not operational. • *DSR Wait* – External equipment, such as a modem, DSU, or CSU, is not currently up and thus is not asserting a Data Set Ready signal. • *HoldDown* – Line is in holding mode. • *Init* – Line is initializing. • *LMI Wait* – Line is waiting for the WAN protocol to indicate that a link layer connection has been established to another device. • *Not Pres* – Line is enabled but not yet started. This state occurs for several reasons. For example, the Link Module may not be physically present in the chassis. The software may be booting and has not yet initialized. The slot may be running diagnostics. Or there may be a problem with the configuration. • *Up* – Line is operating normally.

Active Circuit	Name of the circuit using this line.
Hold Down Time	Number of seconds the router waits before bringing the line up. This delay prevents the line from going up and down if this is a reactivated primary line and there are problems on the line.
Media Type	Signaling mode in use for this dial-on-demand line, as follows: • *RaiseDTR* – Router can initiate, monitor, and terminate dial connections using a programmed number in the attached dial-up device. • *V25bis* – Router can initiate, monitor, and terminate dial connections using telephone numbers that the router passed to the dial-up device.
Cable Type	Interface type that the attached dial unit supports: RS232, RS422, V.35, or X.21.
Line Number	ID number of the line.

ISDN Line Information

Pool ID	ID number of the line pool.
Line Number	ID number of the line.
Channel Count	Number of B channels in the pool.
Priority	Specifies the router's order of preference for using each line pool.
Channels In Use	Indicates whether any of the available channels are in use.

Sample Display – show sws ondemand_dialing pools 1

```
Switched Services Dial OnDemand Pool Information
------------------------------------------------

 CIRCUIT INFORMATION FOR POOL 1:

            Connection Inact MaxUp       Outgoing                  Phone #
   Circuit     Mode     Time  Time     Phone Number     Extension   Type
   -------- ---------- ----- ----- -------------------- ---------- -------
   Demand 3 SLAVE         20    60                7001   Not Used ISDN
                                                  7002   Not Used ISDN

   Total of 1     Circuits found for this Dial On Demand Pool.

 LINE INFORMATION FOR POOL 1:

     Sync Dial On Demand Entries
     ---------------------------

                                 Hold
 Slot Port   Line      Active    Down    Media   Cable   Line
 Num  Num    State    Circuit   Time     Type   Type   Number
 ---- ---- ---------- -------- ------- -------- ----- --------

 No Sync Lines configured.


     ISDN    Demand Pool Entries
     ---------------------------

Pool    Line    Channel          Channels
 ID    Number    Count  Priority  In Use
---- ---------- ------- -------- --------
   1    1301102       2        1        0

Total of    1 Dial On Demand Entries Configured for this Pool.
```

ondemand_dialing schedules

Displays the scheduled availability of each demand circuit in a demand pool.

Circuit	Identifies the name of the circuit.
Pool	Specifies the demand pool that the circuit uses.
Day(s)	Days that the circuit is available.
Start Time	The beginning of the time interval that the circuit is available.
End Time	The end of the time interval that the circuit is available.

Sample Display – show sws ondemand_dialing schedules

```
Switched Services Demand Schedule Information
---------------------------------------------

  Circuit     Pool     Day(s)   Start Time End Time
 ----------- -------- ---------- ---------- --------
 Demand 1           1 Not Configured

 Demand 3           1 Monday       1100     1200
                      Saturday     800      900

 Demand 4           1 Not Configured

 Demand 5           3 Weekday      0        2359
                      Tuesday      0        2359

 Demand 6           3 Not Configured

 Demand 7           3 Not Configured


 Total of    6    Demand Circuits.
```

outbound filters {ip | data_link}

For the ip and data_link options, the display includes the following information:

Name	Displays the name of the filter.
State	Lists the state of the filter.
Counter	Lists the number of packets filtered.

ip Displays information about the IP outbound filters.

Sample Display – show sws outbound_filters ip

```
Switched Services IP Outbound Filters Information
-------------------------------------------------

Name     State    Counter
 -------  -------  --------
  Boston  ENABLED        0

1 IP Filters configured.
```

data_link Displays information about the data link outbound filters.

Sample Display – show sws outbound_filters data_link

```
Switched Services Data Link Outbound Filters Information
---------------------------------------------------------

  Name     State    Counter
 -------  -------  --------
 Chicago  ENABLED         0
 Sydney   ENABLED         0

2 Data Link Filters configured.
```

version

Displays the current version number and modification date of the *sws.bat* script.

Sample Display – show sws version

```
SWS.bat Version: 1.9 Date: 5/1/95.
```

show sync

The **show sync** *<option>* commands display configuration, status, and statistical information about Synchronous (SYNC) lines. For detailed information about configuring SYNC, refer to *Configuring Routers*.

The **show sync** command supports the following subcommand options:

alerts	sample [<period in seconds>] [circuit <circuit name>]
base [circuit <circuit name>]	stats [circuit <circuit name>]
disabled	system errors [circuit [<circuit name>]]
enabled	transmit errors [circuit [<circuit name>]]
receive errors [circuit <circuit name>]	version

alerts

Displays all SYNC circuits that are enabled but not up. Use this display to identify the interfaces that are not working. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier; ranges from 1 to 4.
Circuit	Name of the circuit associated with this line.

State	State of the line driver, as follows: • *Disabled* – User has manually disabled the driver. • *Down* – Driver is not operational. • *DSR Wait* – External equipment, such as a modem, DSU, or CSU, is not currently up and thus is not asserting a Data Set Ready signal. • *Init* – Driver is initializing. • *LMI Wait* – Driver is waiting for any of four WAN protocols to indicate that a link layer connection has been established to another entity. This state applies to the Frame Relay, SMDS, ATM, and PPP protocols. • *Not Pres* – Driver is enabled but not yet started. This state occurs for several reasons. For example, the Link Module may not be physically present in the chassis. The software may be booting and has not yet initialized the driver software. The slot may be running diagnostics. Or there may be a problem with the configuration.
MAC Address	Physical address of the line. The line driver fills this address in from the 48-bit address stored in the serial number PROM for this connector.
Line Number	Line number for this line.
MTU	Maximum transfer unit size — the buffer size for the SYNC port (also the largest frame that can be transmitted or received across the SYNC port). The value ranges from 3 to 4608 bytes.
WAN Protocol	WAN protocol enabled on this interface, as follows: • *ATM* – Asynchronous Transfer Mode protocol • *FRM RLAY* – Frame Relay protocol • *PASSTHRU* – Interface passes data through the network to a SYNC interface configured for Pass Thru on another Bay Networks router. IBM sites typically use this protocol to pass proprietary SYNC data through a Bay Networks network. • *PPP* – Point-to-Point Protocol • *SMDS* – Switched Multi-Megabit Data Service protocol • *WF STND* – Wellfleet Standard, a proprietary protocol used between two Bay Networks routers. Based on the CCITT HDLC (High-level Data Link Control) protocol, Wellfleet Standard provides LLC1 (connectionless, datagram) service. This protocol is sometimes referred to as Wellfleet Point-to-Point. • *X.25* – X.25 protocol

Loc Adr	1-byte value, used in the address field of the HDLC packet. It may be extended to two octets if the *<circuit name>* Extended Address parameter is enabled. The values are DTE, DCE, and Explicit.
Rem Adr	1-byte value, used in the address field of the HDLC packet. It may be extended to two octets if the Extended Address parameter is enabled. The values are DTE, DCE, and Explicit.
Med Typ	Media type this SYNC module uses, as follows: • *STD* – Normal connection. • *T1* – T1 lines. • *E1* – E1 lines. • *DTR* – Connection to a modem that dials out when Data Terminal Ready (DTR) gets raised. • *V25* – Connection to a V25 BIS modem.

Sample Display – show sync alerts

```
SYNC Modules on Alert:
----------------------

                                                 Line          WAN    Loc Rem Med
Slot Conn Circuit State       MAC Address     Number  MTU  Protocol Adr Adr Typ
---- ---- ------- -------- ----------------- -------- ---- -------- --- --- ---
   2    1 T1-21   Down     00-00-A2-00-B6-1B 00302101 1600 WF STND    7   7 T1
   2    2 T1-22   Down     00-00-A2-00-B6-1C 00302102 1600 WF STND    7   7 T1

Found     2 matches out of     4 entries in table.
```

base [**circuit** *<circuit name>*]

Displays the base level information for all SYNC circuits or a specific SYNC circuit. For definitions of the columns in the table, see the **alerts** command. In addition to the states listed under the **alerts** command, State can also be Up.

Sample Display – show sync base

```
SYNC Modules:
-------------

                                                 Line          WAN    Loc Rem Med
Slot Conn Circuit State       MAC Address     Number  MTU  Protocol Adr Adr Typ
---- ---- ------- -------- ----------------- -------- ---- -------- --- --- ---
    5     1 S51      Up        00-00-A2-00-A1-73 00205101 1600 WF STND    7   7
STD
    5     2 S52      Up        00-00-A2-00-A1-74 00205102 1600 WF STND    7   7
STD

    2 entries in table.
```

disabled

Displays SYNC circuits that a user has manually disabled. For definitions of the columns in the table, see the **alerts** command. In this case, State is Disabled.

Sample Display – show sync disabled

```
SYNC Modules Disabled:
----------------------

                                                 Line          WAN    Loc Rem Med
Slot Conn Circuit State       MAC Address     Number  MTU  Protocol Adr Adr Typ
---- ---- ------- -------- ----------------- -------- ---- -------- --- --- ---

Found     0 matches out of     4 entries in table.
```

enabled

Displays SYNC circuits that a user has manually enabled. For definitions of the columns in the table, see the **alerts** command. State can also be Up.

Sample Display – show sync enabled

```
SYNC Modules Enabled:
---------------------

                                                 Line          WAN    Loc Rem Med
Slot Conn Circuit  State      MAC Address      Number  MTU  Protocol Adr Adr Typ
---- ---- ------- -------- ----------------- -------- ---- -------- --- --- ---
   5    1 S51     Up       00-00-A2-00-A1-73 00205101 1600 WF STND    7   7 STD
   5    2 S52     Up       00-00-A2-00-A1-74 00205102 1600 WF STND    7   7 STD

Found     2 matches out of     2 entries in table.
```

receive errors [circuit *<circuit name>*]

Displays receive errors for all circuits or for a specific circuit. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier; ranges from 1 to 4.
Circuit	Name of the circuit associated with this line.
Bad Frames	Number of bad receive frames, caused by Frame Check Sequence (FCS) errors or nonoctet aligned errors.
Runt Frames	Number of runt frames received on this line.
Frame Rejects	Number of frame reject errors received on this line.
Frames Too Long	Number of frames received on this line that exceed the MTU.
Overflow Frames	Number of overflow errors received on this line in which the device's FIFO buffer overflowed before obtaining the next DMA cycle. No buffer resources are available.

Sample Display – show sync receive

```
SYNC Module Receive Errors:
---------------------------

                    Bad       Runt      Frame    Frames   Overflow
Slot Conn Circuit  Frames    Frames    Rejects  Too Long   Frames
---- ---- ------- --------- --------- --------- --------- ---------
   5    1 S51             0         7         0         0         0
   5    2 S52             1         1         0         0         0

    2 entries in table.
```

sample [<**period in seconds**>] [**circuit** *<circuit name>*]

Displays data sampled from SYNC over a period of 10 seconds. You can change the number of seconds over which you want to sample the data, and you can display sampled data for a specific circuit only. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier; ranges from 1 to 4.
Circuit	Name of the circuit associated with this line.
Rx Frames	Number of frames received on this line.
Tx Frames	Number of frames sent on this line.
Rx Lack of Resources	Number of packets received and discarded because of lack of resources; for example, buffers.
Tx Lack of Resources	Number of transmit packets discarded because of lack of resources; for example, buffers.

Sample Display – show sync sample

```
SYNC Sampled Data over  10 seconds
----------------------------------

                      Rx         Tx     Rx Lack of Tx Lack of
Slot Conn Circuit   Frames     Frames   Resources  Resources
---- ---- ------- ---------- ---------- ---------- ----------
   3    1 S31             11         12          0          0

    1 entry in table.
```

Sample Display – show sync sample circuit s31

```
SYNC Sampled Data over  5 seconds
---------------------------------

                      Rx         Tx     Rx Lack of Tx Lack of
Slot Conn Circuit   Frames     Frames   Resources  Resources
---- ---- ------- ---------- ---------- ---------- ----------
   3    1 S31              5          6          0          0

Found     1 matches out of     1 entry in table.
```

stats [**circuit** *<circuit name>*]

Displays SYNC input/output statistical information for all SYNC modules or for a specific circuit. The table contains the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier; ranges from 1 to 4.
Circuit	Name of the circuit associated with this line.
Receive Bytes	Number of octets received without error.
Receive Frames	Number of frames received without error.
Transmit Bytes	Number of octets transmitted without error.
Transmit Frames	Number of frames transmitted without error.
Total Errors	Total number of errors of all types.

Sample Display – show sync stats

```
SYNC Module I/O Statistics:
---------------------------

                   Receive    Receive    Transmit   Transmit    Total
Slot Conn Circuit   Bytes      Frames     Bytes      Frames     Errors
---- ---- ------- ---------- ---------- ---------- ---------- ----------
   5    1 S51       12547667     242153   12750286     246188          7
   5    2 S52       12545913     242593   12752036     245763          2

    2 entries in table.
```

system errors [**circuit** [*<circuit name>*]]

Displays statistical information about system errors for all circuits or for a specific circuit. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier; ranges from 1 to 4.
Circuit	Name of the circuit associated with this line.
Receive Rejects	Number of reject frames received.
Transmit Rejects	Number of reject frames transmitted.
T1 Timeouts	Number of T1 timeouts detected. The T1 timer is the link retransmission timer. Link control frames are retransmitted when the T1 expires. This timer tracks the number of timeouts.
Memory Errors	Number of memory errors detected. A memory error occurs when the DMA cycle expires without obtaining the bus within 26 ms. Memory errors may indicate faulty hardware. If this count exceeds five, call your customer service representative.

Sample Display – show sync system

```
SYNC Module System Errors:
--------------------------

                   Receive    Transmit      T1       Memory
Slot Conn Circuit  Rejects    Rejects    Timeouts    Errors
---- ---- ------- ---------- ---------- ---------- ----------
   5    1 S51              0          0          0          0
   5    2 S52              0          0          0          0

    2 entries in table.
```

Sample Display – show sync system errors circuit s31

```
SYNC Module System Errors:
--------------------------

                   Receive    Transmit      T1       Memory
Slot Conn Circuit  Rejects    Rejects    Timeouts    Errors
---- ---- ------- ---------- ---------- ---------- ----------
   3    1 S31              0          0          0          0

Found     1 match out of     4 entries in table.
```

transmit errors [**circuit** [*<circuit name>*]]

Displays statistical information about transmission errors for all circuits or for a specific circuit. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier; ranges from 1 to 4.
Circuit	Name of the circuit associated with this line.
Underflow Frames	Number of retransmission underflow errors. These occur when the device's FIFO buffer empties before the device obtains the next DMA request.

Sample Display – show sync transmit errors

```
SYNC Module Transmit Errors:
----------------------------

                  Underflow
Slot Conn Circuit   Frames
---- ---- ------- ----------
   5    1 S51              0
   5    2 S52              0

    2 entries in table.
```

Sample Display – show sync transmit errors circuit s31

```
SYNC Module Transmit Errors:
----------------------------

                  Underflow
Slot Conn Circuit   Frames
---- ---- ------- ----------
   3    1 S31              0

Found     1 match out of     4 entries in table.
```

version

Displays the current version and modification date for the *sync.bat* script.

Sample Display – show sync version

```
sync.bat Version: 1.12 Date: 10/31/94.
```

show system

The **show system** *<option>* commands display information about the system state, which pertains to the overall system and not to any specific protocol.

The **show system** command supports the following subcommand options:

buffers	protocols
drivers	tasks
information	version
memory	

buffers

Displays the current buffer usage for all active slots in the system. Note that buffers circulate rapidly through the system. A low free percentage doesn't necessarily indicate a buffer shortage; it may be a transient condition.

Sample Display – show system buffers

```
Buffer Usage Statistics:
-----------------------

Slot  Total   Used   Free  %Free
----  -----  -----  -----  -----
   2    378    124    254   67 %
   3    378     90    288   76 %
```

drivers

Displays link modules and drivers installed on all active slots in the system. If the configuration displayed differs from that expected, your configuration file may be incorrect (wrong module type specified; for example) or there may be a problem loading the software.

Sample Display – show system drivers

```
 Link Module:   Slots:
 ------------   ------
       QENET:   ____2_
        FDDI:   _____________5_
       QSYNC:   _______3_
          DT:   __________4_

Link Drivers - System Software Configuration
--------------------------------------------

      Driver:   Slots:
      -------   ------
       ILACC:   ____2_
         FSI:   _____________5_
     TMS 380:   __________4_
      MK5025:   _______3_
```

information

Displays general system information.

Sample Display – show system information

```
System Information:
 -------------------

System Name: Bay Networks Node 1
    Contact: John Doe
   Location: Corp. HQ
      Image: rel/7.70 Created on Tue Mar 29 15:10:50 EST 1994.
MIB Version: x7.70
    Up Time: 0 hr, 14 min, 37 sec
```

memory

Displays the global memory usage for all active slots in the system. Memory usage is not as volatile as buffer usage and a low free percent may indicate that you need more memory.

Sample Display – show system memory

```
Memory Usage Statistics (Megabytes):
------------------------------------

Slot   Total      Used      Free    %Free
----  --------  --------  --------  -----
   2    5.01 M    1.66 M    3.35 M   66 %
   3    5.01 M    1.00 M    4.00 M   79 %
   4    5.01 M    0.92 M    4.09 M   81 %
```

protocols

Displays which protocols are installed on all active slots in the system. If the configuration displayed differs from that expected, your configuration file may be incorrect (wrong protocol specified, for example) or there may be a problem loading the software.

Sample Display – show system protocols

```
Dynamically Loadable Protocols Configuration
--------------------------------------------

    Protocol:   Slots:
    ---------   ------
          IP:   _1__2__3__4__5_
      DECNET:   ____2__3_
          AT:   ____2__3_
         IPX:   ____2__3_
       VINES:   ____2__3_
      TELNET:   _1__2__3__4__5_
        TFTP:   _1__2__3__4__5_
        SNMP:   _1__2__3__4__5_
         TCP:   _1__2__3__4__5_
```

tasks

Displays the number of tasks scheduled to run on all active slots. This number is highly volatile and a large %In Queue does not necessarily indicate a problem.

Sample Display – show system tasks

```
Tasks stats:
------------
Slot  Total  In Queue  %In Queue
----  -----  --------  ---------
   2    175         2        1 %
   3    126         1        0 %
```

version

Displays the current version and modification date for the *system.bat* script.

Sample Display – show system version

```
SYSTEM.bat Version: 1.10 Date: 9/06/94.
```

show t1

The **show t1** *<option>* commands display configuration, status, and statistical information about T1 lines. For detailed information about configuring T1 lines, refer to *Configuring Routers*.

The **show t1** command supports the following subcommand options:

alerts	frame errors [circuit <circuit name>]
base [circuit <circuit name>]	line errors [circuit <circuit name>]
disabled	version
enabled	

alerts

Displays all T1 modules that are enabled but not up. Use this display to identify the interfaces that are not working. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier: 1 or 2.
Circuit	Name of the circuit associated with this line.

Frame Type	Framing format. The following two framing formats differ in the number of frames per superframe and in the use of the F-bit position. A frame comprises 24 timeslots of 8-bit data preceded by a bit called the F-bit. • *D4* – Twelve frames make up a superframe. The F-bit provides frame and multiframe alignment information. • *ESF* – Twenty-four frames make up a superframe (extended superframe). The F-bit provides Facility Data Link (FDL) and CRC information as well as frame and multiframe alignment information.
Line Bldout	T1 transmit power level measured in length of cable connecting the router and associated T1 equipment; ranges from 1 to 655 feet.
B8ZS Support	Status of Bipolar Eight Zero Substitution — On or Off. B8ZS maintains sufficient “ones” density requirements within the T1 data stream without disturbing data integrity.
Clock Mode	Source of the T1 transmit clock, as follows: • *Internal* – Clock is generated internally. • *Slave* – Clock is derived from the incoming data stream. • *Manual* – Jumpers on the T1 Link Module determine the clock source (Internal or Slave).
MiniDacs Configuration	Function assigned to each of 24 DS0 channels (timeslots). The table shows these functions in a string of 24 characters, one character per channel. The characters and their meaning are as follows: • *1* – Assigns the timeslot to the first HDLC controller (Circuit 1). • *2* – Assigns the timeslot to the second HDLC controller (Circuit 2). • *D* – Assigns the timeslot to data passthrough (HDLC controller to HDLC controller). • *I* – Assigns the timeslot to idle. • *V* – Assigns the timeslot to voice passthrough (HDLC controller to HDLC controller). For example, the sample display shows the Mini Dacs Configuration on circuit 21 as: 1111111111111111IIIIIIII. This string shows timeslots 1 - 16 assigned to the HDLC controller (1) and timeslots 17 - 24 idle (I).

Sample Display – show t1 alerts

```
T1 Modules on Alert:
--------------------

                  Frame  Line   B8ZS    Clock
Slot Conn Circuit Type  Bldout Support  Mode     MiniDacs Configuration
---- ---- ------- ----- ------ ------- -------- ------------------------
   2    1 T1-21   ESF        1 Off     Internal 11111111111111111IIIIIIII
   2    2 T1-22   ESF        1 Off     Slave    22222222222222221IIIIIIII

Found     2 matches out of     2 entries in table.
```

base [**circuit** *<circuit name>*]

Displays the base level information for all T1 circuits or a specific circuit. For definitions of the columns in the table, see the **alerts** command.

Sample Display – show t1 base

```
T1 Modules:
-----------

                  Frame  Line   B8ZS    Clock
Slot Conn Circuit Type  Bldout Support  Mode     MiniDacs Configuration
---- ---- ------- ----- ------ ------- -------- ------------------------
   2    1 T1-21   ESF        1 Off     Internal 11111111111111111IIIIIIII
   2    2 T1-22   ESF        1 Off     Slave    22222222222222221IIIIIIII

    2 entries in table.
```

Sample Display – show t1 base circuit t1-21

```
T1 Modules:
-----------

                  Frame  Line   B8ZS    Clock
Slot Conn Circuit Type  Bldout Support  Mode     MiniDacs Configuration
---- ---- ------- ----- ------ ------- -------- ------------------------
   2    1 T1-21   ESF        1 Off     Internal 11111111111111111IIIIIIII

Found     1 match out of     2 entries in table.
```

disabled

Displays T1 circuits that a user has manually disabled. For definitions of the columns in the table, see the **alerts** command.

Sample Display – show t1 disabled

```
T1 Modules Disabled:
--------------------

                  Frame  Line   B8ZS    Clock
Slot Conn Circuit Type  Bldout Support  Mode     MiniDacs Configuration
---- ---- ------- ----- ------ ------- -------- ------------------------

Found     0 matches out of     2 entries in table.
```

enabled

Displays T1 circuits that a user has manually enabled. For definitions of the columns in the table, see the **alerts** command.

Sample Display – show t1 enabled

```
T1 Modules Enabled:
-------------------

                  Frame  Line   B8ZS    Clock
Slot Conn Circuit Type  Bldout Support  Mode     MiniDacs Configuration
---- ---- ------- ----- ------ ------- -------- ------------------------
   2    1 T1-21   ESF        1 Off     Internal 11111111111111111IIIIIII
   2    2 T1-22   ESF        1 Off     Slave    22222222222222221IIIIIII

Found     2 matches out of     2 entries in table.
```

frame errors [circuit *<circuit name>*]

Displays T1 frame errors for all circuits or for a specific circuit. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier: 1 or 2.
Circuit	Name of the circuit associated with this line.
Frame Bit Errors	Number of frame bit errors on this line. Frame bit errors indicate an error in the F-bit pattern.
Out of Frame Errs	Number of out-of-frame errors on this line. A router detects out-of-frame errors when at least two of four or five consecutive framing bits contain an error.
Super Frame Errs	Number of superframe errors on this line. In ESF mode, this count represents the number of on-chip generated CRC errors. In D4 mode, this count represents the framing bit errors.

Sample Display – show t1 frame errors

```
T1 Module Frame Errors:
-----------------------

                  Frame Bit    Out of     Super
Slot Conn Circuit   Errors   Frame Errs Frame Errs
---- ---- ------- ---------- ---------- ----------
   2    1 T1-21            0          0          0
   2    2 T1-22            0          0          0

    2 entries in table.
```

Sample Display – show t1 frame errors circuit t1-21

```
T1 Module Frame Errors:
-----------------------

                  Frame Bit    Out of     Super
Slot Conn Circuit   Errors   Frame Errs Frame Errs
---- ---- ------- ---------- ---------- ----------
   2    1 T1-21            0          0          0

Found     1 match out of     2 entries in table.
```

line errors [**circuit** *<circuit name>*]

Displays several categories of line errors for all circuits or for a specific circuit. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier: 1 or 2.
Circuit	Name of the circuit associated with this line.

BiPolar Violtns	Number of bipolar violations on this line. On a T1 line, 1's are transmitted as alternating negative and positive pulses, and 0's are simply the absence of pulses. Thus a bipolar violation occurs if there are two or more consecutive pulses of the same polarity. This error count indicates the quality of the T1 line.
Yellow Alarms Rcvd	Number of times the router has received a yellow alarm on this line. A yellow alarm indicates that we have not lost sync, but the remote side of the connection has detected a problem with this line.
Carrier Loss	Number of instances of carrier loss detected on this line. This typically occurs during cable removal.
Red Alarms Recvd	Number of instances of out-of-frame errors detected for periods exceeding 2.5 seconds; typically a mismatched framing format causes this condition.

Sample Display – show t1 line

```
T1 Module Line Errors:
----------------------

                              Yellow                 Red
                    BiPolar   Alarms    Carrier     Alarms
Slot Conn Circuit   Violtns   Recvd       Loss      Recvd
---- ---- ------- ---------- ---------- ---------- ----------
   2    1 T1-21    396177689          0          1          3
   2    2 T1-22    396063622          0          4          0

    2 entries in table.
```

Sample Display – show t1 line errors circuit t1-21

```
T1 Module Line Errors:
----------------------

                                Yellow                  Red
                    BiPolar     Alarms    Carrier     Alarms
Slot Conn Circuit   Violtns     Recvd       Loss      Recvd
---- ---- ------- ---------- ---------- ---------- ----------
   2    1 T1-21    396183809          0          1          3

Found     1 match out of     2 entries in table.
```

version

Displays the current version number and modification date for the *t1.bat* script.

Sample Display – show t1 version

```
t1.bat Version: 1.7 Date: 11/1/94.
```

show tcp

The **show tcp** *<option>* commands display information about the Transmission Control Protocol (TCP). For detailed information about the Bay Networks implementation of TCP, refer to *Configuring TCP Services*.

The **show tcp** command supports the following subcommand options:

base	stats
configuration	version
connections	

base

Displays the base record for TCP. The base record controls TCP for the entire system. The table includes the name of the protocol, its state and the number of TCP connections. State is Down, Init (initializing), Not Present (not yet loaded), or Up.

Sample Display – show tcp base

```
TCP Base Information
--------------------

Protocol         State         Connections
--------         -----         -----------
TCP              Up                      5
```

configuration

Displays the TCP configuration parameters. The table includes the following information:

Timeout Min	Minimum value in milliseconds permitted for the retransmission timeout. When one side of a TCP connection sends a frame and the other side of the connection does not acknowledge the transmission within the timeout period, the sending station retransmits the frame.
Timeout Max	Maximum value in milliseconds permitted for the retransmission timeout. When one side of a TCP connection sends a frame and the other side of the connection does not acknowledge the transmission within the timeout period, the sending station retransmits the frame.
Max Window Size	Maximum transmit and receive window size that TCP allows for each connection.
Timeout Algorithm	Algorithm for determining when to retransmit unacknowledged packets. Currently, Bay Networks implements the Van Jacobson algorithm only.

Sample Display – show tcp configuration

```
TCP Configuration
-----------------

  Time Out    Time Out     Maximum
  Minimum     Maximum    Window Size  Time Out Algorithm
 ---------- ---------- ------------ ------------------
        250     240000         4096 Van_Jacobson
```

connections

Displays information about each TCP connection. The table includes the IP address, port numbers, and state associated with each connection. The states are as follows:

Closed	No connection exists.
Listen	TCP is listening for a connection request.
SYN Sent	TCP has requested a connection (SYN segment) and is waiting for the remote TCP to acknowledge and match the request.

SYN Received	TCP has sent and received a connection request and is now waiting for the remote TCP to confirm.
Established	The connection is open. Data can be received and sent. This is the normal state for data transfer.
Fini Wait 1	TCP is waiting for the remote TCP's request to terminate the connection (FIN segment), or is waiting for the remote TCP to acknowledge a previous request to terminate.
Fini Wait 2	TCP is waiting for the remote TCP's request to terminate the connection.
Close Wait	TCP is waiting for the client to request to terminate the connection.
Last Ack	TCP is waiting for the remote TCP to acknowledge the connection termination request sent previously. This request also acknowledges the remote TCP's request to terminate the connection.
Closing	TCP is waiting for the remote TCP to acknowledge its request to terminate the connection.
Time Wait	TCP is waiting for enough time to pass to be sure the remote TCP received the acknowledgment of its request to terminate the connection.
Delete TCP	The TCP connection is terminating in response to a network management request.

Except for Establish, Closed and Listen, all states are associated with establishing and closing a connection and are thus transitory.

Sample Display – show tcp connections

```
TCP Connections
---------------

                 Local                     Remote
    Local IP      Port       Remote IP      Port        State
---------------- -------- ---------------- -------- ---------------
0.0.0.0               23 0.0.0.0                0 Listen
192.32.174.65        179 192.32.174.66       56834 Established
192.32.175.129     30751 192.32.175.130        179 Established

3 entries
```

stats

Displays statistical information for TCP. The table includes the following information:

Segments Sent	Number of segments sent.
Segments Received	Number of segments received.
Segments Retransmitted	Number of segments retransmitted.
Bad Segments Received	Number of bad segments received.
Resets	Number of resets.
Established Connections	Number of connections established.

Sample Display – show tcp stats

```
TCP Statistics
--------------

  Segments   Segments     Segments     Bad Segments           Established
    Sent     Received  Retransmitted     Received     Resets  Connections
 ---------- ---------- -------------- -------------- -------- ------------
      14449       4200              0              2        4            2
```

version

Displays the current version number and modification date of the *tcp.bat* script.

Sample Display – show tcp version

```
TCP.bat Version: 1.6 Date: 4/2/94
```

show telnet

The **show telnet** *<option>* commands display information about Telnet services. The **show telnet** command supports the following subcommand options:

base	stats
configuration	version
sessions	

base

Displays whether or not Telnet is enabled for the router, and if enabled, the number of active Telnet sessions into the router.

Sample Display – show telnet base

```
TELNET Server Base Information
------------------------------

Protocol         Mode        Sessions
---------------- ------------ ------------
TELNET           Enabled                 1
```

configuration

Displays user configurable parameters for Telnet, as follows:

Screen Size	Default screen size in number of lines.
More	Status of display paging (whether the **more** feature is enabled or not).
TI-TELNET prompt	User-definable prompt string.
Max. Login Retries	Number of login attempts permitted before disconnecting the caller.
Login Time Out	Number of minutes allowed between when the system displays the login banner and a user enters a login ID. If this timeout occurs, the system hangs up on the line.
Password Time Out	Number of minutes allowed for a user to enter a password. If this timeout occurs, the system hangs up on the line.
Command Time Out	Number of minutes to wait for the caller to enter a command before hanging up on the serial port.
Initial Search Path	List of file system volumes to be searched when you run a script without a volume specifier or if the AutoScript doesn't contain a volume specifier. The environment variable PATH is set to this string. The string format is as follows: *<vol>*:[;*<vol>*: . . .] Example: 2:;3:;4:;5:
Manager's AutoScript	Name of the script to run when the Manager account logs in to the router. If the script name doesn't contain a volume specifier, the system searches the volumes listed in Initial Search Path.
User's AutoScript	Name of the script to run when the User account logs in to the router. If the script name does not contain a volume specifier, the system searches the volumes listed in Initial Search Path.
User Abort Logout	Switch to execute control (^C) to break out of the user autoscript. When a user autoscript is in effect with this parameter enabled, anyone logged in as User can break out of the script. Also, if this parameter is enabled and the script terminates due to an error, the system automatically logs you out.

Sample Display – show telnet configuration

```
TELNET Configuration Information
--------------------------------

            Screen Size: 24
                   More: Enabled
       TI-TELNET prompt: ""
  Max. Login Retries: 3
          Login Time Out: 1 minutes.
        Password Time Out: 1 minutes.
         Command Time Out: 15 minutes.
 Initial Search Path: "2:;3:;4:;5:".
Manager's AutoScript: "automgr.bat".
       User's AutoScript: "autouser.bat".
       User Abort Logout: Disabled
```

sessions

Displays the Internet address and port number of each remote system to which the router is connected. The table also includes the state of the connection.

Sample Display – show telnet sessions

```
TELNET/TCP Sessions
-------------------

                  Remote
   Remote IP       Port          State
 --------------- --------   ----------------

 192.32.18.9          1069   Established
 192.32.18.9          1086   Established
```

stats

Displays statistical information that the Telnet daemon records. The information includes the following:

Total Logins	Number of attempted logins.
User Login Errors	Number of password errors for logins as “User.”
Manager Login Errors	Number of password errors for logins as “Manager.”
Other Login Errors	Number of login name errors.
Current Active Sessions	Number of active inbound Telnet sessions.

Sample Display – show telnet stats

```
TELNET Statistical Information
------------------------------

             User   Manager   Other   Current
 Total    Login    Login    Login    Active
 Logins   Errors   Errors   Errors  Sessions
-------- -------- -------- -------- --------
       1        0        0        0        1
```

version

Displays the version number and modification date of the *telnet.bat* script.

Sample Display – show telnet version

```
TELNET.bat Version: 1.9 Date: 5/3/94.
```

show tftp

The **show tftp** *<option>* commands display information about the Trivial File Transfer Protocol (TFTP) status. For information on TFTP, refer to *Configuring Routers*.

The **show tftp** command supports the following subcommand options:

base	version

base

Displays the base record for TFTP, which controls the protocol for the entire system. The table includes the following information:

Protocol	Name of the protocol, in this case TFTP.
State	Operating state of TFTP: Enabled or Disabled.
Default Volume	Volume number of the default file system for writing and retrieving transferred files.
Retransmit Timeout	General retransmission timeout value in seconds.
Max Number Retransmits	Maximum number of retransmissions allowed.
# of Writes	Number of Write requests received.
# of Reads	Number of Read requests received.
# of Retransmits	Number of retransmitted packets.

Sample Display – show tftp base

```
TFTP Base Information
---------------------


                    Default  Retransmit  Max Number   # of    # of     # of
 Protocol   State    Volume    Timeout   Retransmits Writes  Reads  Retransmits
 -------- --------- -------- ----------- ----------- ------- ------ -----------
 TFTP     Enabled          2           5           5       7      3           0
```

version

Displays the current version number and modification date for the *tftp.bat* script.

Sample Display – show tftp version

```
TFTP.bat Version: 1.8 Date: 5/11/94.
```

show token

The **show token** *<option>* commands display configuration, status, and statistical information about Token Ring lines. For detailed information about configuring Token Ring lines, refer to *Configuring Routers*.

The **show token** command supports the following subcommand options:

alerts	stats [circuit <circuit name>]
base [circuit <circuit name>]	stats line [circuit <circuit name>]
disabled	stats ring [circuit <circuit name>]
enabled	system errors [circuit <circuit name>]
receive errors [circuit <circuit name>]	transmit errors [circuit <circuit name>]
sample [<period in seconds>] [circuit <circuit name>]	version

alerts

Displays all Token Ring modules that are enabled but not up. Use this display to identify the interfaces that are not working. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier: 1 or 2.
Circuit	Name of the circuit associated with this line.

State	State of the line; in this case: Beaconing, Disabled, Down, Init (initializing), or Not Pres (enabled but not yet started). Beaconing indicates that the interface doesn't see the token and should be a transient condition. The Not Pres state occurs for several reasons. For example, the Link Module may not be physically present in the chassis. The software may be booting and has not yet initialized the driver software. The slot may be running diagnostics. Or there may be a problem with the configuration.
MAC Address	Physical address of the line. This is a 48-bit address in canonical format.
MTU	Maximum transfer unit size for this interface; the largest frame that can be transmitted or received across the Token Ring module. The MTU is 4568 bytes.
Ring Speed	Speed of the Token Ring media — 4 Mb/s or 16 Mb/s.
Early Token Release	Status of Early Token Release — Enabled or Disabled. When enabled, the token can be released back onto the ring before the recipient copies all the data. This parameter is enabled only when Ring Speed is 16 Mb/s.

Sample Display – show token alerts

```
TOKEN RING Modules on Alert:
----------------------------

                                                    Ring   Early Token
Slot Conn Circuit  State      MAC Address    MTU   Speed    Release
---- ---- ------- -------- ----------------- ---- ------- -----------

Found     0 matches out of     2 entries in table.
```

base [**circuit** *<circuit name>*]

Displays the base information for all Token Ring circuits or a specific Token Ring circuit. For definitions of the columns in the table, see the **alerts** command. In addition to the states listed under the **alerts** command, State can also be Up.

Sample Display – show token base

```
TOKEN RING Modules:
-------------------

                                                    Ring   Early Token
Slot Conn Circuit  State      MAC Address    MTU   Speed    Release
---- ---- ------- -------- ----------------- ---- ------- -----------
   3    1 O31     Up       00-00-A2-00-5B-46 4568 16 Mbps Enabled
   4    2 O42     Up       00-00-A2-00-C8-C1 4568 16 Mbps Enabled

    2 entries in table.
```

Sample Display – show token base circuit o31

```
TOKEN RING Modules:
-------------------

                                                    Ring   Early Token
Slot Conn Circuit  State      MAC Address    MTU   Speed    Release
---- ---- ------- -------- ----------------- ---- ------- -----------
   3    1 O31     Up       00-00-A2-00-5B-46 4568 16 Mbps Enabled

Found     1 match out of     2 entries in table.
```

disabled

Displays Token Ring circuits that a user has manually disabled. For definitions of the columns in the table, see the **alerts** command. In this case, State is Disabled.

Sample Display – show token disabled

```
TOKEN RING Modules Disabled:
----------------------------

                                                    Ring   Early Token
Slot Conn Circuit  State      MAC Address    MTU   Speed    Release
---- ---- ------- -------- ----------------- ---- ------- -----------

Found     0 matches out of     2 entries in table.
```

enabled

Displays Token Ring circuits that a user has manually enabled. For definitions of the columns in the table, see the **alerts** command. State can also be Up.

Sample Display – show token enabled

```
TOKEN RING Modules Enabled:
---------------------------

                                                    Ring   Early Token
Slot Conn Circuit  State      MAC Address    MTU   Speed    Release
---- ---- ------- -------- ----------------- ---- ------- -----------

Found     0 matches out of     2 entries in table.
```

receive errors [**circuit** *<circuit name>*]

Displays receive errors for all circuits or for a specific circuit. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier: 1 or 2.
Circuit	Name of the circuit associated with this line.
Line Errors	Number of frames that this station copied with bad format or Frame Check Sequence (FCS) errors.
Burst Errors	Number of frames with no bit transition for 5-1/2-bit times.

Sample Display – show token receive errors

```
TOKEN RING Receive Errors:
--------------------------

                     Line      Burst
Slot Conn Circuit   Errors     Errors
---- ---- ------- ---------- ----------
   3    1 O31              1          5
   4    2 O42              0          0

    2 entries in table.
```

Sample Display – show token receive errors circuit o31

```
TOKEN RING Receive Errors:
--------------------------

                     Line      Burst
Slot Conn Circuit   Errors     Errors
---- ---- ------- ---------- ----------
   3    1 O31              1          5

Found     1 match out of     2 entries in table.
```

sample [*<period in seconds>*] [**circuit** *<circuit name>*]

Displays data sampled from Token Ring over a period of 10 seconds. You can change the number of seconds over which you want to sample the data, and you can display sampled data for a specific circuit only. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector's instance identifier; ranges from 1 to 4.
Circuit	Name of the circuit associated with this line.
Rx Frames	Number of frames received.
Tx Frames	Number of frames transmitted.
Rx Lack of Resources	Number of packets received and discarded because of lack of resources; for example, buffers.
Tx Lack of Resources	Number of transmit packets discarded because of lack of resources; for example, buffers.

Sample Display – show token sample 5

```
TOKEN RING Sampled Data over   5 seconds
----------------------------------------

                       Rx         Tx     Rx Lack of Tx Lack of
Slot Conn Circuit   Frames     Frames   Resources  Resources
---- ---- ------- ---------- ---------- ---------- ----------
   4    1 O41              0          0          0          0
   4    2 O42              0          0          0          0

    2 entries in table.
```

stats [**circuit** *<circuit name>*]

Displays Token Ring input/output statistical information for all Token Ring circuits or for a specific circuit. The table contains the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier: 1 or 2.
Circuit	Name of the circuit associated with this line.
Receive Bytes	Number of octets received without error.
Receive Frames	Number of frames received without error.
Transmit Bytes	Number of octets transmitted without error.
Transmit Frames	Number of frames transmitted without error.
MAC Rx Frames	Number of MAC frames received without error.
Total Errors	Total number of errors of all types.

Sample Display – show token stats

```
TOKEN RING I/O Statistics:
--------------------------

                   Receive    Receive  Transmit   Transmit   MAC Rx     Total
Slot Conn Circuit   Bytes     Frames     Bytes     Frames    Frames    Errors
---- ---- ------- ---------- --------- ---------- --------- --------- ---------
   4    1 O41      418532016   5550944  632650147   8414845      2327         0
   4    2 O42      597724135   7941684  453448487   6024141      2347         4

    2 entries in table.
```

stats line [**circuit** *<circuit name>*]

Displays Token Ring line statistical information for all Token Ring circuits or for a specific circuit. The table contains the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier: 1 or 2.
Circuit	Name of the circuit associated with this line.
ARI/FCI Errors	Number of times this station has received both an AMP MAC frame and an SMP MAC frame with the a & c bits clear or more than one SMP MAC frame with the a & c bits clear without an intervening AMP MAC frame. This condition indicates that the upstream neighbor is unable to set the a & c bits in a frame that it has copied.
Frame Copied Err	Number of frames addressed to this station that had their a & c bits previously set.
Token Errors	Number of token protocol errors; relevant only when this station is the active monitor.
Soft Errors	Number of soft errors; corresponds to the number of Report Error MAC frames that this station has transmitted.

Sample Display – show token stats line

```
TOKEN RING Line Statistics:
---------------------------

                   ARI/FCI      Frame     Token       Soft
Slot Conn Circuit   Errors   Copied Err   Errors     Errors
---- ---- ------- ---------- ---------- ---------- ----------
   4    1 O41              0          0          0        393
   4    2 O42              3          0          0        373

    2 entries in table.
```

Sample Display – show token stats line circuit o41

```
TOKEN RING Line Statistics:
---------------------------

                   ARI/FCI      Frame     Token       Soft
Slot Conn Circuit   Errors   Copied Err   Errors     Errors
---- ---- ------- ---------- ---------- ---------- ----------
   4    1 O41              0          0          3        393

Found     1 match out of     2 entries in table.
```

stats ring [**circuit** *<circuit name>*]

Displays Token Ring ring statistical information for all Token Ring circuits or for a specific circuit. The table contains the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector's instance identifier — 1 or 2.
Circuit	Name of the circuit associated with this line.
Beacon Events	Number of events causing the adapter to transmit Beacon Frames. Beacon frames indicate that the interface doesn't see the token. If this count goes up, contact your Bay Networks Technical Response Center.
Signal Losses	Number of ring signal losses detected.
Auto Removes	Number of times lobe wrap tests failed during beacon autoremoval.
Removes Recvd	Number of Remove Ring Station MAC frames received. Each frame causes this station to leave the ring.
Single Statns	Number of interrupts caused by a change to ring status while the adapter is the only station on the ring.
Cable Faults	Number of interrupts caused by opens or shorts (cable faults) between the adapter and the MAU.
Ring Recvrys	Number of Claim Token MAC frames (ring recoveries) observed on the ring.

Sample Display – show token stats ring

```
TOKEN RING Ring Statistics:
---------------------------

                  Beacon  Signal   Auto   Removes Single   Cable   Ring
Slot Conn Circuit Events  Losses  Removes  Recvd  Statns  Faults  Recvrys
---- ---- ------- ------- ------- ------- ------- ------- ------- -------
   4    1 O41           0       0       0       0       3       0       1
   4    2 O42           0       0       0       0       0       0       2

    2 entries in table.
```

Sample Display – show token stats ring circuit o41

```
TOKEN RING Ring Statistics:
---------------------------

                  Beacon  Signal   Auto   Removes Single   Cable   Ring
Slot Conn Circuit Events  Losses  Removes  Recvd  Statns  Faults  Recvrys
---- ---- ------- ------- ------- ------- ------- ------- ------- -------
   4    1 O41           0       0       0       0       3       0       1

Found     1 match out of     2 entries in table.
```

system errors [**circuit** *<circuit name>*]

Displays statistical information about general interface errors for all circuits or for a specific circuit. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier: 1 or 2.
Circuit	Name of the circuit associated with this line.
Adapter Checks	Number of internal adapter errors that have caused adapter failures.
DMA Bus Errors	Number of bus errors during DMA that do not exceed threshold.
DMA Parity Errors	Number of parity errors during DMA that do not exceed threshold.
Command Timeouts	Number of times a command timeout has caused the interface to reinitialize.
Host Iface Errors	Number of times a receive-host interface error has caused the interface to reinitialize.

Sample Display – show token system errors

```
TOKEN RING System Errors:
-------------------------

                   Adapter    DMA Bus   DMA Parity  Command   Host Iface
Slot Conn Circuit   Checks     Errors     Errors    Timeouts    Errors
---- ---- ------- ---------- ---------- ---------- ---------- ----------
   4    1 O41              0          0          0          0          0
   4    2 O42              0          0          0          0          0

    2 entries in table.
```

Sample Display – show token system errors circuit o41

```
TOKEN RING System Errors:
-------------------------

                   Adapter    DMA Bus   DMA Parity  Command   Host Iface
Slot Conn Circuit   Checks     Errors     Errors    Timeouts    Errors
---- ---- ------- ---------- ---------- ---------- ---------- ----------
   4    1 O41              0          0          0          0          0

Found     1 match out of     2 entries in table.
```

transmit errors [**circuit** *<circuit name>*]

Displays statistical information about transmission errors for all circuits or for a specific circuit. The table includes the following information:

Slot	Slot identifier; ranges from 1 to 14.
Conn	Connector identifier — 1 or 2.

Circuit	Name of the circuit associated with this line.
Lost Frame Errors	Number of outbound frames whose transmission failed because they were corrupted on their trip around the Token Ring. The interface detects this while stripping a frame off of the ring. In small quantities, this error indicates small disturbances on the Token Ring.

Sample Display – show token transmit

```
TOKEN RING Transmit Errors:
---------------------------
                      Lost
Slot Conn Circuit Frame Errs
---- ---- ------- ----------
   4    1 O41              0
   4    2 O42              0
2 entries in table.
```

Sample Display – show token transmit errors circuit o41

```
TOKEN RING Transmit Errors:
---------------------------

                      Lost
Slot Conn Circuit Frame Errs
---- ---- ------- ----------
   4    1 O41              0

Found     1 match out of     2 entries in table.
```

version

Displays the version number and modification date of the *token.bat* script.

Sample Display – show token version

```
token.bat Version: 1.7 Date: 10/31/94.
```

show vines

The **show vines** *<option>* commands display information about Virtual Networking System (VINES) services on a Bay Networks router. For detailed information, refer to *Configuring VINES Services*.

The **show vines** command supports the following subcommand options:

alerts	stats datagrams
base	stats echo [<circuit name>]
circuit [<circuit name>]	stats fragments
configuration [circuit [<circuit name>]]	stats icp [<circuit name>]
disabled	stats rtp [<circuit name>]
enabled	total neighbors
neighbors [<VINES network address> | <VINES network address> <VINES server ID> | find <VINES network address pattern > [<VINES ID address pattern>]]	total routes
routes [<VINES network address> | find <VINES network address pattern>]	traffic filters

stats [circuit [<circuit name>]]	version
stats arp [<circuit name>]	

alerts

Displays the VINES interfaces that are enabled but not currently up. Use this command to identify interfaces that are not forwarding traffic. The table includes the following information:

Circuit	Name of the circuit the interface runs on.
State	State of the interface: Down, Init (initializing), Not Pres (not yet started), or Up.
Arp	Status of VINES ARP support on this interface: Enabled or Disabled. Enabled means the router can provide address resolution services to client nodes on this interface.
End Station	Status of source routing end station support on this interface: Enabled or Disabled.
Remote Clt Priv	Status of remote client privileges on this network segment: Enabled or Disabled. Enabled means that a client is more than one hop from a VINES server.
Split Horizon	Status of the split horizon parameter: Enabled or Disabled. Enabled means that routes received through an interface will not be included in the routing update packets sent out on that interface.
MAC Address	Media Access Control address of this interface. The router uses this address and its VINES address when transmitting and receiving packets on this interface.

Sample Display – show vines alerts

```
VINES Circuit Table
-------------------

                              End     Remote   Split
 Circuit   State     Arp    Station  Clt Priv Horizon     MAC Address
 -------- -------- -------- -------- -------- -------- -----------------
 E32      Not Pres Disabled Disabled Disabled Disabled (nil)
```

base

Displays the information that the VINES base record contains. The base record controls VINES for the entire system. The table includes the following information:

State	State of the interface: Down, Init (initializing), Not Pres (not yet started), or Up.
Bcast Class	Class of broadcast packets that this node originates. The values are: All, No Charge, Low Cost, LANS, Server All, Server No Charge, Server Low Cost, Server LANS. For definitions, see *Configuring VINES Services*.
Config Netid	Network identifier that the user defines. A null value indicates that the router should assign the network ID rather than the user.
Router Netid	Network identifier that the router defines. If the user configures a network ID, the router adds the Bay Networks code for VINES to the user-configured ID.
RTP Mode	Indicates whether sequenced RTP (Routing Update Protocol) mode or nonsequenced RTP mode will be supported, or both modes will be supported: Sequenced, Non-Sequenced, or Automode (both).
Seq Num	Specifies the current router sequence number.

Sample Display – show vines base

```
VINES Base Record Information
-----------------------------

 Protocol State    Bcast Class   Config Netid Router Netid RTP Mode Seq Num
 -------- -------- -----------   ------------ ------------ -------- ------
 VINES    Up       BCAST         0            810025115    AUTO     2997171688
```

circuit [*<circuit name>*]

Displays information about all VINES circuits or a specific circuit. For column definitions in the display, see the **alerts** command.

Sample Display – show vines circuit

```
VINES Circuit Table
-------------------

                              End     Remote   Split
 Circuit   State     Arp    Station  Clt Priv Horizon     MAC Address
 -------- -------- -------- -------- -------- -------- -----------------
 E31      Up       Disabled Disabled Disabled Disabled 00-00-A2-03-00-6E
 S21      Up       Disabled Disabled Disabled Disabled 00-00-A2-01-4B-4F
 E32      Not Pres Disabled Disabled Disabled Disabled (nil)
```

configuration [**circuit** [*<circuit name>*]]

Displays configurable parameters from the VINES protocol base record. For column definitions in the display, see the **show vines base** command.

Sample Display – show vines configuration

```
VINES Base Record Information
-----------------------------

 Protocol Bcast Class   Config Netid Router Netid RTP Mode Seq Num
 -------- -----------   ------------ ------------ -------- -------
 VINES    BCAST         0            810025115    AUTO     2997171688
```

disabled

Displays VINES interfaces that have been configured as disabled and whose state is not active. For column definitions in the display, see the **alerts** command.

Sample Display – show vines disabled

```
VINES Circuit Table
-------------------

                              End     Remote   Split
 Circuit   State     Arp    Station  Clt Priv Horizon    MAC Address
 -------   -----   -------- -------- -------- -------  -----------------
 E21      Disabled Disabled Disabled Disabled Disabled 00-00-A2-00-8F-71
 S31      Disabled Disabled Disabled Disabled Disabled 00-00-A2-02-BA-22
```

enabled

Displays VINES interfaces that have been configured as enabled and whose state is active. For column definitions in the display, see the **alerts** command.

Sample Display – show vines enabled

```
VINES Circuit Table
-------------------

                              End     Remote   Split
 Circuit   State     Arp    Station  Clt Priv Horizon     MAC Address
 -------- -------- -------- -------- -------- -------- -----------------
 E31      Up       Disabled Disabled Disabled Disabled 00-00-A2-03-00-6E
 S21      Up       Disabled Disabled Disabled Disabled 00-00-A2-01-4B-4F
 E32      Not Pres Disabled Disabled Disabled Disabled (nil)
```

neighbors [*<VINES network address>* | *<VINES network address> <VINES server ID>* | **find** *<VINES network address pattern >* [*<VINES ID address pattern>*]]

Displays VINES neighbor table information. Neighbor entries result from RTP packets received from clients and servers directly adjacent to the router. You can use the following options with the **neighbors** command:

<VINES network address>	Limits the display to neighbors of a specific network.
<VINES network address> <VINES server ID>	Limits the display to a specific neighbor.
find *<vines network address pattern>*	Limits the display to neighbors whose network address matches the given network pattern.
find *<network ID address pattern>*	Limits the display to neighbors whose network ID matches the given ID pattern.

The table includes the following fields:

Network ID	Network identifier of this neighbor.
Subnet ID	Subnetwork identifier of this neighbor.
Type	Type of node, server or client (WorkStat).
Circuit	Name of the circuit connected to this neighbor.
Cost	Cost for reaching this neighbor.
Remote Hw Address	Media Access Control address of the remote system (neighbor).
Nbr State	Current state of NBR: Init (initializing), Full Request, Change Request, or Up.
Nbr Sequence Num	NBR's sequence number.

Sample Display – show vines neighbors

```
VINES Neighbors
---------------

  Network  Subnet                                          Nbr         Nbr
    ID       ID    Type   Circuit  Cost Remote Hw Address   State  Sequence Num
 --------- ------ ------- -------- ---- ----------------- -------- ------------
```

routes [*<VINES network address>* | **find** *<VINES network address pattern>*]

Displays route information from the VINES routing table. The routing table receives routing information through RTP packets sent from servers and other routers. This information includes the known networks, their metrics, and the next-hop gateway for each. You can use the following options with the **routes** command:

<VINES network address>	limits the display to a specific network.
find *<VINES network address pattern>*	limits the display to networks that match the given network address pattern.

The table includes the following fields:

Network ID	Network identifier of the network.
Metric	Routing metric to get to this network.
Gateway Netid	Network ID of the gateway to this network.
Slot #	Number of the slot connected to this network.
Circuit	Name of the circuit connected to this network.
Gateway Hw Addr	Remote Media Access Control address of the gateway to this network.

Sample Display – show vines routes

```
VINES Routes
------------

Network Id Metric Gateway Netid Slot # Circuit   Gateway Hw Addr
---------- ------ ------------ ------ -------- -----------------
17              4 17                2 E21      00-00-A2-00-00-11
624             6 17                2 E21      00-00-A2-00-00-11
625             6 17                2 E21      00-00-A2-00-00-11
1136            8 17                2 E21      00-00-A2-00-00-11
1137            8 17                2 E21      00-00-A2-00-00-11
```

stats [**circuit** [*<circuit name>*]]

Displays basic statistical information, or you can use the **circuit** option to display basic circuit statistics for VINES IP packets within the router.

The table varies according to the options entered. The table from the **stats** command entered without options includes the following information:

Circuit	Name of the circuit this interface runs on.
In Packets	Number of packets received on this interface.
In Errors	Number of packets received in error.
Out Packets	Number of packets transmitted on this interface.

Out Errors	Number of errors on packets transmitted.
Forward Drops	Number of packets dropped because of no forwarding information for the destination.
Zero-Hop Drops	Number of packets dropped because of a zero hop count.

Sample Display – show vines stats

```
VINES Circuit Statistics
-------------------------

             In       In      Out       Out   Forward  Zero-Hop
 Circuit  Packets   Errors  Packets   Errors   Drops    Drops
 -------- -------- -------- -------- -------- -------- --------
 E21        294165        0   268486        0        0        0
 S31        259688        0   274792        3        0        0
 S33          6915        0    14912        1        0        0
```

stats arp [*<circuit name>*]

Displays VINES Address Resolution Protocol (ARP) statistics for the whole router or for a specific circuit.

stats datagrams

Displays basic Receive/Transmit statistics for VINES IP packets within the router.

stats echo [*<circuit name>*]

Displays VINES ECHO Protocol statistics for the whole router or for a specific circuit.

stats fragments

Displays the total number of packets fragmented for transmission (Sync media) and the total number of packets that the router has reassembled.

stats icp [*<circuit name>*]

Displays VINES Internet Control Protocol (ICP) statistics for the whole router.

stats rtp [*<circuit name>*]

Displays VINES Routing Update Protocol (RTP) statistics for the whole router or for a specific circuit.

total neighbors

Displays the total number of entries in the VINES neighbor table.

Sample Display – show vines total neighbors

```
Number of VINES Neighbors:  2
```

total routes

Displays the total number of entries in the VINES route table.

traffic filters

Displays all configured VINES traffic filters for all circuits. The table includes the following information:

Circuit	Identifier of the circuit the filter applies to.
Mode	Status of filter use, which is Enabled (activated) or Disabled (not activated).
Status	Current status of the traffic filter, which is one of the following: • *Active* – Rule is being used. • *Inactive* – Rule is not in use. • *Error* – Application detected an error in the rule.

Rx Matches	Number of packets received that match the rule.
Rule Number	Identifier for the rule.
Fragment Number	Number of a rule fragment — for large rules.

Sample Display – show vines traffic filters

```
VINES Traffic Filters Table
---------------------------

                                Rx      Rule   Fragment
 Circuit    Mode    Status  Matches   Number   Number
 -------  -------- -------- -------- -------- --------
 No entries
```

version

Displays the current version and modification date of the *vines.bat* script.

Sample Display – show vines version

```
VINES.bat Version: 1.16 Date: 12/02/94.
```

show wcp

The **show wcp** *<option>* commands display information about Bay Networks data compression (WCP) service, which provides a near-reliable transfer mechanism for transporting compressed packets. For more information about WCP, refer to *Configuring Data Compression Services*.

The **show wcp** command supports the following subcommand options:

circuits [<circuit name>]	vcs [<line number.llindex.circuit number.VC ID>]
lines [<line>]	version
stats [errors] [<line number.llindex.circuit number.VC ID>]	

circuits [*<circuit name>*]

Displays information about all WCP circuits or a specific WCP circuit.

Circuit Name	Circuit name of this interface.
Circuit Number	Circuit number associated with the circuit name.
Enable	Indicates whether compression is enabled on this circuit.
Compression Mode	Compression mode for this circuit: CPC (Continuous Packet Compression), PPC (Packet by Packet Compression), or Inherit. Circuit entries have an additional value of Inherit, which means that the circuit takes on whatever value the corresponding line entry has in the Compression Mode or History Size according to case.
History Size	History size for the compression facility: 32 KB, 8 KB, or Inherit.

Sample Display – show wcp circuits

```
WCP Circuit Entries
-------------------

 Circuit Circuit          Compression History
  Name    Number  Enable      Mode      Size
-------- ------- -------- ----------- -------
S31            2 Enabled  Inherit     Inherit
S41            3 Enabled  Inherit     Inherit

2 WCP circuit(s) configured.
```

lines [*<line>*]

Displays information about WCP lines for all configured lines or for a specified line.

<line>	Limits the display to the specified line.

In addition to the information described under the **circuits** command, this command displays the following information:

Line Number	Line number for the physical WCP port.
LLIndex	Logical line index. Most lines have an LLIndex of 0.
Slot	Slot number.
Module	Module number.
Conn	Connector number.
Enable	Indicates whether the compression facility is enabled or disabled for this line.
Compression Mode	Compression mode for this circuit: CPC (Continuous Packet Compression) or PPC (Packet by Packet Compression).
History Size	History size for the compression facility: 32 KB or 8 KB.
Buffer Size	Buffer size allocated for the lines displayed: Very Large, Large, Normal, or None.

Sample Display – show wcp lines

```
WCP Line Entries
----------------

   Line                                          Compression History   Buffer
  Number   LLIndex Slot Module Conn   Enable      Mode      Size     Size
---------- ------- ---- ------ ----- -------- ----------- ------- ----------
    203101       0    3      1 COM1  Disabled CPC         32K     Normal
    204101       0    4      1 COM1  Enabled  CPC         32K     Normal

2 WCP line(s) configured.
```

vcs [*<line number.llindex.circuit number.VC ID>*]

Displays configuration information for all existing WCP virtual circuits. This command displays the following information:

Line Number	Line number for the physical WCP port.
LLIndex	Logical line index. Most lines have an LLIndex of 0.
Cct Name	Circuit name.
Vc Id	Virtual circuit ID.
Compression State	Virtual circuit compression state: Data (operational state), Disabled, Disconnected, Init (initializing), or Rexmit_Nak (retransmit ting).
Decompression State	Virtual circuit decompression state: Data, Disabled, Disconnected, Init (initializing), Rexmit, Reset, Connecting, Disconnecting.
Compression Mode	Compression mode for this virtual circuit: CPC (Continuous Packet Compression) or PPC (Packet by Packet Compression).
History Size	History size for this virtual circuit: 32 KB or 8 KB.

Sample Display – show wcp vcs

```
WCP Virtual Circuit Entries
---------------------------

   Line                        Vc   Compression Decompression Compression History
  Number   LLIndex Cct Name    Id      State        State         Mode      Size
---------- ------- -------- ----- ------------ ------------ ----------- ------
-
    201301       0 Demand 2     0   Data         Data          CPC         32K

1 WCP virtual circuit(s) configured
```

stats [**errors**] [*<line number.llindex.circuit number.VC ID>*]

Compression Ratio	Compressor In divided by Compressor Out.
Decompression Ratio	Compressor Out divided by Compressor In.
Compressor In	Number of bytes inputed into the compression facility.
Compressor Out	Number of bytes outputed from the compression facility.
Decompressor In	Number of bytes inputed into the decompression facility.
Decompressor Out	Number of bytes outputed from the decompression facility.
CPC Packets Transmitted	Number of CPC packets sent to the destination.
CPC Packets Received	Number of CPC packets received from the source.
PPC Packets Transmitted	Number of PPC packets sent to the destination.
PPC Packets Received	Number of PPC packets received from the source.

Sample Display – show wcp stats

```
WCP Performance And Data Statistics
-----------------------------------

   Line                        Vc  Compression Decompression
  Number   LLIndex Circuit    Id     Ratio        Ratio
---------- ------- -------- ----- ----------- -------------
    201301       0 Demand 2     0       6.3:1         6.5:1

   Compressor   Compressor  Decompressor Decompressor
       In           Out          In           Out
  ------------ ------------ ------------ ------------
          8732         1372         1334         8732

   CPC Packets  CPC Packets  PPC Packets  PPC Packets
   Transmitted   Received    Transmitted   Received
  ------------ ------------ ------------ ------------
            18           18            0            0

1 Entry.
```

Sample Display – show wcp stats 201301.0.2.0

```
WCP Performance And Data Statistics
-----------------------------------

   Line                        Vc  Compression Decompression
  Number   LLIndex Circuit    Id     Ratio        Ratio
---------- ------- -------- ----- ----------- -------------
    201301       0 Demand 2     0       8.3:1         8.3:1

   Compressor   Compressor  Decompressor Decompressor
       In           Out          In           Out
  ------------ ------------ ------------ ------------
         13098         1560         1566        13098

   CPC Packets  CPC Packets  PPC Packets  PPC Packets
   Transmitted   Received    Transmitted   Received
  ------------ ------------ ------------ ------------
            27           27            0            0

1 Entry.
```

Sample Display – show wcp stats errors

```
WCP Error Statistics
--------------------
   Line                        Vc  Compression Decompression
  Number   LLIndex Circuit    Id     Ratio        Ratio
---------- ------- -------- ----- ----------- -------------
    201301       0 Demand 2     0       6.3:1         6.5:1
AntiExp Packets AntiExp Packets  Reset Packets   Reset Packets
    Transmitted       Received      Transmitted       Received
  --------------- --------------- --------------- ---------------
                0               0               0               0
    Rexmit Reqs      RexmitReqs     RexmitNaks       RexmitNaks
    Transmitted       Received      Transmitted       Received
  --------------- --------------- --------------- ---------------
                0               0               0               0
    DataOutOfSeq   RexmitOutOfSeq  RexmitTimeouts    ExceededKs
  --------------- --------------- --------------- ---------------
                0               0               0               0
1 Entry.
```

Sample Display – show wcp stats errors 201301.0.2.0

```
WCP Error Statistics
--------------------

   Line                        Vc  Compression Decompression
  Number   LLIndex Circuit    Id     Ratio        Ratio
---------- ------- -------- ----- ----------- -------------
    201301       0 Demand 2     0      10.0:1         9.7:1

  AntiExp Packets AntiExp Packets  Reset Packets   Reset Packets
    Transmitted       Received      Transmitted       Received
  --------------- --------------- --------------- ---------------
                0               0               0               0

    Rexmit Reqs      RexmitReqs     RexmitNaks       RexmitNaks
    Transmitted       Received      Transmitted       Received
  --------------- --------------- --------------- ---------------
                0               0               0               0

    DataOutOfSeq   RexmitOutOfSeq  RexmitTimeouts    ExceededKs
  --------------- --------------- --------------- ---------------
                0               0               0               0

1 Entry.
```

version

Displays the current version number and date of the *wcp.bat* script.

Sample Display – show wcp version

```
WCP.bat Version:  1.5 Date: 1/17/95.
```

show x25

The **show x25** *<option>* commands display information about X.25 services. For complete information about the Bay Networks implementation of X.25 services, refer to *Configuring X.25 Services*.

The **show x25** command supports the following subcommand options:

alerts	services [<slot.connector.circuit name>]
base	stats [<slot.connector>]
configuration [<slot.connector>]	version
connections [<slot.connector>]	virtual circuit | vc [<slot.connector.circuit name>]
lines [<slot.connector>]	

alerts

Displays the abnormal conditions in the packet level. Use the display to determine why the packet level is not in data transfer state or why virtual circuits (VCs) have not been established. The table contains the following information:

Line	Line number of the driver X.25 runs on.
Restarts RX/TX	Number of restart packets sent and received over this VC.
Resets RX/TX	Number of reset packets sent and received over this VC.
Rejects RX/TX	Number of reject packets sent and received over this VC.
Intrpts RX/TX	Number of interrupt packets sent and received over this VC.

Failed VC Connections	Number of unsuccessful VC connections performed since starting up.
Abnormal VC Disconnects	Number of abnormal VC disconnections.
SYNC Driver State	State of the driver: Down, Init (initializing), Not Pres (not yet started), or Up.

Sample Display – show x25 alerts

```
X.25 Packet Level Alert Status
------------------------------

      Restarts Resets Rejects Intrpts  Failed VC  Abnormal VC SYNC Driver
Line   RX/TX   RX/TX   RX/TX   RX/TX  Connections Disconnects    State
----- -------- ------ ------- ------- ----------- ----------- -----------
 2.1         4      0       0       0           0           0 Up
1 Alert Entries.
```

base

Displays the state of the X.25 protocol in the base record. The base record controls X.25 for the entire system. State is Disabled, Down, Init (initializing), Not Present (configured but not yet started), or Up.

Sample Display – show x25 base

```
X.25 Base Record Information
----------------------------

Protocol    State
-------- -----------
X.25     Up
```

configuration [*<slot.connector>*]

Displays the basic configuration information for all X.25 lines or displays that only the slot and connector specified. Each line is associated with the services available on that line and the number of virtual circuits configured. The table includes the following information for the protocol:

Slot.Connector.Line.LLIndex	The identity of the line. This includes four parts as follows: slot number, connector number, number of the line that the driver X.25 runs on, lower-layer index from the layer immediately below X.25 on the protocol stack. If the lower layer is a driver, the index is 0.
Services Available	Type of service available on this line: PDN, DDN, or PTOP.
LCN's Configured	Number of logical channels configured; includes LCNs for incoming, bidirectional, and outgoing VCs.

Sample Display – show x25 configuration 2.1

```
X.25 Configuration
------------------

                                    Services    LCN's
Protocol Slot.Connector.Line.LLIndex Available Configured
-------- --------------------------- --------- ----------
X.25     2.1.202101.0                PDN                4

1 Configuration Entries.
```

connections [*<slot.connector>*]

Displays the virtual circuit connect and disconnect counts for normal and abnormal conditions for all lines or for a specific line (slot and connector). The table includes the following information:

Line	Line slot and connector.
Total VC Connections	Total number of virtual connections performed since starting up.

Failed VC Connections	Number of unsuccessful VC connections performed since starting up.
Normal VC Disconnects	Number of normal VC disconnections.
Abnormal VC Disconnects	Number of abnormal VC disconnections.

Sample Display – show x25 connections

```
X.25 Virtual Circuit Connections

       Total VC    Failed VC   Normal VC  Abnormal VC
Line  Connections Connections Disconnects Disconnects
----- ----------- ----------- ----------- -----------
2.1            6           0           6           0

1 Connection Entries.
```

lines [*<slot.connector>*]

Displays the packet level configuration for all lines or for a specific line (slot and connector). You can modify performance by turning Stats on or off. The table includes the following information:

Line	Line slot and connector.
State	State of the line: Disabled, Down, Init (initializing), Not Present (configured but not yet started), or Up.
Network type	Type of network, which is one of the following: • *DTE* – Data Terminating Equipment without restart procedure. • *DCE* – Data Circuit Equipment. • *DTE/RES* – Data Terminating Equipment with restart procedure. • *DTE/DTE* – Unassigned roles.
Def Window	Maximum window size allowed for each call if the line uses flow control negotiation. If the maximum packet length (Def Packet) is 128 or more, an extended window size is up to 127. Otherwise the maximum is 7.
Def Packet	Maximum packet length allowed for each call if the line uses flow control negotiation: 16, 32, 64, 128, 256, 512, 1024, 2068, 4096.

Standard	Network standard to be used on this line: NONE, ISO, or DOD.
Facilities	Status of this line's support for user-configurable facilities (such as flow control negotiation): ON or OFF.
Year	Year of CCITT conformance: 1980, 1984 or 1988.
Local X.121 Address	Local X.121 address of the line.
Stats	Setting of statistics gathering: ON or OFF. Turning Stats to OFF can improve performance.

Sample Display – show x25 line

```
X.25 Packet Line Configuration

                  Network  Def    Def    Standard         Local X.121
Line     State     Type   Window Packet Facilities Year     Address     Stats
----- ----------- ------- ------ ------ ---------- ---- --------------- -----
 2.1  Up          DTE/RES 7      7      NONE / OFF 1988 8217021         ON

1 Line Entries.
```

services [*<slot.connector.circuit name>*]

Displays the X.25 services available on all lines or a specific line. The table includes the following information:

Type	Type of service used to connect to the remote address specified in this service record — PDN, DDN, or PTOP.
Line	Line slot and connector numbers that make up parts of the line's identification.
State	State of the line, which is Disabled, Down, Init (initializing), Not Present (configured but not yet started), or Up.
Circuit	Circuit number part of the line's identification.
Facilities	Status of this service's support for facilities (such as flow control) — ON or OFF.
WCP	Data compression ON or OFF.
Remote X.121 Address	Remote X.121 address for this service.

Remote IP Address	Remote internet (IP) address for a PDN or DDN.
Index	Lower layer index from the layer immediately below X.25 on the protocol stack. If the lower layer is a driver, the index is 0.

Sample Display – show x25 services

```
X.25 Network Services Configuration
-----------------------------------

                                        Remote X.121      Remote IP
Type Line     State    Circuit Fac WCP     Address         Address     Index
---- ----- ----------- ------- --- --- --------------- --------------- -----
PTOP  4.2  Up                4 OFF OFF 111111          0.0.0.0             1

1 Service Entries.
```

stats [*<slot.connector>*]

Displays the packet level statistics for all lines or for a specified line (slot and connector). The table includes the following information:

Line	Slot and connector numbers for the line.
Max LCN's	Maximum number of logical channels allowed on this line.
LCN's Active	Number of active logical channels on this line.
RX Packets	Number of data packets received on this line since starting up.
TX Packets	Number of data packets transmitted on this line since starting up.
Restarts RX/TX	Number of restart packets sent and received on this line.
Resets RX/TX	Number of reset packets sent and received on this line.
Rejects RX/TX	Number of reject packets sent and received on this line.
Intrpts RX/TX	Number of interrupt packets sent and received on this line.

Sample Display – show x25 stats

```
X.25 Packet Line Statistics
---------------------------

       Max  LCN's     RX       TX    Restarts Resets Rejects Intrpts
Line  LCN's Active Packets  Packets   RX/TX   RX/TX   RX/TX   RX/TX
----- ----- ------ -------- -------- -------- ------ ------- -------
 2.1      4      0        1        1        2      0       0       0

1 Stats Entries.
```

version

Displays the current version and the modification date of the *x25.bat* script.

Sample Display – show x25 version

```
X25.bat Version:  1.9  Date:  10/31/94.
```

virtual circuit | vc [<*slot.connector.circuit name*>]

Displays all X.25 virtual circuits currently in use and their statistics, or displays a specified virtual circuit. The table includes the following information:

Line	Line number for this virtual circuit.
LCN #	Logical channel number for this virtual circuit.
VC Circuit	Virtual circuit number, selected from a user-specified range of virtual circuit numbers.
RX Packets	Number of data packets received on this line since starting up.
TX Packets	Number of data packets transmitted on this line since starting up.
Dropped Packets	Number of application or redirector packets dropped.
Resets RX/TX	Number of reset packets sent and received on this line.

Rejects RX/TX	Number of reject packets sent and received on this line.
Intrpts RX/TX	Number of interrupt packets sent and received on this line.

Sample Display – show x25 vc

```
X.25 Virtual Circuit Statistics
-------------------------------


              VC       RX       TX    Dropped Resets Rejects Intrpts
Line  LCN # Circuit  Packets  Packets Packets RX/TX   RX/TX   RX/TX
----- ----- ------- -------- -------- ------- ------ ------- -------
2.1       4       2      420      420       0      0       0       0

1 VC Entries.
```

show xb

The **show xb** *<option>* commands display information about the Translation Bridge (XB). For detailed information on the Bay Networks implementation of the Translation Bridge, refer to *Configuring Bridging Services*.

The **show xb** command supports the following subcommand options:

alerts	sr [circuit <circuit name>]
base	sr stats [circuit <circuit name>]
configuration	stations
disabled	tb [circuit <circuit name>]
enabled	tb stats [circuit <circuit name>]
rifs	version
saps	

alerts

Displays Source Routing and Transparent Bridge interfaces that have been enabled but are not up. Mode is always Enabled and State is always Down. The table can help determine which Source Routing and Transparent Bridge interfaces are not forwarding traffic. The Source Routing Interfaces table includes all interfaces that have translation enabled on the corresponding Transparent Bridge interface. The Transparent Bridge Interfaces table shows only the interfaces that have Translation disabled.

Sample Display – show xb alerts

```
Source Routing Circuits
-----------------------

Circuit   Mode    State
-------  -------  -----
O31      Enabled  Down

1 entries found.

Transparent Bridge Circuits
---------------------------

Circuit   Mode    State
-------  -------  -----
E22      Disabled  Down

1 entries found.
```

base

Displays global Translation Bridge information. The base record controls Translation Bridge for the entire system. Mode is Enabled or Disabled. This display indicates whether or not the Translation Bridge is operational.

Sample Display – show xb base

```
Translation Bridge (XB) Base Record Information
-----------------------------------------------

     Protocol         Mode
------------------   -------
Translation Bridge   Enabled
```

configuration

Displays how a Translation Bridge has been configured globally. The table includes the following information:

Mode	Status of the XB: Enabled or Disabled.
Transparent Bridge Ring ID	Ring number for the entire translation bridge network; ranges from 0x001 to 0xFFF.
Default Mode	Default type of frame to be sent to the transparently bridged network: Ethernet or 802.3.
Broadcast Conversion	Status of broadcast conversion: Enabled or Disabled. When enabled, the translation bridge converts broadcast addresses between 802.3 and 802.5.
Aging Time	Number of seconds an address entry remains in the translation bridge's forwarding or RIF table when no data from that address has been received — between 2 and 600 seconds.

Sample Display – show xb configuration

```
Translation Bridge (XB) Base Record Configuration
-------------------------------------------------

             Transparent
               Bridge      Default    Broadcast  Aging
 Mode          Ring ID      Mode      Conversion Time
-------      -----------   -------    ---------- -----
Enabled            0xFFE   Ethernet   Enabled      300
```

disabled

Displays the Source Routing and Transparent Bridge circuits that are disabled. Mode is always Disabled and State is always Down. Use this display to identify the Source Route or Transparent Bridge circuits that are not enabled. The Source Routing Circuits table includes all circuits that have translation enabled on the corresponding Transparent Bridge circuit. The Transparent Bridge Circuits table shows only the circuits that have Translation disabled.

Sample Display – show xb disabled

```
Source Routing Circuits
-----------------------

Circuit   Mode    State
-------  -------  -----
O31      Disabled Down

1 entries found.

Transparent Bridge Circuits
---------------------------

Circuit   Mode    State
-------  -------  -----
E22      Disabled Down

1 entries found.
```

enabled

Display the Source Routing and Transparent Bridge circuits that are enabled. Mode is always Enabled and State is either Up or Down. Use this display to identify the Source Route or Transparent Bridge circuits that are currently enabled. The Source Routing Interfaces table includes all circuits that have translation enabled on the corresponding Transparent Bridge circuit. The Transparent Bridge Circuits table shows only the circuits that have Translation disabled.

Sample Display – show xb enabled

```
Source Routing Circuits
-----------------------

Circuit   Mode    State
-------  -------  -----
O31      Enabled  Up

1 entries found.

Transparent Bridge Circuits
---------------------------

Circuit   Mode    State
-------  -------  -----
E22      Enabled  Up

1 entries found.
```

rifs

Displays the Source Routing Routing Information Fields (RIFs) that the Translation Bridge has learned. Each MAC address is associated with only one RIF. The table includes the following information:

MAC Address	This address is in Ethernet format.
RIF	The first two bytes of the RIF are the routing control field and the remainder is the route indicator, which consists of ring/bridge pairs. The first three nibbles of the route indicator are the ring ID and the last nibble is the bridge ID. Use this information to identify the stations that the router has heard from.

Sample Display – show xb rifs

```
Translation Bridge (XB) Learned RIFs
------------------------------------

   MAC Address                                RIF
-----------------    ------------------------------------------------------
00-00-84-00-88-80    0x0810 0xFFEA 0x101A 0x0030

1 entries found.
```

saps

Displays the SAPs that the Translation Bridge will convert. The SAP value can range from 0x00 to 0xFF. Use this display to determine which packets get filtered and which get converted.

Sample Display – show xb saps

```
Translation Bridge (XB) SAPS
----------------------------
0x00
0x04
0x08
0x0C
0xF0
0xFC

6 entries found.
```

sr [circuit *<circuit name>*]

Displays all Source Routing interfaces that are participating in the Translation Bridge. You can also display only a specified circuit. Mode is Enabled or Disabled and State is Down or Up. Use this display to identify the Source Route interfaces that are present and part of the Translation Bridge.

Sample Display – show xb sr circuit o31

```
Source Routing Circuits
-----------------------

Circuit   Mode    State
-------  -------  -----
O31      Enabled  Up

1 entries found.
```

sr stats [**circuit** *<circuit name>*]

Displays statistical information about traffic flowing through the Translation Bridge. Each count represents one packet. For frames traveling from a Source Route network to a Transparent Bridge network, the counts Source Routing In Frames, Transparent Bridge In Frames, and Translation Bridge in Frames should all increment. For frames traveling from the Transparent Bridge network to the Source Route network, the count Source Routing Out Frames should increment. The Translation Bridge Frames Not Converted count will increment for packets that the Translation Bridge cannot convert. Use this display to determine whether a Translation Bridge Source Route interface is converting.

Sample Display – show xb sr stats circuit o31

```
Source Routing Circuits
-----------------------

                                                        Translation
           Source     Source   Transparent Translation   Bridge
           Routing   Routing     Bridge      Bridge    Frames Not
 Circuit  In Frames Out Frames  In Frames   In Frames   Converted
 -------  --------- ---------- ----------- ----------- -----------
 O31              1          0           1           1           0

1 entries found.
```

stations

Displays how the Translation Bridge will convert packets destined for Ethernet stations. MAC Address will be in default format and Station Type is either Ethernet or 802.3. Use the display to determine how packets are converted.

Sample Display – show xb stations

```
Translation Bridge (XB) Station Types
-------------------------------------

   MAC Address       Station Type
-----------------    ------------
44-44-44-44-44-43    Ethernet
44-44-44-44-44-44    Ethernet

2 entries found.
```

tb [**circuit** <*circuit name*>]

Displays all Transparent Bridge circuits that have not been configured for translation. You can also display a specific circuit. Mode is Enabled or Disabled and State is Down, Up, Init (initializing), or Not Present. Use this display to identify the Transparent Bridge interfaces that are present.

Sample Display – show xb tb

```
Transparent Bridge Circuits
---------------------------

 Circuit    Mode    State
 -------- -------- --------
 202102.0 Enabled  Down
 *.40
 202102.0 Enabled  Down
 *.41
 202102.0 Enabled  Down
 *.40
 S21      Enabled  Up
 E32      Enabled  Down
 202102.0 Enabled  Down
 *.41
6 entries found.
```

tb stats [**circuit** *<circuit name>*]

Displays statistical information about traffic flowing through the Translation Bridge. Each count represents one packet. For frames traveling from a Transparent Bridge network to a Source Route network, the count Transparent Bridge In Frames should increment. For frames traveling from the Source Route network to the Transparent Bridge network, the count Transparent Bridge Out Frames should increment. Use the display to determine whether a Translation Bridge–Transparent Bridge circuit is converting.

Sample Display – show xb tb stats circuit e22

```
Transparent Bridge Circuits
---------------------------

          Transparent Transparent
             Bridge      Bridge
 Circuit   In Frames   Out Frames
 -------  ----------- -----------
 E22               0           2
1 entries found.
```

version

Displays the current version and modification date of the *xb.bat* script.

Sample Display – show xb version

```
XB.bat Version: 1.7 Date: 10/31/94.
```

show xns

The **show xns** *<option>* commands display information about the Xerox Network Systems (XNS) services on Bay Networks routers. For more details on XNS parameters, refer to *Configuring XNS Services.*

The **show xns** command supports the following subcommand options:

alerts	rip [alerts | disabled enabled | <XNS network>]
adjacent hosts	routes [<network address> | find <address pattern>]
base	static routes
circuit [<circuit name>]	stats [circuit <circuit name>]
configuration [circuit [<circuit name>]]	stats errors [<circuit name>]
disabled	traffic filters [<circuit name>]
enabled	version

alerts

Displays the XNS interfaces that are enabled but not currently up. Use this command to identify interfaces that are not forwarding traffic. The table includes the following information:

Circuit	Name of the circuit.
State	State of the interface, which will be Down.
XNS Address	Network address of the XNS interface.
Encaps Method	Level 0 protocol, frame format, or encapsulation that the circuit uses; is Ethernet, Token Ring, FDDI, Frame Relay, or SMDS.

Sample Display – show xns alerts

```
XNS Circuit Table Alerts
------------------------

Circuit   State       XNS Address       Encaps Method
-------- -------- ------------------- ----------------

0 Entrie(s) found.
```

adjacent hosts

Displays the configurable parameters for each statically configured adjacent host (router) from which hellos have been received. The table includes the following information:

Host Network Address	Network address of the adjacent router.
Host ID Address	Host identifier for the adjacent router.
XNS Interface	XNS address of the network device.
WAN Address	Corresponding WAN address of the adjacent XNS-level host ID.

Sample Display – show xns adjacent hosts

```
XNS Static Adjacent Hosts
-------------------------

Host Network
  Address       Host ID Address   XNS Interface     WAN Address
------------    ---------------   -------------     -----------
  0x00000002     0x0000A2020202      0x00000002            0x02
  0x00000003     0x0000A2030303      0x00000003            0x04
```

base

Displays base record information for XNS. In this case, Protocol is always XNS. The table includes the following information:

State	State of the protocol, which is Down, Init (initializing), Not Pres (not yet started), or Up.
Route Method	Routing method that the XNS protocol uses. The protocol uses vanilla XNS or Ungermann-Bass functionality only.
Total Routes	Total number of networks in the routing table.
Total Hosts	Total number of adjacent routers.

Sample Display – show xns base

```
XNS Protocol
------------
                                        Total    Total
Protocol  State        Route Method     Routes   Hosts
--------  --------    ---------------- -------- --------
  XNS       Up          Vanilla XNS           5       22
```

circuit [*<circuit name>*]

Displays parameters for all XNS circuits or for a specific circuit. For column definitions in the display, see the **alerts** command.

Sample Display – show xns circuit

```
XNS Circuit Table
-----------------

 Circuit   State       XNS Address       Encaps Method
 -------- -------- -------------------- ----------------
   E21      Up         0x00000001           Ethernet
   E31      Up         0x00000002           Ethernet
   E22      Up         0x00000003           Ethernet
3 Total entrie(s).
```

configuration [**circuit** [*<circuit name>*]]

Displays the configurable parameters within the XNS base record for all circuits or for a specific circuit. You can use the following options with the **configuration** command. The table includes the following information for the protocol:

Route Method	Routing method that the XNS protocol uses; vanilla XNS or Ungermann-Bass functionality only.
Router ID	Host ID of the router.

Sample Display – show xns configuration

```
XNS Protocol
------------

Protocol   Route Method      Router ID
-------- ----------------    ---------
  XNS      Vanilla XNS      0x0000010203
```

disabled

Displays XNS circuits that are disabled and down. In this case, State is always Down. For column definitions in the display, see the **alerts** command.

Sample Display – show xns disabled

```
XNS: Table of Disabled Circuits
-------------------------------

Circuit   State       XNS Address       Encaps Method
-------- -------- -------------------- ----------------
   E21     Down          0x00000001           Ethernet
   E31     Down          0x00000002           Ethernet
   E22     Down          0x00000003           Ethernet

3 Entrie(s) found.
```

enabled

Displays all XNS circuits that have their disable/enable parameter set to enable and their state is up. For column definitions in the display, see the **alerts** command.

Sample Display – show xns enabled

```
XNS: Table of Enabled Circuits
------------------------------

Circuit   State       XNS Address       Encaps Method
-------- -------- -------------------- ----------------
   E21      Up         0x00000001           Ethernet
   E31      Up         0x00000002           Ethernet
   E22      Up         0x00000003           Ethernet

     3 Entrie(s) found.
```

rip [**alerts** | **disabled enabled** | *<XNS network>*]

Displays the status of XNS Routing Information Protocol (RIP) interfaces. Entered without options, the **rip** command displays all XNS RIP interfaces. State is Down, Init (initializing), Not Pres (not yet started), or Up. You can use the following options with the **rip** command.

alerts	Displays XNS RIP interfaces that are enabled but their state is not up.
disabled	Displays XNS RIP interfaces that are disabled.
enabled	Displays XNS RIP interfaces that are enabled.
<XNS network>	Limits the display to the XNS RIP interfaces in the specified XNS network.

Sample Display – show xns rip

```
XNS RIP Interface Table
-----------------------

RIP Interface    State
-------------- ----------
 0x00000001       Up
 0x00000002       Up
 0x00000003       Up

3 Total entrie(s).
```

routes [*<network address>* | **find** *<address pattern>*]

Displays information from the XNS routing table. The table acquires routes through the XNS Routing Information Protocol, XNS interface configurations, or from static configuration. You can use the following options with the **routes** command. The table includes the following information:

Destination	Network address of the route's destination.
Next Hop Host	Host ID of the next-hop node to which packets for the destination are forwarded.
Method	Routing mechanism through which the router obtained this routing information; is one of the following: • *Local* – From the network that the router is attached to. • *NetMgmt* – Through a network management application. • *RIP* – Through the Routing Information Protocol.
Age	Number of seconds since the router last updated or verified this route. The interpretation of "too old" depends upon the source of the routing information.
Metric	Primary routing metric for this route; depends on the routing method displayed under Method. A value of -1 means that this route is unreachable.

Sample Display – show xns routes

```
XNS Routing Table Entries
--------------------------

Destination   Next Hop Host   Method     Age    Metric
-----------   -------------   ------     ---    ------
0x00000001    0x0000A2010203   Local      0        1
0x00000002    0x0000A2010203   Local      0        1
0x00000003    0x0000A2010203   Local      0        1
0x00000005    0x0000A2030303   Local      0        3
0x00000006    0x0000A2020202   Local      0        1

5 Routes in table.
```

static routes

Displays all configured XNS static routes. The table includes the following information:

XNS Address	Destination network address of this route. The value 0.0.0.0 indicates a default route.
Nexthop Interface	Configured network address of the local interface through which the router reaches the next hop.
Nexthop ID	Host identifier of the next hop.
Metric	Primary routing metric for this route; depends on the routing method displayed under Method. A value of -1 means that this metric is not used.
State	State of the next-hop interface, which is Enabled or Disabled.

Sample Display – show xns static

```
XNS Static Routes
-----------------

  XNS Address    Nexthop Interface    Nexthop ID     Metric   State
--------------- ----------------- ---------------- -------- --------
0x00000005         0x00000003       0x0000A2030303     3      Enabled
0x00000006         0x00000002       0x0000A2020202     0      Enabled

2 Static Routes configured.
```

stats [circuit *<circuit name>*]

Displays general forwarding statistics for all XNS circuits or for a specific circuit. The table includes the following information:

Circuit	Name of the circuit this interface runs on.
XNS Address	Network address of the interface.
In Receives	Total number of input datagrams received from interfaces, including those received in error.

Out Requests	Total number of XNS datagrams that local XNS user-protocols supplied in transmission requests. Doesn't include datagrams counted in "Forwards."
Forwards	Number of input datagrams for which this router was not their final XNS destination. When this is the case, the router tries to find a route for forwarding the datagram to the appropriate final destination. If the router isn't an XNS Gateway, this counter includes only the packets that were source-routed through the router successfully.
In Discards	Number of input XNS datagrams discarded because of an environmental problem, such as lack of buffer resources. Doesn't include those discarded while awaiting reassembly.
Out Discards	Number of output XNS datagrams discarded because of an environmental problem, such as lack of buffer space. Includes datagrams counted under Forwards if they match this criterion.

Sample Display – show xns stats

```
XNS Circuit Statistic(s) Table
------------------------------

                          In       Out               In      Out
Circuit    XNS Address    Receives Requests Forwards Discards Discards
-------    -----------    -------- -------- -------- -------- --------
  E21      0x00000001       0        23       23       0        0
  E31      0x00000002       0        23       23       0        0
  E22      0x00000003       0        23       23       0        0
```

stats errors [*<circuit name>*]

Displays error information for all circuits or for a specific circuit. The table includes the following information:

Circuit	Name of the circuit this interface runs on.
XNS Address	Network address of the interface.

Header Errors	Number of input datagrams discarded because of errors in their XNS header, including bad checksums, version number mismatch, format errors, and so on.
Address Errors	Number of input datagrams discarded because the XNS address in their XNS header's destination field was not a valid address to be received at this router. This count includes invalid addresses (such as 0.0.0.0) and addresses of unsupported classes (such as Class E). If a router is not an XNS Gateway and does not forward datagrams, this value includes datagrams discarded because the destination address was not a local address.
Unknown Protocol	Number of locally addressed datagrams received successfully but discarded because of an unknown or unsupported protocol.
In Discards	Number of input XNS datagrams discarded because of an environmental problem, such as lack of buffer resources. Doesn't include those discarded while awaiting reassembly.
Out Discards	Number of output XNS datagrams discarded because of an environmental problem, such as lack of buffer space. Includes datagrams counted under Forwards in the "XNS Circuits Statistics" table if they match this criterion.
No Routes	Number of XNS datagrams discarded because the router could not find a route to their destination. This value includes any packets meeting this criterion under Forwards in the "XNS Circuits Statistics" table. It also includes datagrams that a host could not route because its default gateways were down.

Sample Display – show xns stats errors

```
XNS Circuit Error Statistics Table
----------------------------------

                          Header  Address  Unknown     In      Out       No
Circuit    XNS Address    Errors   Errors  Protocol Discards Discards  Routes
-------- -------------- -------- -------- -------- -------- -------- --------
No Entries.
```

traffic filters [*<circuit name>*]

Displays traffic filter information for all circuits or for a specific circuit. The table includes the following information:

Circuit	Name of the circuit the traffic filter applies to.
XNS Address	Network address of the interface running on the circuit.
Mode	State of filter use, which is Enabled (activated) or Disabled (not activated).
Status	Current status of the traffic filter, which is one of the following: • *Active* – Rule is being used. • *Inactive* – Rule is not in use. • *Error* – Application detected an error in the rule.
Rx Matches	Number of packets received that have matched the rule.
Rule Number	Identifier for the rule.
Fragment Number	Number of a rule fragment — for large rules.

Sample Display – show xns traffic

```
XNS Traffic Filter Status Table
-------------------------------
                                                 Rx      Rule   Fragment
Circuit    XNS Address      Mode    Status  Matches   Number   Number
-------- ---------------- -------- -------- -------- -------- --------
No Entrie(s)
```

version

Displays the current version number and modification date of the *xns.bat* script.

Sample Display – show xns version

```
XNS.bat Version: 1.9 Date: 3/31/94
```

Chapter 3
Using enable/disable Commands

You can enable and disable network protocols, services, and interfaces from the Technician Interface command line, using the general syntax of the **enable**/**disable** commands as follows:

enable *<service>* or **disable** *<service>*

<service> is the name of the protocol or service you want to enable or disable.

To display a help message on an **enable** or **disable** command, enter the command followed by a question mark. For example, to display help for the **enable at** command, enter **enable at ?**.

The sample displays in this section show how to use the **enable** commands only. However, **disable** commands follow the same syntax.

enable/disable appn

Use the **enable appn** *<option>* commands to enable APPN services on a Wellfleet router, and the **disable appn** *<option>* commands to disable APPN services. For more information about the Bay Networks implementation of APPN, refer to *Configuring APPN Services*.

The **enable/disable appn** commands support the following subcommand options:

base	ls <LS name>
directory <LU name>	port <port name>
dlc <DLC name>	tunnel <circuit>
log	vrn <VRN name>

base

Enables or disables APPN on the router.

Sample Display – enable appn base

```
APPN base record enabled
```

directory *<LU name>*

Enables or disables a specific Logical Unit directory.

Sample Display – enable appn directory

```
Enter Fully-qualified resource name: USWFLT01.VENUS2
Directory entry for USWFLT01.VENUS2 enabled
```

dlc *<DLC name>*

Enables or disables a specific Data Link Control entry.

Sample Display – enable appn dlc

```
Enter DLC Name: DLC00001
DLC DLC00001 enabled
```

log

Enables or disables APPN problem determination logs.

ls *<LS name>*

Enables or disables a specific Link Station.

Sample Display – enable appn ls

```
Enter Locally-known Link Station Name: DURHAM2
Link Station DURHAM2 enabled
```

port *<port name>*

Enables or disables a specific APPN port.

Sample Display – enable appn port

```
Enter Port Name: PORT0002
Port PORT0002 enabled
```

tunnel *<circuit>*

Enables or disables a specific APPN tunnel.

Sample Display – enable appn tunnel

```
Enter the Circuit number of this Tunnel: 99
Tunnel for Circuit 99 enabled
```

vrn *<VRN name>*

Enables or disables a specific Virtual Routing Node.

Sample Display – enable appn vrn

```
Enter Fully-qualified VRN Name: USWFLT01.VENUS
VRN USWFLT01.VENUS enabled
```

enable/disable at

Use the **enable at** *<option>* commands to enable AppleTalk services on a Bay Networks router, and the **disable at** *<option>* commands to disable AppleTalk services. For more information about the Bay Networks implementation of AppleTalk, refer to *Configuring AppleTalk Services*.

The **enable/disable at** commands support the following subcommand options:

base	circuit <circuit_name>

base

Enables or disables AppleTalk on the router.

Sample Display – enable at base

```
AT base record enabled.
```

circuit *<circuit_name>*

Enables or disables a specific circuit.

Sample Display – enable at circuit E23

```
AT circuit E23 enabled.
```

enable/disable atm

Use the **enable atm** *<option>* commands to enable ATM Adaptation Layer Controller (ALC) link module services on a Bay Networks router, and the **disable atm** *<option>* commands to disable this service. For more information about the Bay Networks implementation of ATM, refer to *Configuring ATM Services.*

The **enable/disable atm** commands support the following subcommand options:

interface <line_number>	line connector <slot.connector>
line circuit <circuit_name>	service <circuit_number>

interface *<line_number>*

Enables or disables a specific ATM interface.

Sample Display – enable atm interface 1104101

```
ATM Interface 1104101 enabled.
```

line circuit *<circuit_name>*

Enables or disables a specific ATM circuit.

Sample Display – enable atm line circuit A51

```
ATM circuit A51 enabled.
```

line connector *<slot.connector>*

Enables or disables a specific ATM connector.

Sample Display – enable atm line connector 5.1

```
ATM connector 5.1 enabled.
```

service *<circuit_number>*

Enables or disables a specific circuit number.

Sample Display – enable atm service 2

```
ATM Service Record (circuit number 2) enabled.
```

enable/disable atmdxi

Use the **enable atmdxi** commands to enable Asynchronous Transfer Mode Data Exchange Interface (ATM DXI) services on Bay Networks router, and the **disable atmdxi** commands to disable ATM DXI services. For more information about the Bay Networks implementation of ATM DXI, refer to *Configuring ATM Services*.

The **enable/disable atm** command supports the *<line.llindex>* subcommand option, as follows:

<line.llindex>

Enables or disables a specific ATM DXI line.

Sample Display – enable atmdxi 2.0

```
ATM DXI Line 2.0 enabled.
```

enable/disable aurp

Use the **enable aurp** *<option>* commands to enable AppleTalk Update-based Routing Protocol (AURP) services on a Bay Networks router, and the **disable aurp** *<option>* commands to disable AURP services. For more information about the Bay Networks implementation of AURP, refer to *Configuring AppleTalk Services*.

The **enable/disable aurp** commands support the following subcommand options:

base	connection <IP_address>

base

Enables or disables AURP on the router.

Sample Display – enable aurp base

```
AURP base record enabled.
```

connection *<IP_address>*

Enables or disables a specific circuit.

Sample Display – enable aurp connection 205.1.10.2

```
AURP connection 205.1.10.2 enabled.
```

enable/disable autoneg

Use the **enable autoneg** *<option>* commands to enable automatic line speed negotiation on 100Base-T Ethernet interfaces services on a Bay Networks router, and the **disable autoneg** *<option>* commands to disable autonegotiation services. For more information about the Bay Networks implementation of autonegotiation services, refer to *Configuring Line Services.*

The **enable/disable autoneg** commands support the following subcommand options:

circuit <circuit_name>	connection <slot.connector>

circuit *<circuit_name>*

Enables or disables autonegotiation on a specific circuit.

Sample Display – enable autoneg E21

```
AUTONEG Circuit E21 enabled.
```

connection *<slot.connector>*

Enables or disables autonegotiation on a specific connector.

Sample Display – enable autoneg connection 2.1

```
AUTONEG connector 2.1 enabled.
```

enable/disable bootp

Use the **enable bootp** *<option>* command to enable BOOTP (bootstrap protocol) services on a Bay Networks router, and the **disable bootp** *<option>* command to disable bootp services. For more information about the Bay Networks implementation of BOOTP, refer to the *Configuring SNMP, BOOTP, DHCP, and RARP Services* guide.

The **enable/disable bootp** commands support only the **interface** *<IP_address>* subcommand option.

interface *<IP_address>*

Enables or disables BOOTP services on a specific interface.

Sample Display – enable bootp interface 130.1.1.1

```
BOOTP interface 130.1.1.1 enabled.
```

enable/disable bridge

Use the **enable bridge** *<option>* commands to enable Bridging services on a Bay Networks router, and the **disable bridge** *<option>* commands to disable Bridging services. For more information about the Bay Networks implementation of Bridging, refer to *Configuring Bridging Services*.

The **enable/disable bridge** commands support the following subcommand options:

base	circuit <circuit_name>

base

Enables or disables Bridging services on the router.

Sample Display – enable bridge base

```
BRIDGE base record enabled.
```

circuit *<circuit_name>*

Enables or disables a specific circuit.

Sample Display – enable bridge circuit e21

```
BRIDGE Circuit e21 enabled.
```

enable/disable circuits

Use the **enable circuits** *<option>* commands to enable a driver circuit on a Bay Networks router, and the **disable circuits** *<option>* commands to disable a driver circuit. You can enable or disable CSMA/CD, DS1E1, E1, FDDI, HSSI, Synchronous, T1, and Token Ring circuits. For more information about the Bay Networks implementation of drivers, refer to *Configuring Line Services*.

The **enable/disable circuits** command supports the *<circuit_name>* subcommand option, as follows:

<circuit_name>

The name of the circuit that you want to enable or disable.

Sample Display – enable circuit e21

```
CSMACD circuit E21 enabled.
```

enable/disable csmacd

Use the **enable csmacd** *<option>* commands to enable Carrier Sense Multiple Access with Collision Detection (CSMA/CD) services on a Bay Networks router, and the **disable csmacd** *<option>* commands to disable CSMA/CD services. For more information about the Bay Networks implementation of CSMA/CD, refer to *Configuring Line Services*.

The **enable/disable csmacd** commands support the following subcommand options:

base	disable dcmmw base

circuit *<circuit_name>*

Enables or disables a specific circuit.

Sample Display – enable csmacd circuit e21

```
CSMACD circuit E21 enabled.
```

connector *<slot.connector>*

Enables or disables a specific circuit.

Sample Display – enable csmacd connector 2.1

```
CSMACD connector 2.1 enabled.
```

enable/disable dcmmw

On a Bay Networks 8-Port ANH with an installed N11 Data Collection Module (DCM) option, use the **enable dcmmw** *<option>* command to enable the software subsystem (DCM middleware, DCMMW) for remote monitoring (RMON) services. The DCMMW driver runs on the ANH motherboard; it controls the DCM and provides access to collected RMON statistics. Use the **disable dcmmw** *<option>* command to disable the DCM board.

For information on configuring the DCM software subsystem with Site Manager, refer to *Connecting AN and ANH Systems to a Network*. For information on the Bay Networks implementation of RMON services in the 8-Port ANH, refer to *Configuring SNMP, BOOTP, DHCP, and RARP Services*. For detailed information on RMON topics, refer to the Remote Network Monitoring MIB, RMON RFC 1757.

The **enable/disable dcmmw** command supports the following subcommand option:

base

Enables or disables the DCM middleware (DCMMW) software subsystem.

Sample Display – enable dcmmw base

```
DCMMW base record enabled.
```

Sample Display – disable dcmmw base

```
DCMMW base record disabled.
```

enable/disable decnet

Use the **enable decnet** *<option>* commands to enable DECnet services on a Bay Networks router, and the **disable decnet** *<option>* commands to disable DECnet service. For more information about the Bay Networks implementation of DECnet, refer to *Configuring DECnet Services*.

The **enable/disable decnet** commands support the following subcommand options:

base	circuit <circuit_name>

base

Enables or disables DECnet on the router.

Sample Display – enable decnet base

```
DECNET base record enabled.
```

circuit *<circuit_name>*

Enables or disables a specific circuit.

Sample Display – enable decnet circuit e21

```
DECNET Circuit e21 enabled.
```

enable/disable dls

Use the **enable dls** *<option>* commands to enable Data Link Switching (DLSw) services on a Bay Networks router, and the **disable dls** *<option>* commands to disable DLSw services. For more information about the Bay Networks implementation of DLSw, refer to *Configuring DLSw Services*.

The **enable/disable dls** commands support the following subcommand options:

base	circuit <circuit_name>

base

Enables or disables DLS on the router.

Sample Display – enable dls base

```
DLS base record enabled.
```

circuit *<circuit_name>*

Enables or disables a specific circuit.

Sample Display – enable dls circuit e21

```
DLS Circuit e21 enabled.
```

enable/disable ds1e1

Use the **enable ds1e1** *<option>* commands to enable MCT1 and MCE1 services on a Bay Networks router, and the **disable ds1e1** *<option>* commands to disable MCT1 and MCE1 services. For more information about the Bay Networks implementation of MCT1 and MCE1, refer to *Configuring Line Services*.

The **enable/disable ds1e1** commands support the following subcommand options:

circuit <circuit_name>	connector <slot.connector.logical line>

circuit *<circuit_name>*

Enables or disables all circuits or a specific circuit.

Sample Display – enable ds1e1 circuit

```
DS1E1 circuits enabled.
```

connector *<slot.connector.logical line>*

Enables or disables a specific circuit.

Sample Display – enable ds1e1 connector 4.1

```
DS1E1 connector 4.1 enabled.
```

enable/disable dvmrp

Use the **enable dvmrp** *<option>* commands to enable DVRMP services on a Bay Networks router, and the **disable dvmrp** *<option>* commands to disable DVMRP services. For more information about the Bay Networks implementation of DVMRP, refer to *Configuring IP Services*.

The **enable/disable dvmrp** commands support the following subcommand options:

base	circuit <circuit_name>

base

Enables or disables DVMRP on the router.

Sample Display – enable dvmrp base

```
Dvmrp base record enabled.
```

circuit *<circuit_name>*

Enables or disables a specific circuit.

Sample Display – enable dvmrp circuit E21

```
DVMRP circuit E21 enabled.
```

enable/disable e1

Use the **enable e1** *<option>* commands to enable E1 services on a Bay Networks router, and the **disable e1** *<option>* commands to disable E1 services. For more information about the Bay Networks implementation of E1, refer to *Configuring Line Services*.

The **enable/disable e1** commands support the following subcommand options:

circuit <circuit_name>	connector <slot.connector>

circuit *<circuit_name>*

Enables or disables all circuits or a specific circuit.

Sample Display – enable e1 circuit e1-21

```
E1 circuit E1-21 enabled.
```

connector *<slot.connector>*

Enables or disables a specific circuit.

Sample Display – enable e1 connector 2.2

```
E1 connector 2.2 enabled.
```

enable/disable fddi

Use the **enable fddi** *<option>* commands to enable Fiber Distributed Data Interface (FDDI) services on a Bay Networks router, and the **disable fddi** *<option>* commands to disable FDDI services. For more information about the Bay Networks implementation of FDDI, refer to *Configuring Line Services*.

The **enable/disable fddi** commands support the following subcommand options:

circuit <circuit_name>	connector <slot.connector>

circuit *<circuit_name>*

Enables or disables a specific circuit.

Sample Display – enable fddi circuit f.51

```
FDDI circuit F1 enabled.
```

connector *<slot.connector>*

Enables or disables a specific circuit.

Sample Display – enable fddi connector 3.1

```
FDDI connector 3.1 enabled.
```

enable/disable fr

Use the **enable fr** *<option>* commands to enable Frame Relay services on a Bay Networks router, and the **disable fr** *<option>* commands to disable Frame Relay services. For more information about the Bay Networks implementation of Frame Relay, refer to *Configuring Frame Relay Services*.

The **enable/disable fr** command supports the *<line.llindex>* subcommand option, as follows:

<line.llindex>

Enables or disables the line or instance identifier for the Frame Relay interface.

Sample Display – enable fr 202101.0

```
Frame Relay line 202101.0 enabled.
```

enable/disable ftp

Use the **enable ftp** *<option>* commands to enable File Transfer Protocol (FTP) services on a Bay Networks router, and the **disable ftp** *<option>* commands to disable FTP services. For more information about the Bay Networks implementation of FTP, refer to *Configuring TCP Services.*

The **enable/disable ftp** command supports the *<base>* subcommand option, as follows:

base

Enables or disables FTP on the router.

Sample Display – enable ftp base

```
FTP base record enabled.
```

enable/disable hssi

Use the **enable hssi** *<option>* commands to enable High-Speed Serial Interface (HSSI) services on a Bay Networks router, and the **disable hssi** *<option>* commands to disable HSSI services. For more information about the Bay Networks implementation of HSSI, refer to *Configuring Line Services*.

The **enable/disable hssi** commands support the following subcommand options:

circuit <circuit_name>	connector <slot.connector>

circuit *<circuit_name>*

Enables or disables a specific circuit.

Sample Display – enable hssi circuit H41

```
HSSI circuit H41 enabled.
```

connector *<slot.connector>*

Enables or disables a specific circuit.

Sample Display – enable hssi connector 4.1

```
HSSI connector 4.1 enabled.
```

enable/disable igmp

Use the **enable igmp** *<option>* commands to enable IGMP services on a Bay Networks router, and the **disable igmp** *<option>* commands to disable IGMP services. For more information about the Bay Networks implementation of IGMP, refer to *Configuring IP Services*.

The **enable/disable igmp** commands support the following subcommand options:

base	circuit <circuit_name>

base

Enables or disables IGMP on the router.

Sample Display – enable igmp base

```
Igmp base record enabled.
```

circuit *<circuit_name>*

Enables or disables a specific circuit.

Sample Display – enable igmp circuit E21

```
IGMP circuit E21 enabled.
```

enable/disable ip

Use the **enable ip** *<option>* commands to enable Internet Protocol (IP) services on a Bay Networks router, and the **disable ip** *<option>* commands to disable IP services. For more information about the Bay Networks implementation of IP, refer to *Configuring IP Services*.

The **enable/disable ip** commands support the following subcommand options:

base	rip <IP_interface_address>
circuit <circuit_name>	

base

Enables or disables IP on the router.

Sample Display – enable ip base

```
IP base record enabled.
```

circuit *<circuit_name>*

Enables or disables IP on a specific circuit.

rip *<IP_interface_address>*

Enables or disables the Routing Information Protocol (RIP) on a specific IP interface.

enable/disable ipx

Use the **enable ipx** *<option>* commands to enable Novell's Internet Packet Exchange (IPX) services on a Bay Networks router, and the **disable ipx** *<option>* commands to disable IPX services. For more information about the Bay Networks implementation of IPX, refer to *Configuring IPX Services*.

The **enable/disable ipx** commands support the following subcommand options:

base	circuit <circuit_name>

base

Enables or disables IPX on the router.

Sample Display – enable ipx base

```
IPX base record enabled.
```

circuit *<circuit_name>*

Enables or disables all circuits on a specific circuit.

enable/disable iredund

Use the **enable iredund** *<option>* commands to enable interface redundancy on a Bay Networks router, and the **disable iredund** *<option>* commands to disable interface redundancy. For more information about the Bay Networks implementation of interface redundancy, refer to *Configuring Interface and Router Redundancy.*

The **enable/disable iredund** commands support the following subcommand options:

circuit <circuit_name>	connector <slot.connector>

circuit *<circuit_name>*

Enables or disables interface redundancy on a specific circuit.

Sample Display – $disable iredund circuit E43

```
Interface Redundancy disabled on circuit E43.
```

connector *<slot.connector>*

Enables or disables interface redundancy on a specific port.

Sample Display – $enable iredund connector 4.3

```
Interface Redundancy is enabled on slot.connector 4.3.
```

enable/disable isdn

Use the **enable isdn** *<option>* commands to enable Integrated Services Digital Network (ISDN) services on a Bay Networks router, and the **disable isdn** *<option>* commands to disable ISDN services. For more information about the Bay Networks implementation of ISDN, refer to *Configuring Dial Services*.

The **enable/disable isdn** commands support the following subcommand options:

bchannel <line.index>	filter <slot>
bri	

bchannel *<line.index>*

Enables or disables a specific ISDN B Channel line.

Sample Display – enable isdn bch <line.index>

```
ISDN B-Channel <line.index> enabled.
```

bri

Note: *See "enable/disable isdn bri."*

filter *<slot>*

Enables or disables a specific ISDN filter.

Sample Display – enable isdn filter <slot>

```
Incoming Filter on Slot <slot> is now ON.
```

enable/disable isdn bri

Use the **enable isdn bri** *<option>* commands to enable Integrated Services Digital Network Basic Rate Interface (ISDN BRI) services on a Bay Networks router, and the **disable isdn bri** *<option>* commands to disable ISDN BRI services. For more information about the Bay Networks implementation of ISDN BRI, refer to *Configuring Dial Services*.

The **enable/disable isdn bri** commands support the following subcommand options:

circuit <circuit_name>	connector <slot.connector>

circuit *<circuit_name>*

Enables or disables an ISDN circuit.

Sample Display – enable isdn bri circuit ISAC

```
ISDN BRI circuit ISAC enabled.
```

connector *<slot.connector>*

Enables or disables an ISDN BRI connector on a specific slot.

Sample Display – enable isdn bri connector 1.2

```
ISDN BRI connector 1.2 enabled.
```

enable/disable lapb

Use the **enable lapb** *<option>* commands to enable Link Access Procedure-Balanced (LAPB) services on a Bay Networks router, and the **disable lapb** *<option>* commands to disable LAPB services. For more information about the Bay Networks implementation of LAPB, refer to *Configuring X.25 Services.*

The **enable/disable lapb** command supports the *<line.llindex>* subcommand option, as follows:

<line.llindex>

Enables or disables LAPB on a specific line and lower-layer index.

Sample Display – enable lapb 201101.0

```
LAPB line 201101.0 enabled.
```

enable/disable lnm

Use the **enable lnm** *<option>* commands to enable LNM Servers services on a Bay Networks router, and the **disable lnm** *<option>* commands to disable LNM Servers services. For more information about the Bay Networks implementation of LNM Servers, refer to *Configuring LNM Services*.

The **enable/disable lnm** commands support the following subcommand options:

base	circuit <circuit_name>

base

Enables or disables LNM Servers on the router.

Sample Display – enable lnm base

```
LNM Servers base enabled.
```

circuit *<circuit_name>*

Enables or disables a specific circuit.

Sample Display – enable lnm circuit o41

```
LNM Servers circuit 041 enabled.
```

enable/disable nbip

Use the **enable nbip** *<option>* commands to enable NetBIOS services on a Bay Networks router, and the **disable nbip** *<option>* commands to disable NetBIOS services on a router. For more information about the Bay Networks implementation of NetBIOS, refer to *Configuring IP Services*.

The **enable/disable nbip** commands support the following subcommand options:

base	interface <IP_interface_address>

base

Enables or disables NetBIOS on the router.

Sample Display – enable nbip base

```
NBIP base record enabled.
```

interface *<IP_interface_address>*

Enables or disables a specific NetBIOS over IP interface.

Sample Display – enable nbip interface 130.1.1.1

```
NBIP interface 130.1.1.1 enabled.
```

enable/disable nml

Use the **enable nml** *<option>* commands to enable Native Mode LAN (NML) services on a Bay Networks router, and the **disable nml** *<option>* commands to disable NML services. For more information about the Bay Networks implementation of NML, refer to *Configuring Bridging Services*.

The **enable/disable nml** commands support the following subcommand options:

circuit <circuit_name>	seclist <circuit_name>

circuit *<circuit_name>*

Enables or disables NML on a specific circuit.

Sample Display – enable nml circuit e21

```
NML circuit e21 enabled.
```

seclist *<circuit_name>*

Enables or disables all ranges in the NML security list on a specific circuit.

Sample Display – enable nml seclist e21

```
NML Security list on e21 enabled.
```

enable/disable osi

Use the **enable osi** *<option>* commands to enable Open Systems Interconnection (OSI) services on a Bay Networks router, and the **disable osi** *<option>* commands to disable OSI services. For more information about the Bay Networks implementation of OSI, refer to *Configuring OSI Services*.

The **enable/disable osi** commands support the following subcommand options:

base	circuit <circuit_name>

base

Enables or disables OSI on the router.

Sample Display – enable osi base

```
OSI base record enabled.
```

circuit *<circuit_name>*

Enables or disables a specific circuit.

Sample Display – enable osi circuit e31

```
OSI Circuit e31 enabled.
```

enable/disable ospf

Use the **enable ospf** *<option>* commands to enable Open Shortest Path First (OSPF) services on a Bay Networks router, and the **disable ospf** *<option>* commands to disable OSPF services. For more information about the Bay Networks implementation of OSPF, refer to *Configuring IP Services*.

The **enable/disable ospf** commands support the following subcommand options:

area <area_ID>	interface <IP_address>
base	

area *<area_ID>*

Enables or disables OSPF for a specific IP area.

base

Enables or disables OSPF on the router.

Sample Display – enable ospf base

```
OSPF base record enabled.
```

interface *<IP_address>*

Enables or disables OSPF on a specific IP interface.

enable/disable packet

Use the **enable packet** *<option>* commands to enable the Packet Capture utility on a Bay Networks router, and the **disable packet** *<option>* commands to disable the Packet Capture utility. For more information about Bay Network's Packet Capture utility, refer to *Using Technician Interface Software*.

The **enable/disable packet** commands support the following subcommand options:

capture <line_number>	line <line_number>

capture *<line_number>*

Starts or stops packet capture on a specific line. This is the line number of the interface connected with the desired packet capture. When you execute this command, the router does not display a response.

line *<line_number>*

Enables or disables packet capture on a specific line.This is the line number of the interface connected with the desired packet capture. When you execute this command, the router does not display a response.

enable/disable ppp

Use the **enable ppp** *<option>* command to enable Point-to-Point Protocol (PPP) services on a Bay Networks router, and the **disable ppp** *<option>* command to disable PPP services. For more information about the Bay Networks implementation of PPP, refer to *Configuring PPP Services.*

The **enable/disable ppp** command supports the *<line.llindex>* subcommand option, as follows:

<line.llindex>

Enables or disables the line or instance identifier for the PPP interface.

Sample Display – enable ppp s31

```
PPP line s31 enabled.
```

enable/disable rarp

Use the **enable rarp** *<option>* command to enable Reverse Address Resolution Protocol (RARP) services on a Bay Networks router, and the **disable rarp** *<option>* command to disable RARP services. For more information about the Bay Networks implementation of RARP, refer to *Configuring SNMP, BOOTP, DHCP, and RARP Services*.

The **enable/disable rarp** command supports the *<base>* subcommand option, as follows:

base

Enables or disables RARP on the router.

Sample Display – enable rarp base

```
RARP base record enabled.
```

enable/disable rptr

Use the **enable rptr** *<option>* commands to enable Access Node (AN) Repeater services, and the **disable rptr** *<option>* commands to disable AN Repeater services. For more information about the Bay Networks AN Repeater, refer to *Connecting BayStack AN and ANH Systems to a Network*.

The **enable/disable rptr** commands support the following subcommand options:

port <port_number>	test
reset	

port *<port_number>*

Enables or disables all ports, or just a selected port.

reset

Enables the repeater to reset and test itself.

test

Enables the repeater to run a self-test without also resetting the AN.

Sample Display – enable rptr test

```
802.3 Repeater (HUB) Non-Disruptive Selftest:
---------------------------------------------
Repeater Selftest Initiated... Completed

Repeater Post-Selftest Status:
Repeater Operating Status: OK
         Repeater Health Text: "Repeater Health: Operational "
      Total Partitioned Ports: 2
       Group Operating Status: Operational
     Last Group Status Change: 29221136 (SNMP SysUpTime of Change)
```

enable/disable rredund

Use the **enable rredund** *<option>* commands to enable router redundancy (RREDUND) services on a Bay Networks router, and the **disable rredund** *<option>* commands to disable router redundancy. For more information about the Bay Networks implementation of router redundancy, refer to *Configuring Interface and Router Redundancy.*

The **enable/disable rredund** commands support the following subcommand options:

base	circuit <circuit_name>

base

Enables or disables RREDUND on the router.

Sample Display – enable rredund base

```
RREDUND base record enabled.
```

circuit *<circuit_name>*

Enables or disables RREDUND on a specific circuit.

Sample Display – enable rredund circuit E43

```
Router Redundancy enabled on circuit E43.
```

enable/disable sdlc

Use the **enable sdlc** *<option>* commands to enable Synchronous Data Link Control (SDLC) services on a Bay Networks router, and the **disable sdlc** *<option>* commands to disable SDLC services. For more information about the Bay Networks implementation of SDLC, refer to *Configuring SDLC Services*.

The **enable/disable sdlc** commands support the following subcommand options:

base	circuit <circuit_name>

base

Enables or disables SDLC on the router.

Sample Display – sdlc disable base

```
SDLC base record disabled.
```

circuit *<circuit_name>*

Enables or disables a specific circuit.

Sample Display – sdlc enable circuit SDLC_CIR 1234

```
Circuit SDLC_CIR 1234 enabled
```

enable/disable span

Use the **enable span** *<option>* commands to enable Spanning Tree Bridge services on a Bay Networks router, and the **disable span** *<option>* commands to disable Spanning Tree Bridge services. For more information about the Bay Networks implementation of Spanning Tree Bridging, refer to *Configuring Bridging Services*.

The **enable/disable span** commands support the following subcommand options:

base	circuit <circuit_name>

base

Enables or disables Spanning Tree Bridging on the router.

Sample Display – enable span base

```
SPAN base record enabled.
```

circuit *<circuit_name>*

Enables or disables a specific circuit.

enable/disable sr

Use the **enable sr** *<option>* commands to enable Source Routing services on a Bay Networks router, and the **disable sr** *<option>* commands to disable Source Routing services. For more information about the Bay Networks implementation of Source Routing, refer to *Configuring Bridging Services*.

The **enable/disable sr** commands support the following subcommand options:

base	circuit <circuit_name>

base

Enables or disables Source Routing on the router.

Sample Display – enable span base

```
Source Routing (SR) base record enabled.
```

circuit *<circuit_name>*

Enables or disables a specific circuit.

enable/disable srspan

Use the **enable srspan** *<option>* commands to enable Source Route Spanning Tree Bridging services on a Bay Networks router, and the **disable srspan** *<option>* commands to disable Source Route Spanning Tree Bridging services. For more information about the Bay Networks implementation of Source Route Spanning Tree Bridging, refer to *Configuring Bridging Services*.

The **enable/disable srspan** commands support the following subcommand options:

base	circuit <circuit_name>

base

Enables or disables Source Route Spanning Tree Bridging on the router.

Sample Display – enable srspan base

```
Source Route Spanning Tree base record enabled.
```

circuit *<circuit_name>*

Enables or disables a specific circuit.

Sample Display – enable srspan circuit S21

```
Source Route Spanning Tree circuit S21 enabled.
```

enable/disable sta

Use the **enable sta** *<option>* commands to enable Statistical Thresholds and Alarms (STA) services on a Bay Networks router and the **disable sta** *<option>* commands to disable STA services. For more information about the Bay Networks implementation of STA, refer to *Configuring SNMP, BOOTP, DHCP, and RARP Services*.

The **enable/disable sta** commands support the following subcommand options:

base	object <object_ID>

base

Enables or disables STA on the router.

Sample Display – enable sta base

```
STA base record enabled.
```

object *<object_ID>*

Enables or disables STA for a specific object.

enable/disable sws

Use the **enable sws** *<option>* commands to enable Switched Services on a Bay Networks router, and the **disable sws** *<option>* commands to disable Switched Services. For more information about the Bay Networks implementation of Switched Services, refer to *Configuring Dial Services*.

The **enable/disable sws** commands support the following subcommand options:

dial_forced <circuit_name>	takedown_forced <circuit_name>

dial_forced *<circuit_name>*

Enables or disables forced dialing on a circuit. We support this feature only for on-demand dialing. When you enable forced dialing on a circuit, you make it possible for someone to initiate a connection across the line. When you disable forced dialing, you inhibit a connection across the line.

Sample Display – enable sws dial_forced s31

```
Switch Services Forced Dial Enabled for Circuit: s31
```

takedown_forced *<circuit_name>*

Enables or disables the ability to take down a specific circuit. When you enable this parameter, you are choosing to take the circuit down. When you disable this parameter, you are making it possible to use the line.

Sample Display – enable sws takedown_forced s31

```
Switch Services Forced TakeDown Enabled for Circuit: s31
```

enable/disable sync

Use the **enable sync** *<option>* commands to enable synchronous services on a Bay Networks router, and the **disable sync** *<option>* commands to disable synchronous services.

The **enable/disable sync** commands support the following subcommand options:

circuit <circuit_name>	connector <slot.connector>

circuit *<circuit_name>*

Enables or disables a specific circuit.

Sample Display – enable sync circuit s31

```
SYNC circuit S31 enabled.
```

connector *<slot.connector>*

Enables or disables a specific circuit.

Sample Display – enable sync connector 3.2

```
SYNC connector 3.2 enabled.
```

enable/disable t1

Use the **enable t1** *<option>* commands to enable T1 services on a Bay Networks router, and the **disable t1** *<option>* commands to disable T1 services. For more information about the Bay Networks implementation of T1, refer to *Configuring Line Services*.

The **enable/disable t1** commands support the following subcommand options:

circuit <circuit_name>	connector <slot.connector>

circuit *<circuit_name>*

Enables or disables a specific circuit.

Sample Display – enable t1 circuit t1-21

```
T1 circuit T1-21 enabled.
```

connector *<slot.connector>*

Enables or disables a specific circuit.

Sample Display – enable t1 connector 2.2

```
T1 connector 2.2 enabled.
```

enable/disable tcp

Use the **enable tcp** *<option>* commands to enable Transmission Control Protocol (TCP) services on a Bay Networks router, and the **disable tcp** *<option>* commands to disable TCP services. For detailed information about the Bay Networks implementation of TCP, refer to *Configuring TCP Services*.

The **enable/disable tcp** command supports the *<base>* subcommand option, as follows:

base

Enables or disables TCP at the base record, thus enabling or disabling TCP services for the entire router.

Sample Display – enable tcp base

```
TCP base record enabled.
```

enable/disable telnet

Use the **enable telnet** *<option>* commands to enable Telnet services on a Bay Networks router, and the **disable telnet** *<option>* commands to disable Telnet services. For more information about the Bay Networks implementation of Telnet, refer to *Configuring TCP Services*.

The **enable/disable telnet** command supports the *<base>* subcommand option, as follows:

base

The **enable telnet base** command enables inbound router Telnet sessions. Telnet must have been previously configured.

The **disable telnet base** command disables inbound router Telnet sessions. Telnet must have been previously configured.

Sample Display – enable telnet base

```
TELNET base record enabled.
```

enable/disable tftp

Use the **enable tftp** *<option>* commands to enable Trivial File Transfer Protocol (TFTP) services on a Bay Networks router, and the **disable tftp** *<option>* commands to disable TFTP services. For more information about the Bay Networks implementation of TFTP, refer to *Configuring IP Services*.

The **enable/disable tftp** command supports the *<base>* subcommand option, as follows:

base

Enables or disables TFTP at the base record, thus enabling or disabling TFTP services for the entire router.

Sample Display – enable tftp base

```
TFTP base record enabled.
```

enable/disable token

Use the **enable token** *<option>* commands to enable Token Ring services on a Bay Networks router, and the **disable token** *<option>* commands to disable Token Ring services. For more information about the Bay Networks implementation of Token Ring, refer to *Configuring Line Services*.

The **enable/disable token** commands support the following subcommand options:

circuit <circuit_name>	connector <slot.connector>

circuit *<circuit_name>*

Enables or disables a specific circuit.

Sample Display – enable sync circuit o31

```
TOKEN RING circuit O31 enabled.
```

connector *<slot.connector>*

Enables or disables a specific connector.

Sample Display – enable token connector 4.2

```
TOKEN RING connector 4.2 enabled.
```

enable/disable vines

Use the **enable vines** *<option>* commands to enable Virtual Networking System (VINES) services on a Bay Networks router, and the **disable vines** *<option>* commands to disable VINES services. For more information about the Bay Networks implementation of VINES, refer to *Configuring VINES Services*.

The **enable/disable vines** commands support the following subcommand options:

base	circuit <circuit_name>

base

Enables or disables VINES on the router.

Sample Display – enable vines base

```
VINES base record enabled.
```

circuit *<circuit_name>*

Enables or disables a specific circuit.

enable/disable wcp

Use the **enable wcp** *<option>* commands to enable Wellfleet Compression Protocol (WCP) services on a Bay Networks router, and the **disable wcp** *<option>* commands to disable WCP services. For more information about the Bay Networks implementation of WCP, refer to *Configuring Data Compression Services*.

The **enable/disable wcp** commands support the following subcommand options:

circuit <circuit_name>	line <line_number.llindex>

circuit *<circuit_name>*

Enables or disables compression for a specific WCP circuit.

Sample Display – enable wcp circuit S31

```
WCP circuit S31 enabled.
```

line *<line_number.llindex>*

Enables or disables compression for a specific WCP line.

Sample Display – enable wcp line 203101.0

```
WCP line 203101.0 enabled.
```

enable/disable x25

Use the **enable x25** *<option>* commands to enable X.25 services on a Bay Networks router, and the **disable x25** *<option>* commands to disable X.25 services. For more information about the Bay Networks implementation of X.25, refer to *Configuring X.25 Services.*

The **enable/disable x.25** commands support the following subcommand options:

base	service <slot.connector.cct.index >
line <slot.connector>	

base

Enables or disables X.25 at the base record.

Sample Display – enable x25 base

```
X25 base record enabled.
```

line *<slot.connector>*

Enables or disables a specific X.25 line.

Sample Display – enable x25 line 2.1

```
X.25 line 2.1 enabled.
```

service *<slot.connector.cct.index >*

Enables or disables a specific X.25 service.

enable/disable xb

Use the **enable xb** *<option>* commands to enable Translation Bridge services on a Bay Networks router, and the **disable xb** *<option>* commands to disable Translation Bridge services. For more information about the Bay Networks implementation of Translation Bridge, refer to *Configuring Bridging Services*.

The **enable/disable xb** commands support the following subcommand options:

base	circuit <circuit_name>

base

Enables or disables XB on the router.

Sample Display – enable xb base

```
XB base record enabled.
```

circuit *<circuit_name>*

Enables or disables a specific circuit.

enable/disable xns

Use the **enable xns** *<option>* commands to enable Xerox Network Systems (XNS) services on a Bay Networks router, and the **disable xns** *<option>* commands to disable XNS services. For more information about the Bay Networks implementation of XNS, refer to *Configuring XNS Services.*

The **enable/disable xns** commands support the following subcommand options:

base	circuit <circuit_name>

base

Enables or disables XNS on the router.

Sample Display – enable xns base

```
XNS base record enabled.
```

circuit *<circuit_name>*

Enables or disables a specific circuit.

Appendix A
Packet Configuration

The **config packet** command enables you to configure the Packet Capture utility using the Technician Interface. For information about the Bay Networks implementation of Packet Capture, refer to *Troubleshooting Routers*.

The **config packet** command supports the following subcommand options:

config packet line [<line_number>]	config packet unload [<slot>]
config packet load [<slot>]	

Note: *As with other script commands, entering* **?** *as an option to* **config packet** *invokes Technician Interface help for that command.*

config packet line [*<line_number>*]

config packet line [*<line_number>*] configures packet capturing on the specified line.

<line_number> specifies the line number of the physical line. You can enter the line number on the command line or have the script prompt you for it.

The **config packet line** command prompts for media type, slot number, and connector number, so you should gather this information before you begin. After you enter this information, the script displays available memory and the maximum packet save size. As it runs, the script displays the current values of the following items and asks you to either press return to confirm or enter a new value.

- Capture buffer size
- Packet save size
- Capture direction options — receive, transmit, or both
- Receive trigger options (when to stop capturing packets) — when buffer is full, when filter one is matched, when filter two is matched, or no filter
- Transmit trigger options (when to stop capturing packets) — when buffer is full, when filter one is matched, when filter two is matched, or no filter
- Receive Filter Configuration — type and reference options
- Transmit Filter Configuration — type and reference options

For information on all these options, refer to the *Troubleshooting Routers* guide.

Sample Display – config packet line

```
config packet line
Performing mount check...


Packet Capture Line Configuration
---------------------------------
Media Types
-----------
1: Ethernet
2: Synchronous or ISDN B Channel
3: T1
4: E1
5: Token Ring
6: FDDI
7: HSSI

9: MCT1



13: ISDN D Channel

Enter media type by number: 1

Enter slot number: 5

Enter connector number: 3

The calculated Linenumber is 105103
Please record it for use with other packet commands.

Current available memory in 1Kbyte blocks is 2609
Do not leave less than 200 blocks available unless necessary


Current value for Capture Buffer size in 1Kbyte blocks is 0
Press return for current value or enter new value: 1

Maximum Packet Save size in 32 Byte blocks is 32

Current value for Packet Save size in 32 Byte blocks is 0
Press return for current value or enter new value: 2
```

```
Capture Direction Options
-------------------------
1: Receive
2: Transmit
3: Receive and Transmit

Current value for Capture Direction is 1
Press return for current value or enter new value: 3

Receive Trigger Options
-----------------------
1: Stop Capture when Capture Buffer is Full
2: Stop Capture when Receive Filter One is Matched
3: Stop Capture when Receive Filter Two is Matched
4: No Receive Trigger

Current value for Receive Trigger is 4
Press return for current value or enter new value: 4

Transmit Trigger Options
------------------------
1: Stop Capture when Capture Buffer is Full
2: Stop Capture when Transmit Filter One is Matched
3: Stop Capture when Transmit Filter Two is Matched
4: No Transmit Trigger

Current value for Transmit Trigger is 4
Press return for current value or enter new value: 4

Packet Capture Receive Capture Filter Configuration
---------------------------------------------------

Receive Filter One Type Options
-------------------------------
1: Capture

3: Not Used
Current value for Receive Filter One Type is 3
Press return for current value or enter new value: 1

Current value for Receive Filter One Offset is 0
Press return for current value or enter new value:
```

```
Receive Filter One Reference Options
------------------------------------
1: Mac
2: Data Link
3: Multicast

Current value for Receive Filter One Reference is 1
Press return for current value or enter new value:

Current value for Receive Filter One Size is 0
Press return for current value or enter new value: 6

Current value for Receive Filter One Match is
 0x(nil)
Press return for current value or enter new value: 0x0000a200000c

Receive Filter Two Type Options
-------------------------------
1: Capture

3: Not Used

Current value for Receive Filter Two Type is 3
Press return for current value or enter new value:

Packet Capture Transmit Capture Filter Configuration
----------------------------------------------------

Transmit Filter One Type Options
--------------------------------
1: Capture

3: Not Used
Current value for Transmit Filter One Type is 3
Press return for current value or enter new value:
```

config packet load [<slot>]

config packet load [<slot_number>] loads the Packet Capture utility on the specified slot.

<slot> specifies the slot number for loading Packet Capture. You can enter the slot number on the command line or have the script prompt you for it.

Sample Display – config packet load

```
Performing mount check...

Enter slot number to load Packet Capture: 5
```

config packet unload [<slot>]

config packet unload [<slot_number>] unloads the Packet Capture utility on the specified slot.

<slot> specifies the slot number for unloading Packet Capture. You can enter the slot number on the command line or have the script prompt you for it.

Sample Display – config packet unload

```
Performing mount check...

Enter slot number to unload Packet Capture: 5
```

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